MGA 1030

Magnetic field system

DC - 250 kHz

- **EN 55103-1 + 2, EN 61000-4-8, Automotive, MIL-STD a.o.**
- **Generation and measurement of magnetic fields from DC up to 250 kHz**
- **Field strengths up to 1000 A/m**
- **Additional – Sensor coils, Helmholtz coils, Test adapter**

Introduction

The compact magnetic field generator and analyzer MGA 1030 allows susceptibility tests against magnetic fields from DC up to 250 kHz according the standard EN 55103-2 (product standard for professional audio, video and light control techniques) and there measurement according to EN 55103-1.

In combination with our tri axial Helmholtz coils full automated susceptibility tests are possible at magnetic field strength up to 1000 A/m for frequencies from DC to 1 kHz. Lower field strength can be generated for frequencies up to 250 kHz. Due to the tri axial set-up of our Helmholtz coil major improvement in device handling is achieved because there is no need to turn an EUT during tests.

The MGA 1030 complies to all magnetic field requirements of relevant EMC and military standards.

More EMC tests are possible according the standards below:

- IEC / EN 61000-4-8	- SAE J 1113-2, SAE J 1113-22	- GM W 3097
- ISO 11452-8	- Ford ES-XW7T-1A278-AC	- MIL-STD-461 E/F RS 101, CS101
- PSA B21 7110	- DC – 11224, DC 1014	- and similar standards

Furthermore magnetic field measurements acc. MIL-STD-461 E/F RE101, CE101 are possible

Tests and measurements are controlled by a program which will set most parameter automatically. For any relevant standard, which are fulfilled by the MGA 1030, limit values are already included into the software package, although any different value can be defined by a user. After every test full reports will be created automatically. Report layout is pre-defined, though any user-defined layout is possible.

High performance is guaranteed by a self-calibration process which utilizes an internal source as reference.

Benefits

- **Components**
  MGA 1030 consists of three independent module: a signal generator (DC – 250 kHz), a power amplifier (800W output maximum, DC – 1MHz bandwidth) and spectrum analyzer (16 Bit, 1 MSPS sampling rate). All modules can be used as stand-alone units.
- **Software**
  Any function is controlled via an application which also guide the user through any test or measurement. Adaptation of signal strength or measurement graphs are possible at any stage. User defined signals complement the usage for fast and reliable tests. The application software is written in LabVIEW which guarantees stable and fast performance on any Microsoft® Windows platform
- **Additional equipment**
  Our company also provides many different coils and loop sensors which are ideally suited for the described tests. Not only our own equipment can be used with the MGA 1030, but also user defined coils. A calibration mode is included in the software to complement the magnetic test system with any further equipment.

- **Self-calibration**
  Using an ultra-stable voltage source self-calibration correction values are stored in an internal EEPROM. Any voltage signal or voltage measurement device is calibrated as a self-calibration process automatically in about a minute.

Applications

- **Automotive Testing**
  Intensive testing is required for new products which should be used in any automotive application. The MGA 1030 allows fast and easy testing according to many automotive standards as described before.
- **Magnetic Field Generation**
  MGA 1030 enables a user to generate strong magnetic fields up to 1000 A/m. Even alternating fields up to 250 kHz can be generated by the magnetic test system

Technical Data - MGA 1030

Type	Magnetic Test System MGA 1030
Electrical Data	
Voltage input (Analyzer)	
Frequency range	DC - 250 kHz
Input impedance	1 MΩ / 50 Ω switchable
Connector	XLR, unbalanced
Max. input voltage	100 V continuous (attenuator autoset at overvoltage) 10 V at 50 Ω
Gain	-20/0/20/40 dB Preamplifier 0/20 dB ADC Amplifier Self-calibration with ultra stable on-board reference
Current input	
Frequency range	DC - 250 kHz
Shunts	10 mΩ / 1 Ω / 100 Ω
Max. input current	20 A continuous (overload protection) 1 Ω and 100 Ω shunt are protected by an additional 1.5 A fuse
Connector	4 mm safety jack (+, -) measurement via insulation amplifier or input jacks
Measurement range	20 A, 10 A, 1 A, 100 mA, 10 mA, 1 mA automatic offset and gain Self-calibration with ultra stable on-board reference
AD converter	
Resolution	16 Bit
Sampling rate	1.0 MSPS
Aliasingfilter	0.01dB Tschebyscheff filter, fg = 260 kHz; filter may be switched off

Technical Data - MGA 1030 (continuation)

Generator	
Frequency range	DC - 250 kHz
Output impedance	50 Ω
Connector	BNC, unbalanced
Signal	Sine wave / square wave / triangular / DC
Amplitude	0 – 10V AC, -10V - +10V DC
Resolution	12 Bit (2.5 mV) Switchable -20 dB Attenuator Self-calibration with ultra stable on-board reference
Amplifier	
Frequency range	DC - 1MHz
Connector	4mm safety jacks (output) BNC, unbalanced (input)
Current	5Arms / 16Arms (MGA1030-05 / MGA1030-16)
Voltage	50Vrms / 75 V_{DC}
Type	Magnetic Test System MGA 1030
Electrical Data	
Distortion (DC – 100 kHz, load ≥	0.10%
Gain	10 ± 0.1 % (± 0.01 % / 0C)
General Data	
EUT control / Connector	9-pin Sub-D; RS-232
Connection to Computer	USB
Temperature range	0 to 40 °C
Warm-up time	15 min
Primary Power	115 / 230 VAC ± 10%, 50-60 Hz
Mechanical Data	
Housing	19“ Subrack or desktop case
Width / height / depth	449 mm / 177 mm / 580 mm
Weight (shipping)	approx. 40 kg (net 34 kg)
	Ordering information
MGA 1033	Magnetic field analyzer and generator acc. to EN 55103 + IEC 6100-4-8 + MIL-STD-461 E/F, DC-250 kHz, Amplifier 50V / 16A
MGA 1034_16_SYS	Complete Test-System for Magnetic field tests acc. ISO 11452-8, MIL-STD-461 E/F and other – incl. compensation board and Triax Coil MGA_HCST_50-28 for magnetic fields until 1000 A/m at 1000 Hz, DC – 250 kHz, Amplifier 50V / 16A

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