Studio Microphones types 4003, 4004, 4006, 4007, 3529, 3530
Two Channel Microphone Power Supply and 2812

FEATURES:

Types 4003 and 4006
- On-axis response from 20 Hz to 20 kHz ±2 dB
- Very low inherent noise, typically 15 dB(A)
- Three responses: linear on-axis, presence boost diffuse and true omni diffuse
- Available as matched Stereo Microphone Sets

Types 4004 and 4007
- On-axis response from 20 Hz to 40 kHz ±2 dB
- High-level handling capability

Common
- Wide dynamic range (>120 dB)
- On-axis/off-axis response uniformity
- Linear phase responses, both on- and off-axis
- Powering via Type 2812 (Types 4003, 4004)
- P48 Phantom powering (Types 4006, 4007)
- Individually calibrated
- Robust construction
- Excellent long-term stability

Type 2812
- Output fully compatible with symmetrical transformer or transformerless microphone inputs and line inputs (balanced or single-ended)
- 0, 6 or 12 dB attenuation in each channel
- Very low inherent noise
- Very robust construction
- No transformers or electrolytics in signal path

USES:

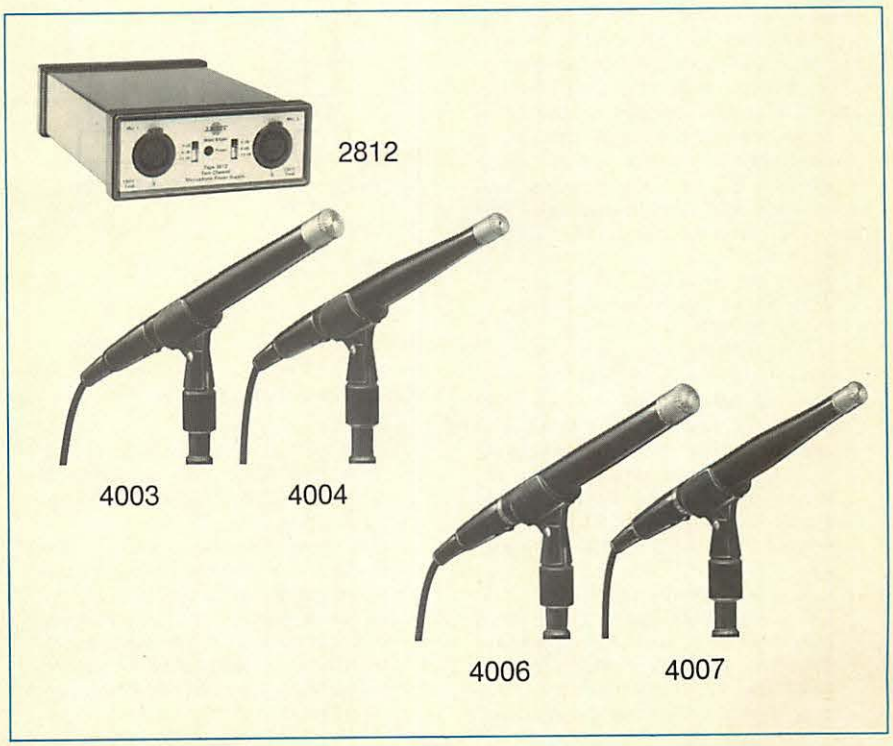
Types 4003 + 2812 and 4006
- Low-noise critical recordings
- Orchestral recording
- General recording of vocals and instruments
- Indoor and outdoor reporting/interviewing
- Sound reinforcement

Types 4004 + 2812 and 4007
- Very close recording of high intensity sources (brass, percussion, etc)
- Applications requiring extended phase linearity and very high degrees of omnidirectivity and spatial resolution

Four onmidirectional condenser microphones and a two-channel power supply specifically designed for professional recording and broadcasting. **Studio Microphones Types 4003, 4004, 4006** and **4007** constitute a truly unique development in studio microphone design, offering quality commensurate with state-of-the-art recording technology. The Microphones are individually calibrated and have well-defined operating characteristics: wide frequency responses, on-/off-axis uniformity, linear phase responses and a wide dynamic range. Types 4003 and 4006 are *Low Noise* (typ. 15 dB(A)) microphones while Types 4004 and 4007, with <1% THD at 148 dB peak, are ideal for *High Intensity* applications.

Types 4003 and 4004 are powered via **Power Supply Type 2812**, giving a high-level, transformerless output for direct routing to line inputs, while Types 4006 and 4007 are powered via the standard P48 Phantom system.

Robust and easy-to-use, the Microphones and Power Supply offer full compatibility with existing studio equipment.



These prepolarized condenser microphones with integral preamplifiers have been developed for use in the recording and broadcasting industries. They have been designed with particular emphasis on an ability to render a balanced and clean sound image, free from tonal colouration. Each B&K Studio Microphone undergoes a thorough quality control procedure, and is individually calibrated and the details given on the accompanying calibration chart.

Two basic microphone designs are available:

1. Types 4003 and 4006 are equipped with 16 mm-diameter cartridges and are intended for critical low noise applications and general purpose recording of instruments and vocals. The Microphone Sets differ only in the method of powering their built-in preamplifiers. Type 4003 is a *Line Level* model which is powered via Two Channel Microphone Power Supply Type 2812, giving a transformerless, high level, balanced output. Type 4006 is a *Phantom* model for use with standard P48 Phantom systems in accordance with DIN 45596. In all other respects the Microphones are acoustically identical, although the sensitivity of Type 4006 is a factor of four lower due to the integral transformer circuitry associated with Phantom powering. For stereo applications both Microphones may be obtained as matched pairs. See "Accessories" section.
2. Types 4004 and 4007 (12 mm diameter cartridges) have been designed with an emphasis on a high-level handling capability. They are ideally suited for very close placement to brass and percussion instruments and for applications requiring a broad frequency response, extended linear phase response and a high degree of spatial resolution. Type 4004 is the *Line Level* model for use with Power Supply Type 2812, while Type 4007 (*Phantom* model) is powered from standard 48 V Phantom supplies. The sensitivity of Type 4007 is a factor of four lower than that of Type 4004. The Microphones are otherwise acoustically identical.

The Microphones are available in "Set" or "Package" form. A Microphone Set consists of either a single microphone with accessories in a protective mahogany case or a matched pair of stereo microphones with accessories in a Samsonite® brief case. In package form four microphones of the same Type are delivered together with accessories in a lightweight package. For further details, see "Accessories" section.

Two Channel Microphone Power Supply Type 2812 has been developed as part of the Line Level System consisting of the 2812 and Microphones Types 4003 or 4004. Type 2812 is a two channel power preamplifier and impedance converter with the ability to drive very long cables. Its inherent noise is very low and separation between channels better than 90 dB (0 Hz to 20 kHz). Very high signal levels may be independently attenuated by 0, 6 or 12 dB at its inputs.

Type 2812 complies with IEC 348 Safety Class II and may be powered from 100 to 127 V or 220 to 240 V, 50 to 60 Hz AC mains supplies. An internal regulator monitors the supply voltage and no manual adjustment of the 2812 is needed for operation from either of these two ranges. In addition, it is protected against internal overheating by a self-resetting thermal switch which operates at 125°C ±5°C.

The Power Supply is extremely robust; it will withstand mechanical shock and vibration and is well suited for placement on the studio floor.

Line Level System — Microphones Types 4003 or 4004 and Power Supply Type 2812

For optimum utilization of the wide dynamic range and excellent acoustic characteristics of the Microphones, B&K has developed a *Line Level System* consisting of Microphone Power Supply Type 2812 and Microphones Types 4003 or 4004. The 2812 supplies 130 V DC to the integral preamplifiers of these Microphones and provides a transformerless, high level output which is ideal for Digital, Direct-to-Disc and other state-of-the-art recordings. This line level system offers some distinct advantages:

1. *High Level Output:* For a given sound level the balanced output of the 2812/4003 or 2812/4004 combination is 18 dB higher than the output of the corresponding Phantom powered Microphones (Types 4006 and 4007). This high, line-level voltage is ideal for connection to console line inputs or directly to a tape recorder, keeping the signal path as simple as possible and thereby preserving the integrity of the audio signal.
2. *Additional Headroom:* Using 130 V DC as a preamplifier supply voltage compared with the 48 V employed in Phantom powering systems results in additional "headroom-before-clipping" over and above the dynamic range of the microphone. Using Type 4004 peak levels up to 168 dB re 20 μP can be handled before clipping occurs.
3. *Low Frequency Performance:* Dispensing with the transformer circuitry commonly employed in Phantom powering systems, and thus avoiding core saturation at low frequencies, results in considerably improved amplitude, phase and distortion performances.
4. *Versatility:* In addition to direct connection to balanced line inputs, the output of the 2812 may be easily modified for connection to single-ended line inputs. In the normal balanced mode of operation it may also be directly connected to symmetric, transformer or transformerless microphone inputs. When connected to Phantom inputs, the 48 V Phantom supply need not be switched off.

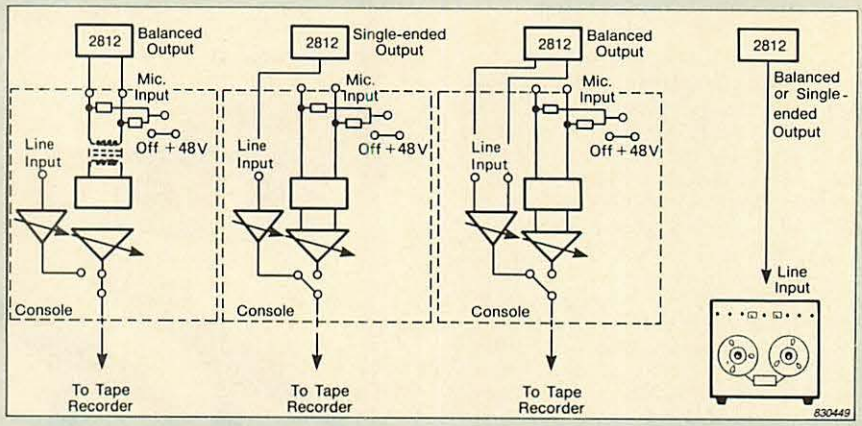


Fig. 1. The output of the 2812 may be connected to microphone and line inputs

P48 Phantom Powering — Microphones Types 4006 and 4007

48 V Remote Phantom Powering of condenser microphones in accordance with DIN 45596 is standard procedure in most recording studios and in many broadcasting corporations.

The principle of the P48 system is straightforward and its versatility allows dynamic and other microphone types to be directly connected to Phantom inputs without disconnecting the 48 V Phantom supply. Half of the DC preamplifier supply current is fed through each of the two audio conductors, either via the centre tap of the console input transformer or via a virtual centre-tap created using two carefully matched resistors. At the microphone end of the line a similar centre-tap or resistor configuration is used to supply the DC to the built-in preamplifier and the shield is used as the DC return path. Since both audio conductors are at the same potential with respect to ground, no DC voltage is apparent between them.

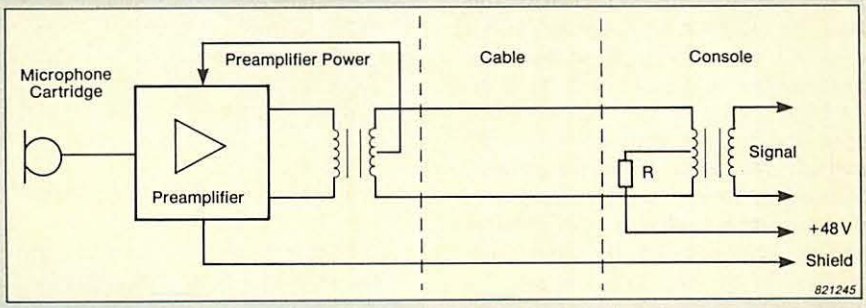


Fig. 2. Principle of remote Phantom powering of condenser microphones

B&K Studio Microphones Types 4006 and 4007 are designed for powering from the standard P48 system. These two microphones are acoustically identical to their *Line Level* counterparts (Types 4003 and 4004 respectively) although of lower sensitivity due to the integral transformer circuitry associated with P48 systems.

Description

Microphone Construction

Microphones Types 4003, 4004, 4006 and 4007 have essentially the same design. They consist of a prepolarized condenser microphone cartridge which is pressure operative, having only one side of the diaphragm exposed to the sound field. The cartridges are tightly secured to a main body housing enclosing a solid-state preamplifier for impedance conversion.

Types 4003 and 4006 (16 mm-diameter cartridges) have high sensitivity, low inherent noise and an on-axis frequency response which covers the entire audio range from 20 Hz to 20 kHz ±2 dB. Smaller diameter Types 4004 and 4007 (12 mm) provide wider frequency response, extended phase linearity, better omnidirectivity and higher upper limit of dynamic range at the expense of lower sensitivity and a correspondingly higher noise floor.

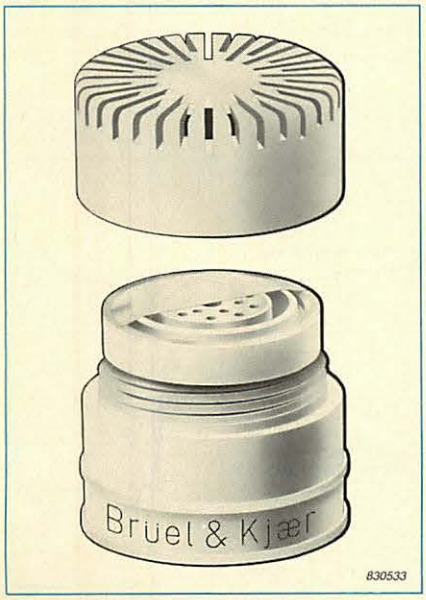


Fig. 3. Sectional view of 16 mm Studio Microphone cartridge (Types 4003 and 4006)

A sectional view of a 16 mm-diameter cartridge (Types 4003 and 4006) is shown in Fig. 3. The microphone polarization is provided by a negatively-charged, prepolarized (electret) film which is deposited on the microphone backplate. The nickel diaphragm is polymer coated for protection against corrosion caused by dust and particle penetration to the diaphragm.

The cartridge housing, protection grid and main body housing are manufactured from thermally matched, nickel alloys which are specially chosen to ensure dimensional and long-term stability. The body is finished in a hard-wearing, corrosion-resistant matt black chrome. Special care has been taken in the geometric design of the Microphones to avoid spurious resonances and standing waves in and around the cartridge, grid and body.

Line Level models Types 4003 and 4004 are fitted with a special male output connector which is recessed at the base of the main body housing. This connector is used to connect the Microphones to Power Supply Type 2812 and accepts cable AO 0261 and female connector JJ 0327 only, thus ensuring that only the correct Microphones can be connected to the Type 2812. Types 4006 and 4007 are equipped with a 3-pin male XLR connector which accepts cable AO 0182 and female connector JJ 0322.

Types 4004 and 4007 have fixed protection grids, while with Types 4003 and 4006 the normal grid may replaced by the interchangeable grids shown in Fig. 4. Grid DD 0297 is included as standard and gives a presence boost for brightening sound and cutting long distance, high frequency sound losses, while grid UA 0777 is an optional extra which gives a true omni/diffuse response for improving tonal balance of sound arriving at all angles of incidence.

The Microphones are robust and have very low sensitivity to handling noise and stand-borne vibration. An expanded foam windscreen is included for outdoor use and use of the Microphones close to vocalists or speakers.

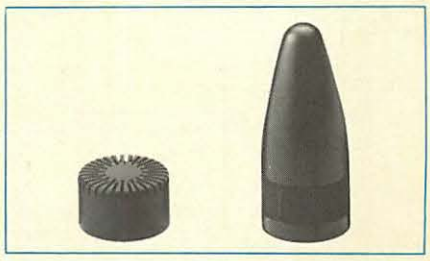


Fig. 4. Interchangeable grids DD 0297 (supplied) and UA 0777 (option) for use with Types 4003 and 4006

Frequency and Phase Response

The on-axis frequency responses of the Microphones are very broad and linear throughout the entire audio range. At the lower end of the frequency range the response extends to 4 ±1 Hz (–3 dB point) while at the upper limit the response rolls off smoothly to ensure phase linearity is maintained. Special care has been taken to ensure that the on- and off-axis responses are uniform to avoid "colouration" of the recorded sound.

Types 4003 and 4006 have an on-axis frequency response from 20 Hz to 20 kHz (±2 dB max., typically ±1,5 dB) as shown in Fig. 5. The on-axis response of smaller diameter Types 4004 and 4007 ranges from 20 Hz to 40 kHz ±2 dB and is shown in Fig. 6. The Microphones are well suited for very close placement to a source as they are inherently insensitive to vocal "popping" caused by consonant sounding and do not exhibit any low frequency, bass-accentuating proximity effect.

Types 4003 and 4006 are supplied with two interchangeable protection grids. For use under predominantly reverberant conditions the grid DD 0297 shown in Fig. 4. may be fitted in place of the normal silver grid. When equipped with grid DD 0297, a linear diffuse field response up to 15 kHz is obtained by boosting the on-axis response of the Microphone by approximately 5 dB in the range 10 to 12 kHz (see Fig. 5). For a smoother diffuse field response up to 15 kHz (plus true omni response – see "Directional Characteristics") the optional protection grid UA 0777 may be fitted.

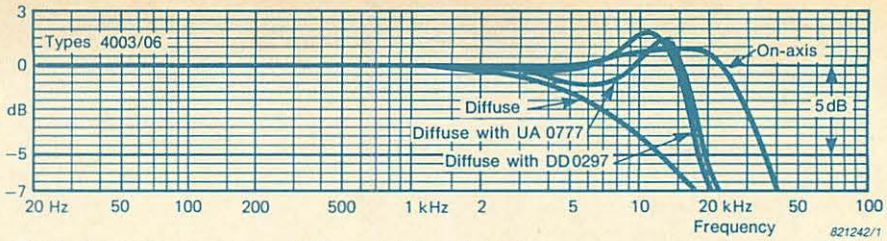


Fig. 5. Frequency responses of Types 4003 and 4006

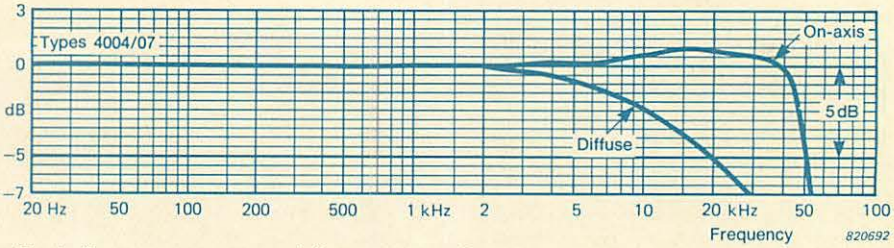


Fig. 6. Frequency responses of Types 4004 and 4007

The diffuse field response of Types 4004 and 4007 is shown in Fig. 6.

Typical on-axis and 90° incidence phase responses of the Microphones are shown in Figs. 7 and 8. Linear frequency scales (50 kHz full scale in Fig. 7; 100 kHz full scale in Fig. 8) are used for plotting the Microphone phase characteristics for better representation of phase response linearity.

On-axis, phase linearity is maintained beyond the limit of the Microphone frequency response linearity. For Types 4003 and 4006 the phase response extends linearly to approximately 30 kHz, while linearity for Types 4004 and 4007 is maintained up to 55 kHz.

At 90° incidence the phase responses are linear throughout the entire audio frequency range (to 20 kHz for Types 4003 and 4006, to 40 kHz for Types 4004 and 4007). The excellent phase responses of the Microphones ensures accurate reproduction of transients.

For "spaced-apart" stereo applications where two microphones are placed 25 to 60 cm apart, the stereo image is dependent on arrival-time differences and therefore phase-matching between microphones is extremely important. Here the use of the Stereo Microphone Sets Types 3529 and 3530 are recommended. These contain a two Microphones Type 4003 and 4006 respectively which to track at frequencies up to 20 kHz are phase-matched to within ±10°. In addition, their on-axis sensitivity and frequency response are especially matched towithin ±1 dB. See "Accessories" section for further details.

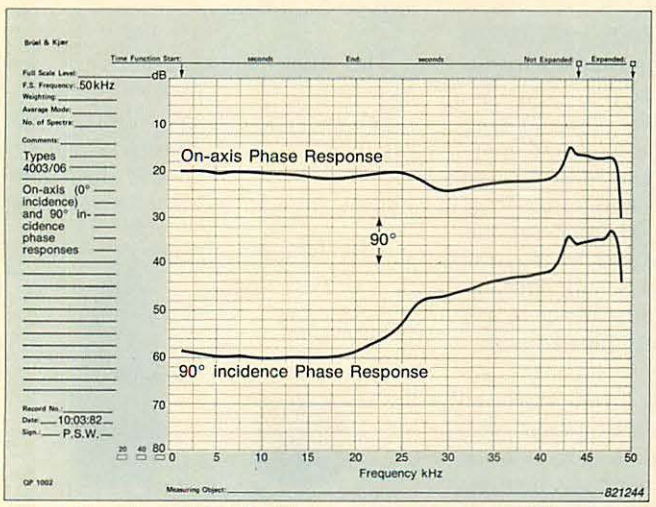


Fig. 7. On-axis and 90° incidence phase responses of Types 4003 and 4006. Note that a linear frequency axis (50 kHz full scale) is used for evaluation of phase response linearity

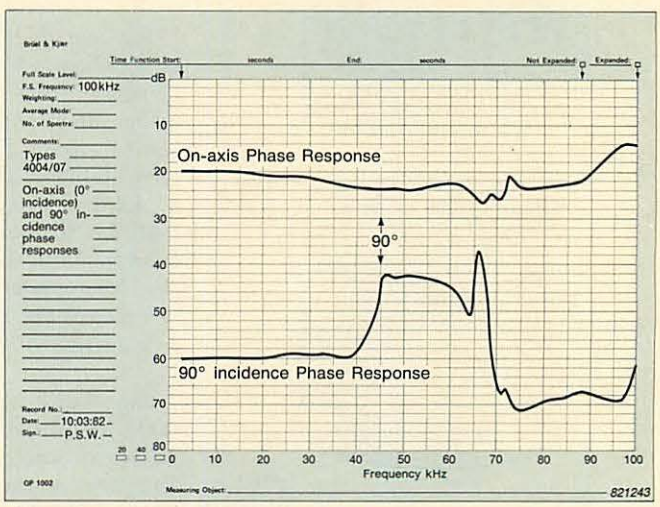


Fig. 8. On-axis and 90° incidence phase responses of Types 4004 and 4007. Note that a linear frequency axis (100 kHz full scale) is used for evaluation of phase response linearity

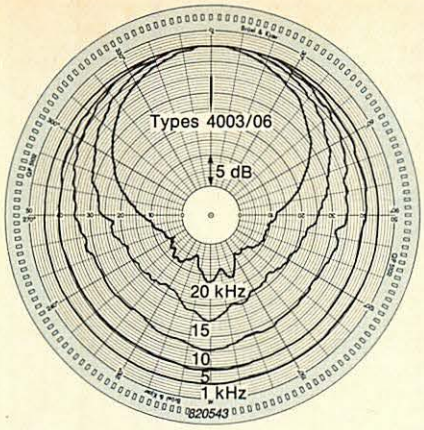


Fig. 9. Directional characteristics of Types 4003 and 4006

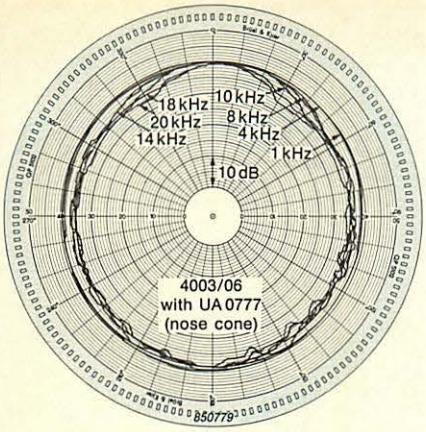


Fig. 10. Directional characteristics of Types 4003 and 4006 with optional protection grid UA 0777

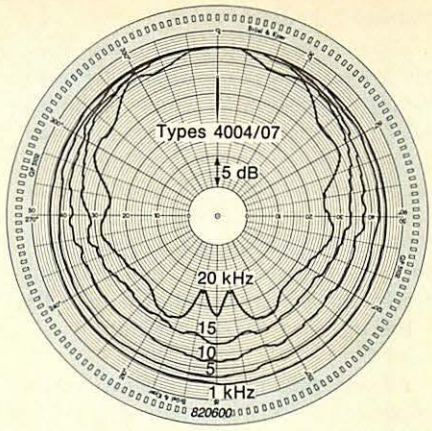


Fig. 11. Directional characteristics of Types 4004 and 4007

Directional Characteristics

The Microphones are omnidirectional, and, owing to their relatively small diameters and careful geometric design, omnidirectivity is retained at high frequencies. Polar diagrams for the Microphones are shown in Figs. 9 to 11. The curves are normalized to the 0° incidence response. At 10 kHz and 90° incidence the responses deviate from the 0° incidence response by less than 5 dB for Types 4003 and 4006 and by less than 3,5 dB for Types 4004 and 4007. For diffuse field response, Types 4003 and 4006 should be used with the optional grid UA 0777 which gives less than 5 dB deviation at frequencies up to 20 kHz. See Fig. 10.

Dynamic Range

The equivalent noise level of Types 4003 and 4006 is very low, typically 15 dB(A) with a guaranteed maximum of 17 dB(A). A typical third-octave inherent noise spectrum for Type 4006 is shown in Fig. 12. Nominal sensitivities for the Microphones are 50 mV/Pa (–26 dB re 1 V/Pa) and 12,5 mV/Pa (–38 dB re 1 V/Pa) respectively, the lower sensitivity of Phantom model Type 4006 being due to the integral transformer circuitry associated with P48 powering system. The Microphones will handle levels up to 135 dB peak with less than 1% total harmonic distortion and peak levels up to 154 dB (Type 4003) and 143 dB (Type 4006) before clipping occurs.

Nominal sensitivities for Types 4004 and 4007 are 10 mV/Pa (–40 dB re 1 V/Pa) and 2,5 mV/Pa (–52 dB re 1 V/Pa) respectively. Peak levels up to 148 dB are reproduced with less than 1% THD and clipping occurs at peak levels of 168 dB (Type 4004) and 155 dB (Type 4007). The noise floor of the Microphones is correspondingly higher with a typical A-weighted noise level of 24 dB(A) and a guaranteed maximum of 26 dB(A). A typical third-octave inherent noise spectrum for Type 4007 is shown in Fig. 13.

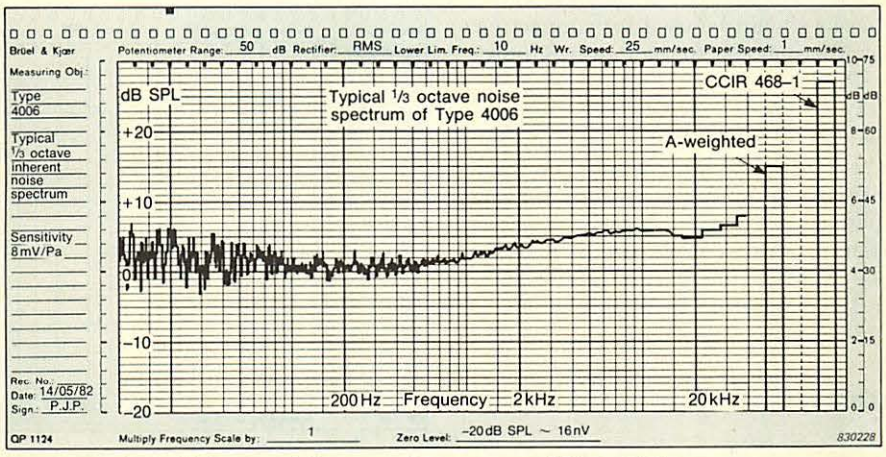


Fig. 12. Typical third-octave inherent noise spectrum of Type 4006

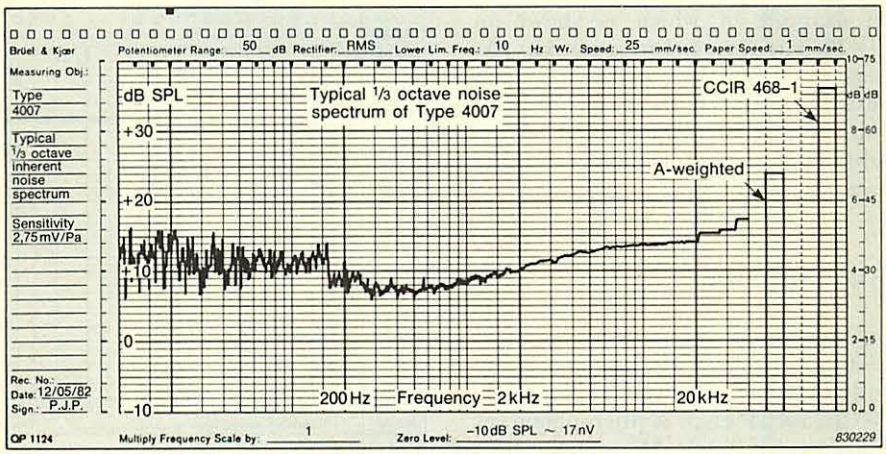


Fig. 13. Typical third-octave inherent noise spectrum of Type 4007

The A-weighted equivalent noise level of each Microphone is individually measured and stated on the accompanying calibration chart. Total harmonic distortion and difference frequency distortion levels are checked to lie within the specified limits.

Output Levels

Microphones Types 4003 and 4004 are powered via Two Channel Power Supply Type 2812 which supplies 130 V DC to the integral preamplifiers of these microphones. Maximum input voltage to the 2812 is 16 V peak corresponding to sound pressure levels of 144 and 158 dB peak for Types 4003 and 4004 respectively. Higher signal levels may be attenuated by 6 or 12 dB at the input of the Power Supply.

In the normal mode of operation the output of the 2812 is balanced. Table 1 shows the peak open circuit output of the 2812 when used with Types 4003 and 4004 for a given peak incident sound pressure level. Figs. 14 and 15 show the effect of loading capacitance (cable length) on the output of Types 4003, 4004 and Type 2812. Short cable lengths should be used for connecting the Microphones to the Power Supply.

Types 4006 and 4007 are powered via the standard P48 Phantom system. **Note** that they cannot be used with Power Supply Type 2812. Peak open circuit output levels for these Microphones are also given in Table 1. Fig. 16 shows the effect of cable length on the output of the Microphones.

Individual Calibration

The Microphones undergo a thorough quality control procedure and are supplied with a calibration chart, an example of which is shown in Fig. 16. The open circuit sensitivity, A-weighted equivalent noise level and on-axis frequency response are individually measured and stated on the calibration chart, together with other useful data.

Accessories

The Microphones are available in "Set" or "Package" form, denoted by suffixes "S" or "P" respectively (Type 4003 S, 4003 P etc.). A Microphone set consists of a single Microphone in a protective Mahogany Case KE 0215 together with an expanded foam Windscreen, Protection Grid DD 0297, Microphone Clamp UA 0639 and calibration chart. A 5 m connection cable is also delivered with each set. Line level models Types 4003 S and 4004 S are supplied with cable AO 0261 which is used to connect the Microphones to Power Supply Type 2812. Phantom models Types 4006 S and 4007 S are delivered with cable AO 0182.

In package form four Microphones of the same Type are delivered together with Windscreen, Protection Grid, Microphone Clamps and calibration charts in a lightweight package.

Microphone Types 4003 and 4006 are also available as Stereo Microphone Sets Type 3529 and 3530 respectively. These contain a matched pair of microphones, a Stereo Boom UA 0836, 2 Windscreens UA 0638, 2 Protection Grids DD 0297 and UA 0777, plus 2 Cables AO 0182 in a

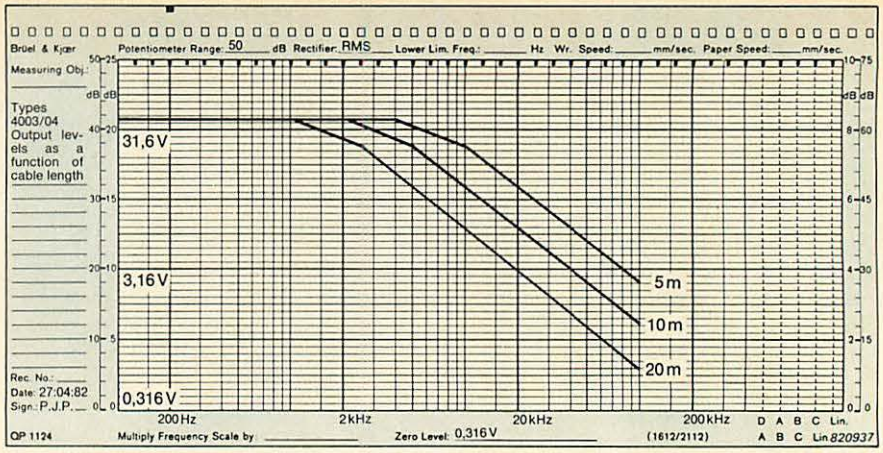


Fig. 14. Effect of loading capacitance (cable length) on output of Microphones Types 4003 and 4004. Short cable lengths such as 5 m cable AO 0261 provided with Types 4003 S and 4004 S should be used for connecting the Microphones to Power Supply Type 2812

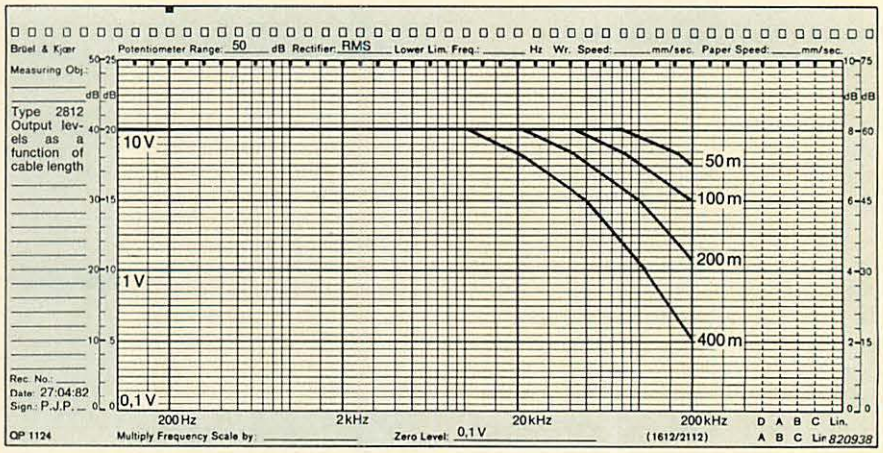


Fig. 15. Effect of loading capacitance (cable length) on output of Power Supply Type 2812

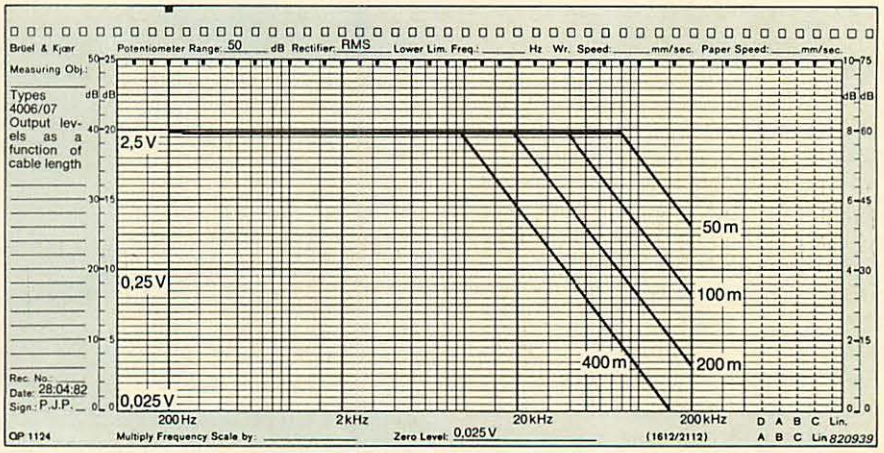


Fig. 16. Effect of loading capacitance (cable length) on output of Microphones Types 4006 and 4007

practical brief case for convenient transportation. In addition Type 3529 contains 2 Cables AO 0261 and a Two Channel Power Supply Type 2812 (see Fig. 19).

Both the Stereo Boom UA 0836 and Protection Grid UA 0777 can be ordered individually for Microphone sets and packages not including these items. For stand mounting the Stereo Boom, as well as the Microphone Clamps supplied with the other sets and packages, have an integral 5/8" – 27 UNS thread and a 1/2" – 13 UNC and 3/8" – 16 UNC thread adaptor.

Windscreens UA 0638 and UA 0658 for Types 4003/06 and 4004/07 respectively are used for protection and to reduce wind- and breath-induced noise in outdoor, close vocal and speech recording. They are available in sets of four using order numbers UA 0794 (4 × UA 0638) and UA 0795 (4 × UA 0658). See Fig. 20.

Cable AO 0261 is a special cable intended for connection of Types 4003 and 4004 to the input sockets of Power Supply Type 2812 and is terminated with modified 4-pin male and female connectors JP 0327 and JJ 0327.

Cable AO 0182 is a standard three-core cable terminated in 3-pin male and female XLR connectors JP 0322 and JJ 0322. It is intended for connection of Phantom model Types 4006 and 4007 to P48 supplies and connection of the 2812 output to microphone and line inputs.

SPL	Peak Output Levels							
	Type 2812[1]				Type 4006		Type 4007	
dB re 20 μPa	with Type 4003		with Type 4004					
	mV	dBm	mV	dBm	mV	dBm	mV	dBm
14	0,01	–97,8	—[2]		0,0013	–115,8	—[2]	
24	0,032	–87,8	0,006	–101,7	0,004	–105,8	0,002	–119,8
34	0,1	–77,8	0,02	–91,7	0,0125	–95,8	0,0025	–109,8
44	0,317	–67,8	0,063	–81,7	0,04	–85,8	0,007	–99,8
54	1,0	–57,8	0,2	–71,7	0,125	–75,8	0,025	–89,8
64	3,17	–47,8	0,63	–61,7	0,396	–65,8	0,079	–79,8
74	10,0	–37,8	2	–51,7	1,25	–55,8	0,25	–69,8
84	31,7	–27,8	6,3	–41,7	3.96	–45,8	0,79	–59,8
94	100	–17,8	20	–31,7	12,5	–35,8	2,5	–49,8
104	317	–7,8	63,4	–21,7	39,6	–25,8	7,92	–39,8
114	1,002 V	+2,2	200	–11,7	125	–15,8	25	–29,8
124	3,17 V	+12,2	634	–1,74	396	–5,8	79,2	–19,8
134	10,02 V	+22,2	2 V	+8,25	1,25 V	+4,8	250	–9,8
144	31,7 V	+32,2	6,34 V	+18,25	3,96 V[3]	+14,2[3]	792	+0,2
154	23 V[3,4]	+30[3,4]	20 V	+28,25	—[3]		2,5 V	+10,2
164	—[3]		15,85 V[4]	+26,25[4]	—[3]		—[3]	

(1) Values valid for Type 2812 balanced output mode. With single-ended operation all voltage values should be divided by 2 and 6 dB subtracted from dBm levels
(2) Output level equal to noise floor of microphone
(3) Type 4003: clipping occurs for SPL >154 dB peak
Type 4004: clipping occurs for SPL >168 dB peak
Type 4006: clipping occurs for SPL >143 dB peak
Type 4007: clipping occurs for SPL >155 dB peak
(4) Type 2812 input attenuator set to –12 dB

Table 1 Nominal output levels of Type 2812 + 4003 and Type 2812 + 4004 combinations and Microphones Types 4006 and 4007

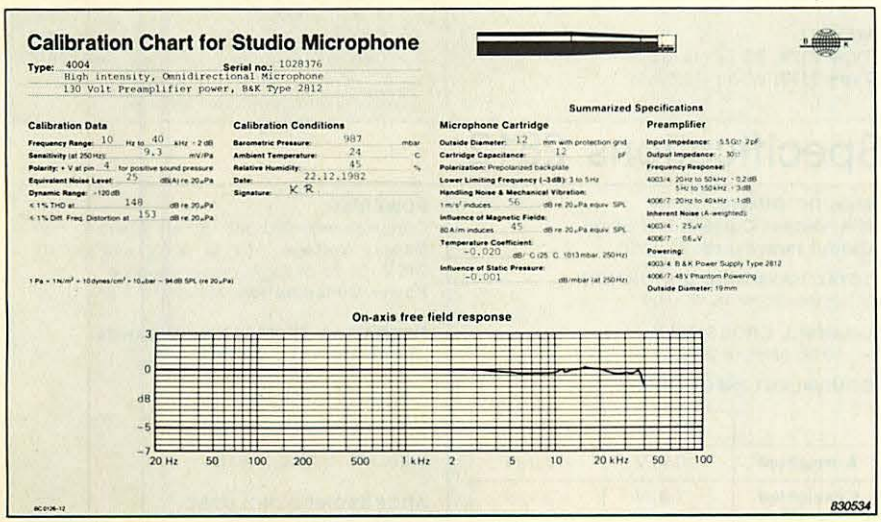


Fig. 17. Calibration Chart for Type 4004

Fig. 18. Type 4003 S as delivered in mahogany case

Fig. 19. Stereo Microphone Set Type 3529 including Stereo Boom UA 0836

Fig. 20. Windscreens UA 0638 and UA 0658, and Microphone Clamp UA 0639

Specifications 4003, 4004, 4006, 4007

CARTRIDGE TYPE:
Prepolarized back-plate condenser
Principle of Operation: Pressure
Types 4003 and 4006: 16 mm diameter
Types 4004 and 4007: 12 mm diameter

POWERING:
Types 4003 and 4004: Via B & K Two Channel Microphone Power Supply Type 2812
Types 4006 and 4007: Via P48 Phantom supplies in accordance with DIN 45596

NOMINAL SENSITIVITY AT 250 Hz*:
Type 4003: 50 mV/Pa (–26 dB re 1 V/Pa)
Type 4006: 12,5 mV/Pa (–38 dB re 1 V/Pa)
Type 4004: 10 mV/Pa (–40 dB re 1 V/Pa)
Type 4007: 2,5 mV/Pa (–53 dB re 1 V/Pa)

POLARITY:
Types 4003 and 4004: Positively increasing sound pressure produces positive-going voltage at pin 4. Pin 1: Shield; Pin 2: Not used; Pin 3: 130 V DC preamplifier supply; Pin 4: Signal. Powering via Type 2812
Types 4006 and 4007: Positively increasing sound pressure produces positive-going voltage at pin 2. Pin 1: Shield; Pin 2: Signal (+); Pin 3: Signal. P48 Phantom powering

ON-AXIS FREQUENCY RESPONSE*:
See Figs. 5 and 6.
Type 4003: 10 Hz to 20 kHz ±2 dB
Type 4006: 20 Hz to 20 kHz ±2 dB up to 124 dB SPL peak
Type 4004: 10 Hz to 40 kHz ±2 dB up to 152 dB SPL peak
Type 4007: 20 Hz to 40 kHz ±2 dB up to 135 dB SPL peak

LOWER LIMITING FREQUENCY (–3 dB):
3 to 5 Hz

PHASE RESPONSE: See Figs. 7 and 8

DIRECTIONAL CHARACTERISTICS:
Omnidirectional. See Figs. 9 to 11

EQUIVALENT NOISE LEVEL:
Types 4003 and 4006: See Fig. 12
A-weighted*: Typically 15 dB (Max. 17 dB)
CCIR 468–1: Typically 27 dB (Max. 29 dB)
Types 4004 and 4007: See Fig. 13
A-weighted*: Typically 24 dB (Max. 26 dB)
CCIR 468–1: Typically 36 dB (Max. 38 dB)

MAXIMUM SOUND PRESSURE LEVEL:
Type 4003: 154 dB SPL peak (f < 4 kHz)
Type 4006: 143 dB SPL peak (f > 200 Hz)
Type 4004: 168 dB SPL peak (f < 4 kHz)
Type 4007: 155 dB SPL peak (f > 200 Hz)

TOTAL HARMONIC DISTORTION:**
Types 4003 and 4006: ≤1% at 135 dB SPL peak (Type 4006: f > 100 Hz)
Types 4004 and 4007: ≤1% at 148 dB SPL peak (Type 4007: f > 100 Hz)

DIFFERENCE FREQUENCY DISTORTION (DF2, DF3, Δf = 80 Hz):**
Types 4003 and 4006: ≤1% at 135 dB SPL peak (Type 4006: f > 500 Hz)
Types 4004 and 4007: ≤1% at 153 dB SPL peak (Type 4007: f > 500 Hz)

DYNAMIC RANGE:
Types 4003 and 4006: 120 dB
Types 4004 and 4007: 124 dB

TEMPERATURE COEFFICIENT:
–0,025 dB/°C at 250 Hz, 25°C, 1013 mbar

STATIC PRESSURE COEFFICIENT:
–0,002 dB/mbar at 250 Hz, 25°C, 1013 mbar

INFLUENCE OF VIBRATION:
Types 4003 and 4006: 64 dB equivalent SPL
Types 4004 and 4007: 69 dB equivalent SPL for 1 m/s^2 in direction of greatest sensitivity

INFLUENCE OF MAGNETIC FIELD:
Type 4003: 45 dB equivalent SPL
Type 4006: 60 dB equivalent SPL
Type 4004: 45 dB equivalent SPL
Type 4007: 72 dB equivalent SPL
for 80 A/m, 50 Hz in direction of greatest sensitivity

PREAMPLIFIER:
Input Impedance: >5,5 GΩ‖2 pF
Output Impedance: <30 Ω

* individually calibrated
** individually checked

Frequency Range:
Types 4003 and 4004: 10 Hz to 50 kHz ±0,2 dB (5 Hz to 150 kHz ±3 dB)
Types 4006 and 4007: 20 Hz to 40 kHz ±1 dB
A-weighted Inherent Noise:
Types 4003 and 4004: <2,5 μV
Types 4006 and 4007: <0,6 μV

OPERATING TEMPERATURE RANGE:
–10 to +70 °C (+14 to +158 °F)

WEIGHT: 150 g (0,33 lb)

DIMENSIONS:
Overall Length: 165 mm (6,5 in)
Cartridge Diameter:
Types 4003 and 4006: 16 mm (0,63 in)
Types 4004 and 4007: 12 mm (0,47 in)

ACCESSORIES INCLUDED (4003/06 S):
Protection Grid ..... DD 0297
Windscreen ..... UA 0638
Microphone Clamp ..... UA 0639
Cable (Type 4003 S) ..... AO 0261
Cable (Type 4006 S) ..... AO 0182

ACCESSORIES INCLUDED (4003/06 P):
4 × Protection Grid ..... DD 0297
4 × Windscreen ..... UA 0638
4 × Microphone Clamp ..... UA 0639

ACCESSORIES INCLUDED (4004/07 S):
Windscreen ..... UA 0658
Microphone Clamp ..... UA 0639
Cable (Type 4004 S) ..... AO 0261
Cable (Type 4007 S) ..... AO 0182

ACCESSORIES INCLUDED (4004/07 P):
4 × Windscreen ..... UA 0658
4 × Microphone Clamp ..... UA 0639

ACCESSORIES AVAILABLE:
Protection Grid ..... UA 0777
Set of 4 Windscreens UA 0638 ..... UA 0794
Set of 4 Windscreens UA 0658 ..... UA 0795
Cable ..... AO 0261
Cable ..... AO 0182
Modified 4-pin male connector ..... JP 0327
Modified 4-pin female connector ..... JJ 0327
3-pin male XLR connector ..... JP 0322
3-pin female XLR connector ..... JJ 0322

Specifications 3529 and 3530

MATCHED MICROPHONES:
Type 3529: 2 Microphones Type 4003
Type 3530: 2 Microphones Type 4006

MATCHING:
Sensitivity: 1 dB max. difference
Frequency Response: 1 dB max. difference from 20 Hz to 20 kHz
Phase Response: 10° max. difference from 50 Hz to 20 kHz

All other specifications as stated for Types 4003 and 4006

DIMENSIONS (H × W × D):
360 × 470 × 130 mm (14,2 × 18,5 × 5,1 in)

WEIGHT:
Type 3529: 7,3 kg (16 lbs)
Type 3530: 5,8 kg (12,8 lbs)

ACCESSORIES INCLUDED:
1 × Power Supply ..... Type 2812*
2 × Windscreen ..... UA 0638
2 × Protection Grids ..... UA 0777
2 × Protection Grids ..... DD 0297
1 × Stereo Boom ..... UA 0836
2 × Cables ..... AO 0182
2 × Cables ..... AO 0261*

* accessory included with Type 3529 only

Specifications 2812

FREQUENCY RANGE:
15 Hz to 200 kHz ±0,5 dB

DYNAMIC RANGE: (140 dB)

INPUT: Via special 4-pin socket. Also supplies 130 V DC for 4003 and 4004. Accepts cable AO 0261 and plug JP 0327. Selectable 0, 6 and 12 dB input signal attenuator settings
Input Impedance: 10 kΩ
Max. Input Voltage: 16, 32 or 64 V peak for 0, 6 or 12 dB attenuator settings

OUTPUT: Via 3-pin XLR male connector. Accepts cable AO 0182 and connector JJ 0322. Pin 1: Shield; Pin 2: Signal (+); Pin 3: Signal.
Max. Output Voltage: 32 V peak (16 V peak single-ended operation)
Max. DC Offset: ±20 mV
Min. Output Current: 2 × 55 mA
Output Impedance: 2 × 30 Ω

TOTAL HARMONIC DISTORTION:
<–75 dB (20 Hz to 40 kHz)

CHANNEL CROSS-TALK:
<–90 dB (0 Hz to 20 kHz)

EQUIVALENT INPUT NOISE:

	Pin 2–1	Pin 2–3
A-weighted	<0,9 μV	<2,2 μV
C-weighted	<1,3 μV	<2,4 μV
CCIR 468–1	<4 μV	<9 μV

POWERING:
Complies with IEC 348, Safety Class II.
Supply Voltage: 100 to 127 V and 200 to 240 V, 50 to 60 Hz AC mains supply
Power Consumption: Maximum 9,8 W

OPERATING TEMPERATURE RANGE:
–10 to +70 °C (+14 to +158 °F)

DIMENSIONS (H × W × D):
200 × 126 × 46 mm (7,9 × 5,0 × 1,8 in)

WEIGHT: 1,75 kg (3,85 lb)

ACCESSORIES INCLUDED:
Power Cable ..... AN 0027
Two 100 mA Slow Blow Fuses ..... VF 0026