

Product Data

Microphone Positioning System — Type 9664

USES:

- Sound intensity mapping
- Sound power measurements
- Vector intensity measurements
- SPL distributions
- Source location and source ranking
- Mapping of hemispheres and planes in a three-dimensional space

FEATURES:

- Made to order and customised to meet your requirements
- Optimised acoustical design for use in anechoic chambers and test cells
- Easy to set up positional geometry
- Versatile configurations, wall and floor mode
- Menu-driven software for PS/2 or AT compatible computers
- Computer interfaced servo controller for 6 DC motors
- 5 degrees of freedom

The Microphone Positioning System Type 9664 is an automated microphone positioning system tailored to meet your individual requirements. The system enables accurate, repeatable, acoustic measurements to be made automatically. Type 9664 systems have a structure with an optimised acoustical design for use in test rooms and the use of the system ensures the influence of the operator on the sound field is minimised.

The Multi-dimensional Microphone Positioning Software WT9555 supplied can be integrated with Mapping and Sound Power Program WT9378.

The System

Microphone Positioning System Type 9664 is a versatile system for making

automated, acoustic measurements in a three-dimensional space. Type 9664 is a microphone positioning system which is individually customised to meet your requirements. The software supplied with Type 9664 enables you to control the precise position and path followed by a microphone or sound intensity probe during a measurement on a sound field. Type 9664 is ideally suited to the investigation of complicated sound fields, or measurements to be made under severe conditions, such as in test cells. If you need to make measurements where the heat is excessive, wind flow is present, or the noise source to be measured presents a safety hazard to an operator, Type 9664 supplies a solution.

The Microphone Positioning System Type 9664 provides automated

microphone positioning for measurement of a rectangular box ("shoe-box") or a hemisphere of up to 1.5 metres radius. The noise source to be measured can be wall or floor mounted, see Fig. 1 and Fig. 2.

Accurate and Repeatable

The physical structure of Type 9664 systems have an optimised acoustical design for use in anechoic chambers and test cells. Automating sound measurements using a Type 9664 system ensures that the influence of the operator on the sound field is minimised. The possibility of operator and positioning errors during a measurement is also reduced, as is the overall measurement time.



The main application area for Type 9664 is in the characterization of sound fields by use of either sound pressure or sound intensity measurements. You define the measurement points prior to the measurement, using the dedicated software. Data is then recorded at these user-defined points as the Microphone Positioning System automatically moves the microphone from point to point in the defined path. Sound power can be calculated for user-defined surfaces, making the system extremely useful in quality audit applications, or where noise labelling of machines is required. Results obtained using the Microphone Positioning System Type 9664 are far more repeatable than if the microphone or probe were hand-held, ensuring the requirements of the strictest international standards, such as ISO 9614-1, can be fully met.

Contour maps can be generated directly from the recorded measurement data with the addition of Mapping and Sound Power Program WT 9378, with which the included Multi-dimensional Microphone Positioning Software WT 9555 is designed to integrate and a compatible analyzer. Table 1 gives a list of the compatible Brüel & Kjær analyzers.

Installation

Microphone Positioning System Type 9664 is a custom-made "robot" system which is tailored to meet individual customers' requirements. The size limitations when ordering a custom-made Type 9664 system can be seen in the Specifications. Contact your local Brüel & Kjær representative for further details.

The microphone measurement positions and microphone path followed is controlled by a Motor Control Unit and control software. The Motor Control Unit controls six DC motors and the Multi-dimensional Microphone Positioning software runs on a PS/2 or AT compatible computer. A Type 9664 system has 5 degrees of freedom for the positioning and movement of the microphone, namely, X, Y and Z directions plus Phi and Theta angles of rotation (see Fig. 1 and Fig. 2). The structure supplied with the system and installed is dependent on your specific requirements. Therefore, a Brüel & Kjær engineer is required to go on site to install a Type 9664 sys-

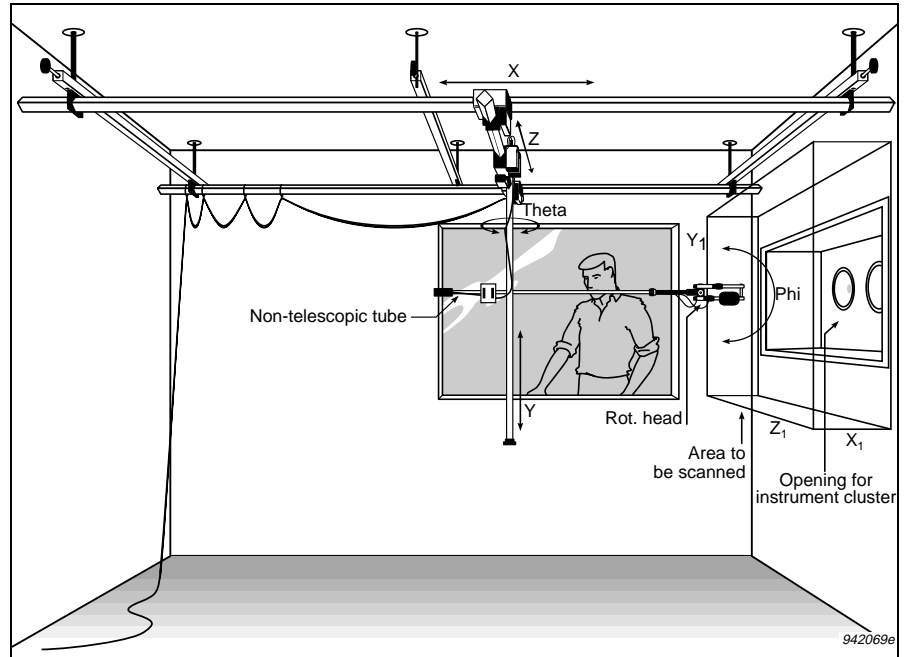


Fig.1 Microphone Positioning System Type 9664 mapping a shoe-box surface area for a measurement on a wall-mounted instrument cluster

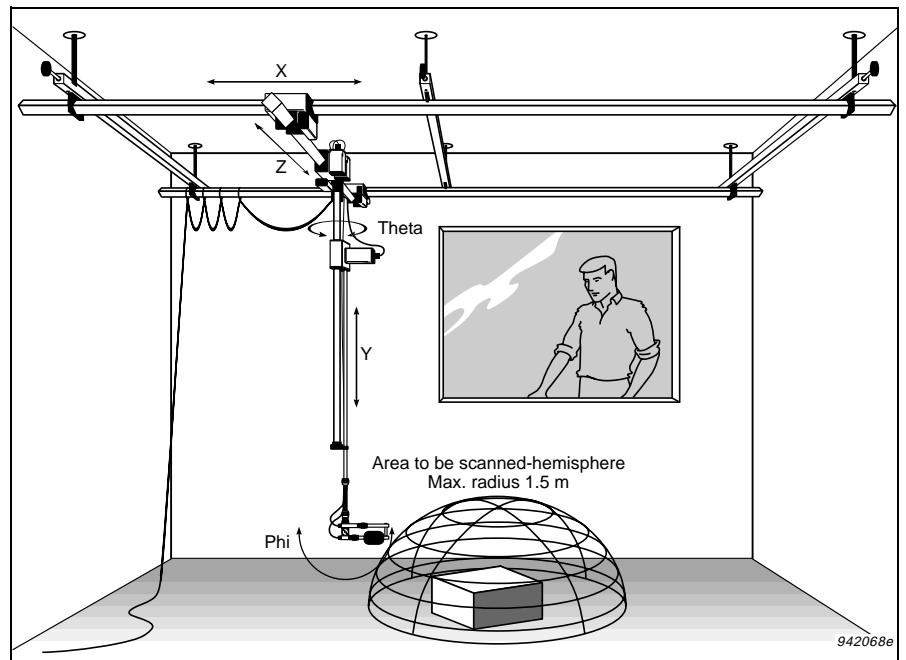


Fig.2 Microphone Positioning System Type 9664 mapping a hemispherical surface area for a measurement on a floor-mounted noise source

tem and provide a training course for your operator.

Easy to control

The Motor Control Unit is controlled by the computer via an RS-232 interface and the menu-driven Multi-dimensional Microphone Positioning

Software, WT 9555. With this software it is easy to set the system up for a measurement by defining the measurement points for the microphone and setting a suitable velocity and acceleration for each motor.

You have the flexibility to define the actual path the microphone follows between measurement points by the use of way-points. Way-points can

Analyzer
Dual Channel Signal Analyzer Type 2032
Dual Channel Signal Analyzer Type 2034
Signal Analyzer Unit Type 2035
Sound Intensity Analysis System Type 3360
Multichannel Analysis System Type 3550
Sound Intensity Analyzer Type 4433
Sound Intensity Analyzer Type 4437
Real-time Frequency Analyzer Type 2131
Real-time Frequency Analyzer Type 2143
Dual Channel Real-time Frequency Analyzer Type 2144
Dual Channel Real-time Frequency Analyzer Type 2133
Bus-controlled Frequency Analyzer Type 2140/WH 2858
Real-time Frequency Analyzer Type 2133

Table 1 Compatible Brüel & Kjær analyzers

be inserted so that the Microphone Positioning System intelligently avoids any obstacles between measurement points. This allows protruding parts to be avoided, such as hoses, drive-shafts, etc. and also permits noise sources with complex shapes to be mapped.

The motors used for the positioning of the microphone can also be controlled manually, by use of a remote control. This feature is useful when planning the microphone path to be followed when making a measurement.

Specifications 9664

<p>Max. Size of 9664 System</p> <p>9664 System with Vertical Telescopic Boom</p> <p>Two X-rail System X-direction: Max. length 5.0 m Mapping length 4.5 m or room length minus 0.5 m</p> <p>Y-direction: Max. height 3.0 m Mapping height 1.5 m or (room height minus 0.5 m) / 2</p> <p>Z-direction: Max. width 3.0 m Mapping width 2.5 m or room width minus 2.5 m</p>	<p>Three X-rail System Z-direction: Max. length 5.0 m Mapping length 4.5 m or room length minus 0.5 m</p> <p>9664 System with Horizontal Non-Telescopic Boom X and Z-direction: As above minus 2 × boom length</p> <p>Y-direction: Microphone boom can be up to 1.25 m long and map from 0.1 metres above floor to 0.6 m from ceiling Max. map height 2.4 m</p> <p>Motor Control Unit Control Parameters: Position, velocity and acceleration. Individual and simultaneous control of all motors</p>	<p>Control Type: Control of DC brush motors for 12 V, fitted with encoders Control Outputs: Delivered with outputs for 6 motors Interface to PC: RS-232 Power Supply: 100-240 V AC or 12 V DC Dimensions: 360 × 320 × 140 mm Weight: 6.5 kg</p> <p>Software All software is written for IBM compatible AT and PS/2 computers, and uses the built in RS-232 interface for communication with the Motor Control Unit</p> <p>Microphone Positioning Software: A complete program for controlling the Microphone Positioning System for sound intensity mapping</p>
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Ordering Information

<p>Type 9664: Microphone Positioning System Includes the following parts: WB 1320: Universal Motor Units WA 0665: Carriage for X-profile WA 0666: Carriage for Z-profile WA 0667: Clamps for X-profile (incl. screws) WA 0669: End rollers for Z-profile WA 0670: X and Z-profile WA 0671: Y-profile WA 0672: Belt fasteners, X-direction WQ 1086: Drive belt 10 m WQ 1087: Belt clips WQ 1088: End stop marker WB 1321: Motor Control Unit WL 1090: Motor connection cables AN 0020: Mains cable</p>	<p>WT 9555: Multi-dimensional Microphone Positioning Software, floppy disk WS 3577: Support camps WU 0501: Theta rotation unit WA 0677: Cable carriages WB 1322: 2-channel motor control boards WB 1346: Remote control (5-axis) Set of screws Toolkit RS-232 cable Fuses (set) WW 8003: Installation, Training & Technical Support (must be ordered with Type 9664 system—price quoted separately)</p>	<p>Accessories Required</p> <p>USE WITH COMPUTER: IBM PC or compatible computer with: an Intel 80286 processor or higher at least 400 Kilobytes of RAM 0.5 MB of free hard disk space 3 1/2" floppy disk drive DOS version 3.3, or higher RS-232 interface IEEE interface: National Instruments IEEE 488.2 interface board EGA or VGA monitor</p>
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Type 9664 is a customized product made according to individual customer specifications.
For ordering information please contact your local Brüel & Kjær representative.

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

Brüel & Kjær 

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