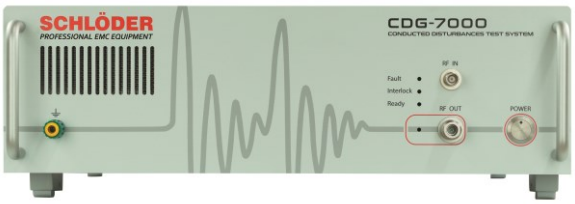
CDG 7000

Conducted Disturbances Test System

IEC/EN 61000-4-6, IEC 60601-1-2 Ed. 4.1,
IEC 61000-4-39, MIL 461 CS 114,
ISO 11452-4, Namur

- The compact device consists of
  RF signal generator,
  RF-power amplifier,
  3-channel RF voltmeter and
  directional coupler
- Frequency range (signal generator)
  4 kHz – 1200 MHz
- The RF power amplifier is available in three different models:
  10 kHz – 250 MHz
  100 kHz – 250 MHz
  100 kHz – 400 MHz



Turn Key Solution for Conducted Immunity and Magnetic Field Tests

Overview

New test generator for all interference immunity standards and magnetic fields against conducted interference induced by high frequency fields including BCI tests (ISO 11452-4). One of the very few combined IEC 61000 4-6 test systems that include the RF signal generator, a RF power amplifier, a 3-channel RF voltmeter and a directional coupler for a competitive price. The CDG 7000 generates interferences as defined in IEC EN 61000-4-6 immunity to conducted disturbances induced by radio frequency fields and magnetic fields acc. IEC 60601-1-2 and IEC 61000-4-39.

The standard describes a test setup in which these high frequency interferences can be influenced on a EUT without a complicated structure with antennas, field instrumentation and shielded rooms. By using coupling networks and coupling clamp's sine waves are induced directly into power and signal lines. We offer an extensive range of accessories for this purpose. The test object retains its original place in the device structure, so that the system can be tested in its overall function.

Key Facts

- The included application software **(HELIA 7-Basic)** enables extensive reporting functions and EUT monitoring (HELIA 7 BCI requires for BCI testing)
- Simple expansion with external amplifier via 2nd generator output
- SCPI command set enables easy integration into own software systems
- Interfaces: USB, LAN, GPIB (option)
- Temperature measuring input, e.g. for monitoring and displaying the BCI clamp temperature
- Input for external pulse modulation
- Configurable, digital 8-channel user port
- Warranty 3 years

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Conducted Disturbances Test System

Models	
CDG 7000-25	RF generator for conducted and magnetic field tests 100 kHz - 250 MHz, amplifier 25 W Maximum test level: 10 V (15 V) with 80 % AM (without 6 dB) Built-in directional coupler, with software HELIA 7 - Basic USB, LAN
CDG 7000-75	RF generator for conducted and magnetic field tests 100 kHz - 400 MHz, amplifier 75 W Maximum test level: 30 V (40 V) with 80% AM (without 6 dB) Built-in directional coupler with software HELIA 7 - Basic USB, LAN
CDG 7000-75-10	RF generator for conducted and magnetic field tests 10 kHz - 250 MHz, amplifier 75 W Maximum test level: 30 V (40 V) with 80% AM (without 6 dB) Built-in directional coupler with software HELIA 7 - Basic USB, LAN

Technical data I

RF-Power Amplifier

	25 W	**75 W**	**75 W / 10k**
Frequency range	100 kHz-250 MHz	100 kHz-400 MHz	10 kHz-250 MHz
Output Power:			
Nominal	25 W	75 W	75 W
Linear @ 1dB compression	20 W	50 W	50 W
Gain	46 dB nominal	51 dB nominal	51 dB nominal
Flatness	± 1.5 dB maximum	± 1.5 dB maximum	± 1.5 dB maximum
Input power for rated output	1 mW / 0 dBm	1 mW / 0 dBm	1 mW / 0 dBm
Input / output impedance	50 Ω	50 Ω	50 Ω
Input VSWR	1.5 : 1 max.	1.5 : 1 max.	1.5 : 1 max.
Harmonic distortion	< -20 dBc @ 20 W	< -20 dBc @ 50 W	< -20 dBc @ 50 W
Noise figure	typ. 5 dB	typ. 7 dB	typ. 7 dB
Spurious output	< -75 dBc at 10 W	< -75 dBc at 10 W	< -75 dBc at 10 W

Directional coupler

Power	200 W	200 W	200 W
Frequency range	100 kHz – 500 MHz	100 kHz – 500 MHz	10 kHz – 400 MHz

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Conducted Disturbances Test System

RF Generator	
Two switchable outputs (only one can be used simultaneously)	2 x SMA
Frequency range	9 kHz - 1.2 GHz (usable from 4 kHz)
Frequency resolution	1 Hz
Output level range	0 to - 63 dBm
Output level resolution	0.1 dB
Harmonics	< 30 dBc
Spurious	< 45 dBc
Amplitude modulation (internal)	0 - 100 %, resolution 1 %
Amplitude modulation (external)	0 – 100 % , max. Amplitude 1 V = 100 %, BNC jack
Pulse modulation (internal)	5 - 95 %, resolution 1 %
Pulse modulation (external)	DC...1 MHz, 3,3/5 V CMOS/TTL, BNC jack

LF Generator (modulation)	
Connector	BNC jack
Frequency range	1 Hz - 100 kHz
Frequency resolution	0.1 Hz
Signal	Sine wave / square wave / triangular
Amplitude	0...1 V

RF Voltmeter (test level)	
Connector	BNC jack
Frequency range	9 kHz - 1.2 GHz (usable from 4 kHz)
Measuring range	-40 to +30 dBm

RF Voltmeter 2+3 (forward / reverse power)	
Connector	2 x SMA
Frequency range	9 kHz - 1.2 GHz (usable from 4 kHz)
Measuring range	-40 to +33 dBm + directional coupler (typ. 40 dB)

Technical data II

Module	
EUT-MONITOR INPUT	
Input voltage	0 to 10 V DC
Resolution	2.5 mV
Input impedance	100 kΩ
EUT-FAILED INPUT	
Input signal	3,3/5 V CMOS/TTL level
Detection mode	status or edge controlled
Temperature measurement	10 - 100 °C (1039 to 1385 Ω) resolution < 1 °C (PT 1000)
SCPI Interfaces	
USB 2.0	USB-B
LAN, 100 Mbit	RJ45
GPIB (optional)	Centronics

Module	
DIGITAL I/OS	
Out	4 Bit Digital out, 5 V CMOS/TTL
In	4 Bit Digital in, 5 V CMOS/TTL
INTERLOCK	
Closes at	R < 1 kΩ

General data	
Temperature range	0 - 40 °C
Housing	19“ desktop case (84 TE; 3 HE)
Weight	approx. 11 kg
Width / height / depth	app. 450 / 135 / 504 mm
AC Input	100 - 240 VAC; 50/60 Hz

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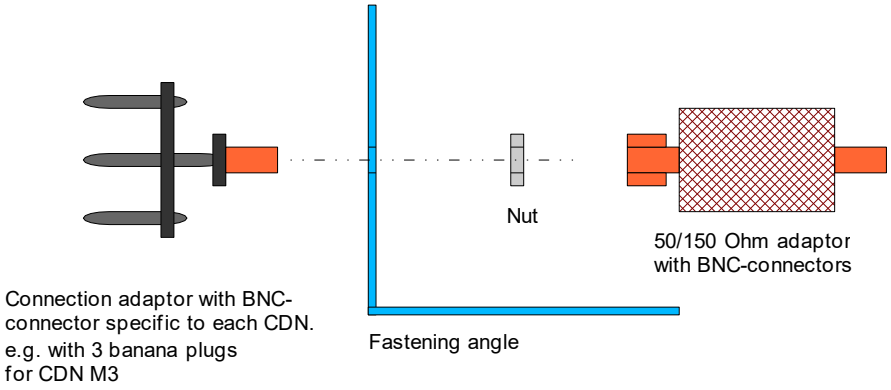
Conducted Disturbances Test System

Accessories for calibration set I



| < -- --- CDG A 31xx - ---> | < ---------- --CDG A 3100 --------- ---------- > | or

| < ---- - CDG A 31xx - - --> | < ---------- CDG A 3190 + CDG 3110 --------- ----- > |

To calibrate a CDN the following items are required*:
2 x CDG A 31xx (appropriate connection CDN Adapter for AE-side and EUT-side required)
2 x CDG A 3100 (mounting plate + 50/150 Ω passage + 50 Ω termination for AE-side)

For the first CDN following is required*:
2 x CDG A 31xx +
2 x CDG A 3100 or 2x (CDG A 3190 + CDG 3110)

For each additional CDN, only 2 corresponding connection adapters need to be ordered*:
2 x CDG A 31xx, optional for each connection adapter also one mounting plate CDG A 3190

**Dependent of the signal, termination can be omitted on the AE side. Let us advise you on the details.*

Accessories

Coupling Networks (special CDNs upon request)

▪ CDN M1	▪ CDN M4-32/63/100-HV	▪ CDN RJ45S
▪ CDN L1-16	▪ CDN M5-16/32	▪ CDN USB 3.0
▪ CDN M2-16/32	▪ CDN M5-32/63/100-HV	▪ CDN USB-C / USB-P
▪ CDN M2-32/63/100-HV	▪ CDN CAN-BUS	▪ CDN HDMI
▪ CDN M2+3-16/32	▪ CDN AF2/ AF3/ AF4 / AF5/ AF8/ AF12	▪ CDN Firewire
▪ CDN M3-16/32	▪ CDN T2/T4/T8	▪ CDN D 100
▪ CDN M3-32/63/100-HV	▪ CDN RJ11/RJ45	
▪ CDN M4-16/32	▪ CDN S1/ S2/ S3/ S4/ S8/ S9/ S15/ S25	

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CDN Facts

CDN EMCL-20

- EM-Coupling clamp for cables up to Ø 20 mm
- Included calibration set and factory calibration
- Option: With matching network **CDN-EMCLNW_10** starting from 10 kHz

CDN EMCL-35

- EM-Coupling clamp for cables up to Ø 35 mm
- Included calibration set and factory calibration

CDN ABCL-20

- Decoupling clamp for cables up to Ø 20 mm
- For additional decoupling at immunity testing according to IEC / EN 61000-4-6

CDN ABCL-35

- Decoupling clamp for cables up to Ø 35 mm
- For additional decoupling at immunity testing according to IEC / EN 61000-4-6

CDN BCI-P1

- Injection probe for Bulk Current Injection (BCI)
- Frequency range 1 - 400 MHz
- For cables up to Ø 40 mm
- Included calibration set

CDN BCI-P1_MT1

- Additional transformer for CDN BCI-P1
- Frequency range 1 - 400 MHz
- For cables up to Ø 40 mm
- Included calibration set

CDG CMP-45

- Current monitoring probe 10 kHz - 400 MHz, foldable
- For cables up to Ø 45 mm
- Option: Calibration set **CDG A CMP-45**

CDG CMP-46

- Current monitoring probe 10 kHz - 400 MHz, not foldable
- For cables up to Ø 46 mm
- Option: Calibration set **CDG A CMP-46**

CDN Calibration set

- Mounting angle: **CDG A 3100** (Mounting angle, 50 / 150 Ω adapter, 50 Ω Termination)
- Calibration adapter: **CDG A 31xx**

Attenuators

- **CDG 7006-20W** 6 dB Attenuator, 20 W
- **CDG 7006-100W** 6 dB Attenuator, 100 W
- **CDG 7020-20W** 20 dB Attenuator, 20 W

Termination

- **CDG A 50** BNC Termination, 50 Ω, 1 W
- **CDG A 50-10W** BNC Termination, 50 Ω, 10 W

Included in scope of delivery

- Power cable V-Lock
- Ground terminal
- USB cable
- BNC connector, 50 Ohm resistor
- 2 x Socket strips and 3 x SMA fixed cables (already connected)
- USB dongle for HELIA software
- User manual
- USB stick including calibration certificate, user manual, HELIA software.
- 4 x RF cable:
  - BNC male ¬- N male, 1.5 m (L0023),
  - N connector - N connector, 1.5 m (L0068),
  - BNC male - TNC male, 1.5 m (L0024),
  - N connector - BNC connector angled (only for 75 W version), 30 cm (L0069)

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