Measurement Microphones **A4**

Accessories of the KLIPPEL ANALYZER SYSTEM

FEATURES

- Microphones optimal for research, development and manufacturing of transducers
- Condenser and electret microphones
- High performance/cost ratio
- Complete sets (cartridge, preamp, power supply if required)
- Recommended for Klippel Analyzer System
- Customized solutions according to your needs

The KLIPPEL R&D SYSTEM also provides a spectrum of microphones which are optimal for transducer measurements in research, development and manufacturing. There are three different basic solutions for applications where special constraints such as excellent performance, special climate conditions or minimal cost are considered. These sets comprise all components (Cartridge, preamplifier, power supply, cables) which are required for the operation with the Distortion Analyzer 2. These solution offer highest ratio between performance and cost. All components are manufactured at high quality. The basic solutions may be customized according to the particular application.

Article Number:	2400-001, 2400-002, 2400-003, 2400-101, 2400-102, 2400-202, 2400-203, 2400-301, 2400-303, 2400-403, 2400-020

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Lite Microphone Set

Article Number: 2400-001

Features	• Good performance at low cost • Perfect for assembling line testing and array application • 7mm standard diameter • Can be calibrated by pistophone using ¼" adapter • Sound pressure level from 28 dB ... 128 dB
Components	• 1/4 " electret-measuring microphone MI 17 • Cone for tripod mounting • Microphone clamp (1/4 " thread) • 40 mm windscreen WS 10 • 2m BNC cable • Ball- and socket head

MI 17

1/4 " Electret-Measuring Microphone

Article Number: 2400-101

- High sensitivity
- Integrated preamplifier
- Optimal for array application
- High performance cost ratio
- CLASS 1 according DIN-IEC 651

Transducer type	electret pressure transducer
Polar pattern	omni
Transducer excitation	5 - 24 V
Mode of power supply	ICP and Delta Tron
Frequency range	30 Hz ... 4 kHz (± 0.5 dB) 4 kHz ... 20 kHz (± 1.5 dB))
Sensitivity (A weighted)	50 ± 5% mV/Pa
Max. SPL for THD 3 %	128 dB
Inherent noise (A weighted)	26µV
Operating temperature range	-10 ... +50 °C
Diameter	∅ 8 mm
Height	93 mm
Weight	23 g
Connector	BNC
Current consumption	2- 6 mA
Source impedance	50 Ohm

Pro Microphone Set

Article Number: 2400-002

Features	• **High accuracy** and excellent long term **stability** • Perfect for speaker development and research • ½ " standard diameter • Can be calibrated by Pistophone using ½" adapter • Sound pressure level up to 146 dB • Frequency range from 3.5 Hz to 20 kHz, free field
Components	• ½" Electret condensor measuring microphone cartridge type MK 250 • Measurement microphone preamplifier MV 210 with ½" clamp and 3m BNC cable • MH64 clamp for mounting the microphone to laser / mic stands

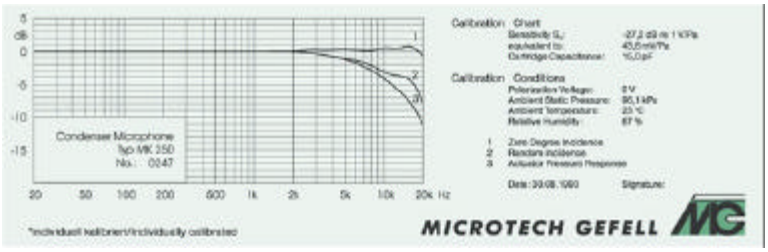
MK 250

Electret Condensor Measuring Microphone
Cartridge Type

Article Number: 2400-102

- Fixed layer of back-electret to dispense with external polarization voltage
- All components made of nickel
- Diaphragm bonded by a galvanic process
- Rear electrode insulated by quartz glass
- Protection grid over diaphragm
- Calibration grid is integrated
- Artificially aged under defined temperature and humidity
- Dehumidifier TA 202 may be used optionally
- International standard thread 60 UNS
- Cartridge thread compatible with standard devices
- IEC Type 1 according to IEC 651

Frequency range	3,5 Hz ... 20 kHz (± 2 dB)
Sensitivity	50 mV/Pa
Max. SPL for THD 3 %	146 dB
Inherent noise with MV 203	15 dBA
Polarization voltage	Back-electret
Polarized cartridge-capacitance at 1 kHz	17 pF
Operating temperature range	-50 ... +100 °C
Main ambient temperature coefficient	0,01 dB/K
Main ambient pressure coefficient	-1x10 dB/Pa
Diameter	
with protection grid	13,2 ± 0,02 mm
without protection grid	12,7 ± 0,02 mm
Height	16,4 mm
Weight	9 g
Preamplifier thread	11,7 mm 60 UNS
Protection grid thread	12,7 mm 60 UNS



MV 210

Measurement Microphone Preamplifier

Article Number: 2400-202

- Preamplifier for electret microphones
- CLASS 1 according DIN-IEC 651
- ICP and Delta Tron using BNC plug
- Microphone ½" clamp MH 64
- Wide-band measurements

Current Consumption	2…10 mA
Transducer Excitation	24…30 V DC
Frequency Range, C= 22 pF	20 Hz ... 100 kHz < ± 0,1 dB
	1 Hz ... 1 MHz: < ± 0,5 dB
Gain, C= 1nF	- 0,07 dB
Gain, C= 22pF	- 0,55 dB
Input impedance	10GO II < 0,4 pF
Output impedance	< 100 O
Output voltage (for THD 3%)	< 6V eff
Inherent noise A-weighted	= 1,5 µV eff
Inherent noise linear	= 3,8 µV eff
Plug	BNC
Dimensions	Ø 12,7 x 85mm
Weight	38 g

Special Microphone Set

Article Number: 2400-003

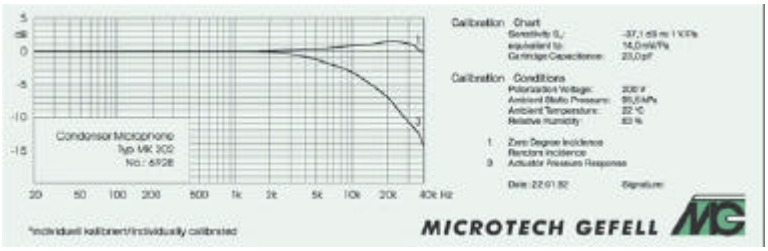
Features	• Copes with **extreme climatic conditions** (high humidity, high temperature) • **Electrical heating** of the microphone • **High accuracy** and excellent long term **stability** • Perfect for speaker development and research • Low noise level • ½ " standard diameter • Can be calibrated by Pistophone using ½" adapter • Frequency response can be measured by electrostatic field (400 V DC, 30 V AC) • Sound pressure level from 28 dB ... 158 dB
Components	• Condensor measuring microphone cartride type MK 202 • Measurement microphone preamplifier MV 203 with ½" clamp and 2m cable • Microphone power supply MS 10 • Dehumidifier TA 202

MK 202

Condensor Measuring Microphone Cartridge Type Article Number: 2400-103

- All components made of nickel
- Diaphragm bonded by a galvanic process
- Rear electrode insulated by quartz glass
- Protection grid over diaphragm
- Calibration grid is integrated
- Equalization of the static air pressure by capillary tube rear vented into preamplifier
- Dehumidifier TA 202 may be used optionally
- International standard thread 60 UNS
- Compatible with standard devices
- IEC Type 1 according to IEC 651

Frequency Range	10 Hz ... 35 kHz (± 1,5 dB) 40 kHz (0...-3 dB)
Sensitivity	14 mV/Pa
Max. SPL for THD 3 %	158 dB
Inherent noise with MV 203	22 dBA
Polarization voltage	200 V
Polarized cartridge-capacitance at 1 kHz	25 pF
Operating temperature range	-50 ... +100 °C
Main ambient temperature coefficient	0,01 dB/K
Main ambient pressure coefficient	$-1x10^{-5}$ dB/Pa
Diameter	
with protection grid	13,2 ± 0,02 mm
without protection grid	13,2 ± 0,02 mm
Height	14,2 mm
Weight	8,5 g
Preamplifier thread	11,7 mm 60 UNS
Protection grid thread	12,7 mm 60 UNS



MV 203	**Measurement Microphone Preamplifier**	Article Number: 2400-203
	• CLASS 1 according DIN-IEC 651 • Cartridge thread compatible with standard devices • Low output impedance • Good driver capability for long cables • Wide-band measurements • High dynamic range from 11 ... 168 dB • Heater resistor preventing condensation	
	Power supply	28 … 130 V
	Current consumption	< 2,3 mA
	Gain	0 ± 0,05 dB
	Frequency range	± 0,5 dB; 18 pF; small signal
	Input impedance	20 GO; 0,2 pF
	Output impedance	< 80 O
	Maximal RMS output	7 … 33 V eff
	Inherent noise (A weighted)	< 2,5 µV
	Temperature (operation)	-10 ... +50 °C
	Temperature (storage)	-20 ... +70 °C
	Humidity (operation)	max. 90% rel. H. (non condensing)
	Humidity (storage)	max. 95% rel. H. (non condensing)
	connector /plug	7 pin LEMO FGG 1 B 307 CNAD 62
	Cartridge thread	11,7 mm 60 UNS
	Dimensions	Ø 12,7 x 90 mm
	Weight	165 g
MS 10 K	**Microphone Power Supply** • AC main power supply • 200V polarization voltage • BNC output • LEMO input	Article Number: 2400-303 
	Channel	1
	Supply voltage preamplifier	28 V
	Supply current preamplifier	5 mA
	Polarization voltage, switchable	0 or 200 V
	AC voltage of main power supply	80 ...220 V
	DC voltage for powering	9...18 V
	Current for heating of preamplifier	50 mA
	Weight	600 g
	Connector / Plug	BNC (out) / Lemo (in)
	Dimensions (W x H x D)	105 x 45 x 85 mm
	Case	aluminum cabinet
	Temperature (operation)	-10 ... +55 °C
	Temperature (Storage)	-25 ... +70 °C
TA 202	**Dehumidifier** • Removes humidity from air in the microphone • Small window shows colors of gel • Gel may be dried at 100° C	Article Number: 2400-403 
	Material	Silica gel
	Weight	15 g
	Length	39,5 mm
	Dimensions	12,7 mm

Pistonphone / Sound Calibrator

Article Number: 2400-020

Features

- Provides easy and fast calibration of microphones
- Compartible to 1", ½" and ¼" microphones
- Portable (9V block battery operated)

Components

- Adapter for ½" and ¼" microphones (MI17 and 40BE / 26CB)

4000 CL.1

Universal Pistonphone / Sound Calibrator

- Supported by Klippel QC and R&D software
- Automatic switch off to save battery life
- Low weight
- Automatic low battery detection

Sound pressure level (re: 20 µPa)	114.0 ± 0.2 dB
Frequency	1000 Hz ± 0.2 %
Distortion	< 1 %
Sesitivity to change in the load volume	+ 0.0003 dB/mm³
Typical change in SPL per year	< 0.02 dB
Time for level to stabilise	< 2 sec.
Microphone cartridge size	1",1/2", 1/4"
Controls	Power-on push button with green LED indication. Automatic shut-off when the microphone is removed (except for 1/4").
Temperatur range	- 10 °C to + 50 °C
Ambient pressure range	65 - 108 kPa
Humidity range	10 / 90 %RH
Battery type	9 V 6LR61
Battery live-time	> 30 hours
External supply voltage (via battery connector)	7.5 - 15 Vdc. Automatic shout-off when VBATT < 7.5 Vdc
CE classification, EMC	EN 50081-1, EN 50082-1
Safety	EN 61010-1, 1993 portable equipment pollution category 2
Size	L: 109.5 mm; Ø: 40 mm
Weight	185 g with battery

Microphone ICP Power Supply

Article Number: 2400-301

The ICP power supply IV10 is required only for operation with older Distortion Analyzer units (version 1.x) which do not have built in ICP power supply.
An adapter cable from BNC to XLR input is required for proper operation (1.5 m BNC to XLR adapter cable, Art. Nr. 2300-102)

IV 10-N

- 1-Channel
- BNC In and Out
- AC main power supply

ICP Voltage	+24 V / 4 mA
Frequency range (-3 dB)	0,2 Hz - 100 kHz
DC supply	9... 18 V
AC main power supply	80 ...240 V
Connector / Plug	BNC
Dimensions (W x H x D)	105 x 65 x 85 mm
Case	aluminum cabinet
Temperature (operation)	-10 ... +50 °C
Temperature (storage)	-25 ... +70 °C

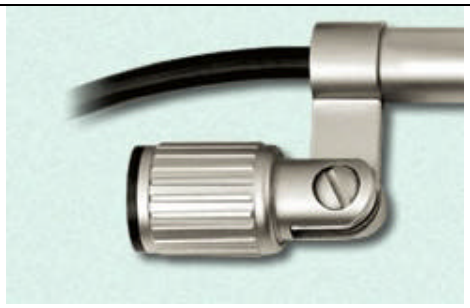
½” Swivel Adaptor

Article Number: 2400-204

The clamp can be used to mount any ½” microphone to an microphone or laser stand.

MH64

- ½” clamping width
- > 180” swivel range
- 1/4” thread
- locking screw



Find explanations for symbols at http://www.docs.klippel.de/symbols.pdf

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