

IEC / EN 61000-4-6

ISO 11452-4

## Overview

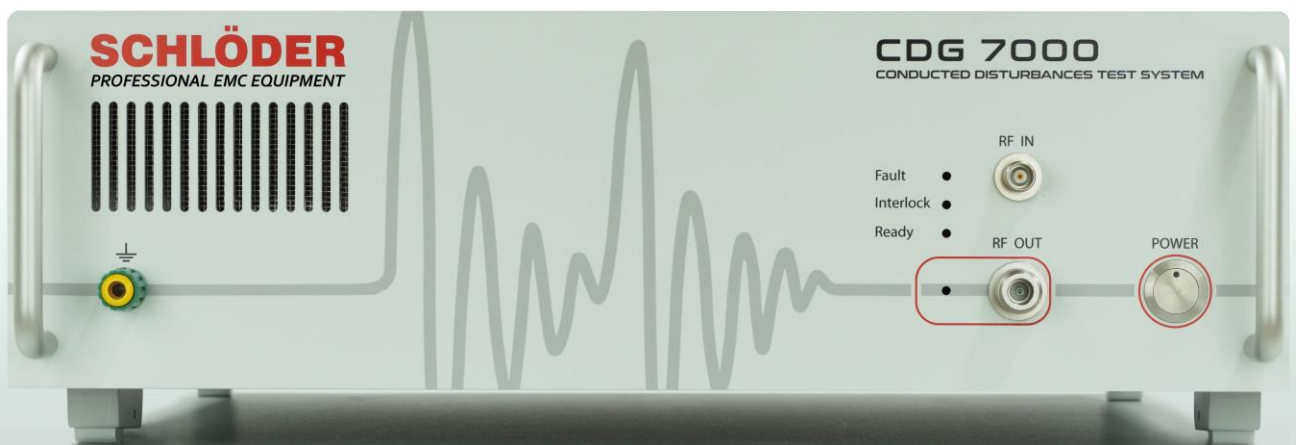
New test generator for all interference immunity standards against conducted Interference induced by high frequency fields - including BCI tests (ISO 11452-4).

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 very reasonable price.

The CDG 7000 generates interferences as defined in IEC / EN 61000-4-6 - immunity to conducted disturbances induced by radio-frequency fields. 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. 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 compact device consists of a RF signal generator, a RF-power amplifier, a 3-channel RF voltmeter and a **directional coupler**
- Frequency range (signal generator) **4 kHz - 1200 MHz**
- The RF power amplifier is available in three different models
- The included application software (**HELIA 7 - Basic**) enables extensive reporting functions and EUT monitoring, (HELIA 7 - BCI required 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**



## CDG 7000 Models and Options

Device	Technical Specs
<b>CDG 7000-25</b>	Conducted RF generator, acc. IEC 61000-4-6 100 kHz – 250 MHz, amplifier 25W Maximum test level: 10 V (15 V) with 80% AM (without 6 dB) Built-in directional coupler, with software HELIA 7 - Basic USB, LAN
<b>CDG 7000-75</b>	Conducted RF generator, acc. IEC 61000-4-6 100 kHz – 400 MHz, amplifier 75W Maximum test level: 30 V (40 V) with 80% AM (without 6 dB) Built-in directional coupler with Software HELIA 7 - Basic USB, LAN
<b>CDG 7000-75-10</b>	Conducted RF generator, acc. IEC 61000-4-6 10kHz – 250 MHz, amplifier 75W Maximum test level: 30 V (40 V) with 80% AM (without 6 dB) Built-in directional coupler with Software HELIA 7 - Basic USB, LAN
<b>HELIA 7 – BCI</b>	Software extension necessary for BCI tests, requires HELIA 7 - Basic
<b>CDG 7 GPIB</b>	GPIB interface for CDG 7000 series, NI's GPIB interface delivers performance, reliability and productivity in measurement technology

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

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**Technical Details I**

<b>Module</b>	
<b>RF GENERATOR</b>	
Two switchable outputs (only one can be used simultaneously)	2 x SMA
Frequency range	9 kHz to 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 to 100%, resolution 1%
Amplitude modulation (external)	0 to 100% , max. Amplitude 1V = 100%, BNC jack
Pulse modulation (internal)	5 to 95%, resolution 1%
Pulse modulation (external)	DC...1 MHz, 3,3/5V CMOS/TTL, BNC jack
<b>LF-GENERATOR (modulation)</b>	
Connector	BNC jack
Frequency range	1 Hz to 100 kHz
Frequency resolution	0.1 Hz
Signal	Sine wave / square wave / triangular
Amplitude	0...1 V
<b>RF-VOLTMETER 1 (test level)</b>	
Connector	BNC jack
Frequency range	9 kHz to 1.2 GHz (usable from 4 kHz)
Measuring range	-40 to +30 dBm
<b>RF-VOLTMETER 2+3 (forward and reverse power)</b>	
Connector	2 x SMA
Frequency range	9 kHz to 1.2 GHz (usable from 4 kHz)
Measuring range	-40 to + 33 dBm + directional coupler (typ. 40 dB)

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**Technical Details II**

<b>Module</b>	
<b>EUT-MONITOR INPUT</b>	
Input voltage	0 to 10 V DC
resolution	2.5 mV
Input impedance	100 kΩ
<b>EUT-FAILED INPUT</b>	
Input signal	3,3/5V CMOS/TTL level
Detection mode	status or edge controlled
Temperature measurement	10 to 100 °C (1039 to 1385 Ω) resolution < 1 °C (PT 1000)
<b>SCPI Interfaces</b>	
USB 2.0	USB-B
LAN, 100 Mbit	RJ45
GPIB (optional)	Centronics
<b>Digital I/Os</b>	
Out	4 Bit Digital out, 5 V CMOS/TTL
In	4 Bit Digital in, 5 V CMOS/TTL
<b>INTERLOCK</b>	
Closes at	R < 1 kΩ

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

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## Accessories

### Coupling Networks (special CDNs upon request)

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

#### CDN EMCL-20

- EM-Coupling clamp for cables up to  $\varnothing$  20mm
- Included calibration set and factory calibration
- Option: With matching network **CDN-EMCL-NW\_10** starting from 10 kHz

#### CDN EMCL-35

- EM-Coupling clamp for cables up to  $\varnothing$  20mm
- Included calibration set and factory calibration

#### CDN ABCL-20 (Absorbing clamp)

- For cables up to  $\varnothing$  20mm
- For additional decoupling at immunity testing according to IEC / EN 61000-4-6

#### CDN Calibration set

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

#### To calibrate a CDN the following items are required:

2x CDG A 31xx (appropriate connection CDN-Adapter for AE-side and EUT-side required)

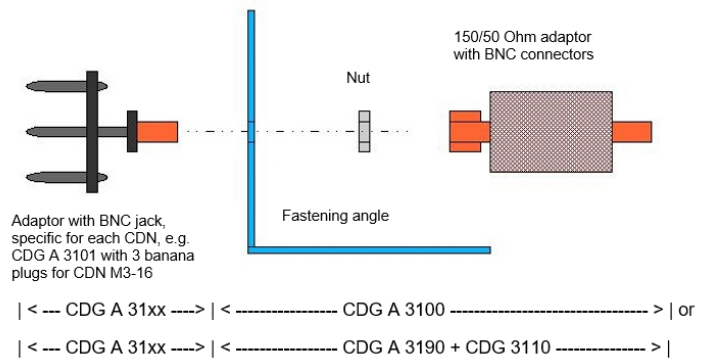
2x CDG A 3100 (Mounting plate + 50/150 Ohm passage + 50 Ohm termination for AE-side) or  
2x CDG A 3190 (Mounting plate + 50 Ohm termination for AE-side) +  
2x CDG 3110 (50/150 Ohm passage)

#### For the first CDN following is required:

2x CDG A 31xx +  
2x CDG A 3100 or 2x (CDG A 3190 + CDG 3110)

#### For each additional CDN, only 2 corresponding connection adapters need to be ordered:

2x CDG A 31xx, optional for each one connection adapter also one mounting plate CDG A 3190.



#### Attenuators

- **CDG 7050** 6dB Attenuator, 20W
- **CDG 7050-100W** 6dB Attenuator, 100W
- **CDG 7050-50W** 30 dB Attenuator, 50W

#### Termination

- **CDG A 50** BNC Termination, 50 $\Omega$ , 1W
- **CDG A 50-10W** BNC Termination, 50 $\Omega$ , 10W
- **CDG A 50-50W** BNC Termination, 50 $\Omega$ , 50W

#### CDN BCI-P1

- Clamp for Bulk Current Injection (BCI)
- Frequency range 1 – 400 MHz
- For cables up to  $\varnothing$  40mm
- Included calibration set

#### CDG CMP-45

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

#### CDG CMP-46

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