

ER8000

EMI Receiver with built-in LISN



Main Features

- ER8000 Opt.00: 9 kHz to 30 MHz frequency range
- ER8000 Opt.01: 9 kHz to 3 GHz frequency range
- Compliant with CISPR 16-1-1, MIL-STD-461, ANSI C63.2 and FCC
- Compliant with CISPR 14-1 when in conjunction with CA0010
- Conducted and radiated emission tests
- Direct analog to digital conversion up to 30 MHz
- Combination of EMI test receiver and spectrum analyzer
- Operates gapless FFT
- Very fast measuring time
- Built-in Lines Impedance Stabilization Networks (LISN)
- User port for driving external LISNs and ancillaries
- Free PES PMM Emission Suite Software
- Robust, compact construction
- 140 dBμV (2 W) maximum input level without damage

Extra compact, flexible and easy-to-use, ER8000 is a high performance, full CISPR 16-1-1 compliant EMI receiver perfect for any conducted and radiated measurement from 9 kHz up to 3 GHz.

A full compliant span as fast as two seconds in band B and as fast as one minute in bands C+D is the result of a state-of-the-art design featuring FFT architecture to optimize measurement speed.

Other technical improvements include an extremely effective front end with efficient preselector, for outstanding performance, and a user port suited for external devices like LISNs and switching boxes for even faster testing times.

The ER8000 also features an internal built-in 16 A LISN (Line Impedance Stabilization Network), so this compact setup can perform conducted emission measurement tests and characterize EUTs quickly and effectively, whether in the design lab during product development or in an EMC laboratory for the certification of EMI measurements. An optional DDA Click Analyzer makes this measurement system more attractive and profitable than ever.

The compact size and rugged yet lightweight design make the ER8000 the perfect solution for in-situ testing.

PMM Emission Suite software (included free of charge) is the ideal companion for this high performance receiver, featuring a full set of user-friendly functions for all EMI applications.


The receiver can be ordered with two different frequency ranges: 9 kHz to 30 MHz (ER8000 opt. 00), or 9 kHz to 3 GHz (ER8000 opt. 01). Users can upgrade from version opt. 00 to version opt. 01 at any time.

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SPECIFICATIONS

Frequency range		9 kHz to 30 MHz (Opt.00) 9 kHz to 3 GHz (Opt.01) 1 Hz; 100 Hz above 30 MHz < 2.5 ppm
Resolution		1 Hz; 100 Hz above 30 MHz
Frequency accuracy		< 2.5 ppm
Spectrum method analysis		FFT, size up to 8192, minimum overlap 89%
RF Input		Zin 50 Ω, N fem.
VSWR 10 dB RF att.		< 1.2; < 2 above 1 GHz
0 dB RF att.		< 2
Attenuator		0 dB to 45 dB (5 dB steps)
Preamplifier gain		20 dB; 10 dB above 30 MHz Low saturation preamplifier (after preselector)
Pulse limiter		Built in (selectable) below 30 MHz
Max input level (without equipment damage)		
Sinewave AC		140 dBμV (2 W); 137 dBμV (1 W) above 30 MHz
Voltage pulse spectral density		176 dBμV/MHz below 150 kHz; 130 dBμV/MHz below 30 MHz; 97 dBμV/MHz below 1 GHz
Max. pulse voltage		200V (≤ 20 μs)
Max. DC voltage		50V
Preselector (permanent built-in)		(Seven BP filters - 15 MHz BW to ADC) 9 kHz to 150 kHz 30 MHz to 96.6 MHz tracking 150 kHz to 15 MHz 96.6 MHz to 311 MHz tracking 15 MHz to 30 MHz 311 MHz to 1000 MHz tracking 1 GHz to 3 GHz
IF bandwidth		
6dB bandwidth		100Hz, 300Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz
CISPR 16-1-1		200 Hz, 9 kHz, 120kHz, 1 MHz
Displayed Average Noise level		Preselector OFF, preamplifiers OFF Preselector ON, preamplifiers OFF Preselector ON, preamplifier ON
9 kHz to 150 kHz (200 Hz RBW)		< -17 dBμV < -14 dBμV < -27 dBμV
0.15 MHz to 30 MHz (9 kHz RBW)		< 0 dBμV < 3 dBμV < -14 dBμV
30 MHz to 300 MHz (120 kHz RBW)		< 4 dBμV < 1 dBμV < -5 dBμV
300 MHz to 3 GHz (120 kHz RBW)		< 10 dBμV < 6 dBμV < 0 dBμV
Detectors		Peak, Quasi-Peak, Average, RMS, RMS-Average (Optional), C-Average Smart Detector function above 30 MHz
Scan time		A band (9 to 150 kHz) B band (150 kHz to 30 MHz) C band (30 to 300 MHz) D band (300 MHz to 1 GHz) E band (1 to 3 GHz)
		(200 Hz RBW) (9 kHz RBW) (120 kHz RBW) (120 kHz RBW) (1 MHz RBW)
SWEEP MODE (CISPR: preselector ON, QP)		< 2 s (Ht 1 s) < 3 s (Ht 1 s) < 20 s (Ht 1 s) < 40 s (Ht 1 s) < 160 s (Ht 1 s)
		< 3 s (Ht 2 s) < 5 s (Ht 2 s) < 40 s (Ht 2 s) < 80 s (Ht 2 s) < 320 s (Ht 2 s)
ANALYZER MODE (preselector OFF, PK, Ht lowest)		< 50 ms (Ht 27 ms) < 10 ms (Ht 525 μs) < 100 ms (Ht 32 μs) < 500 ms (Ht 32 μs) < 400 ms (Ht 4 μs)
Level measuring time (hold time)		CISPR 16-1-1 as default 2 μs to 120 s
Measurement accuracy		
S/N > 20 dB		9 kHz to 1 GHz ± 1.2 dB 1 to 3 GHz ± 1.6 dB
Main measuring functions		• Manual, spectrum analyser and sweep modes
(With included PMM Emission Suite SW)		• Waterfall • Standard and user definable limits • Conversion and correction factors • Control of DDA (Click) analyser, LISNs and other accessories • Auto diagnosis; • Test reporting
Demodulation		AM – FM Internal loudspeaker
I/O Interface (protocol available for SW developers)		USB 2.0 type B, RS-232 DB9, user port DB15 (drives PMM LISNs and accessories)
Operating temperature		-5° to 45° C
Power supply		10 - 15 Vdc, 2.5A with AC universal adapter/charger
Built-in LISN (compliant to CISPR 16-1-2)		
Frequency range		150 kHz to 30 MHz
Continuous rated output current		16A
Max permissible operating voltage		250 Vac – 350 Vdc
AC supply frequency range		DC to 60 Hz
CISPR equivalent circuit		50 Ω // (5 Ω + 50 μH)
Test socket		Schuko 2P+E
Line plug		IEC 60320 C20
Artificial hand		4 mm plug
RF Output		Internal receiver or BNC fem.
Dimensions (W x H x D)		235 x 105 x 300 mm
Weight		5,2 kg



The image shows the rear panel of a white electronic device, likely a spectrum analyzer. It features several ports and labels: a BNC connector labeled 'L2', a 'PE' ground symbol, a 'LISN OUT' port, a 'DO NOT COVER FAN' warning, a '10-15 Vdc 2.5 A max' power input, a 'USB' port, and a 'RS-232' port. There are also some smaller connectors and a 'Vmax = 250 V/rms Imax = 16 A' label.

Ordering information:

ER8000 Option 00 (9 kHz to 30 MHz)
ER8000 Option 01 (9 kHz to 3 GHz)
Includes: LISN mains cable, RS232 cable, USB-RS232 serial converter, USB cable, N-m to BNC-f adapter, AC/DC converter with plug adapters, PES PMM Emission Suite Software, soft carrying case, user's manual, standard calibration certificate

Optional accessories:

9010/RAV RMS-Avg detector
9010-RMA rack mount adapter for 19" rack
ER8000/GND Ground connection
9010/CC Rigid Carrying Case.
Upgrades:
ER8000/00/UP/01 from ER8000 Opt. 00 to ER8000 Opt. 01 (9 kHz to 3 GHz)



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Related products

Receivers

- 7010/01: EMI Receiver 9 kHz to 1 GHz
- 7010/02: EMI Receiver 9 kHz to 30 MHz
- 7010/03: EMI Receiver 9 kHz to 3 GHz
- 9010F: EMI Receiver 10 Hz to 30 MHz
- 9010/03P: EMI Receiver 10 Hz to 300 MHz
- 9010/30P: EMI Receiver 10 Hz to 3 GHz
- 9010/60P: EMI Receiver 10 Hz to 6 GHz
- 9030: EMI Receiver 30 MHz to 3 GHz
- 9060: EMI Receiver 30 MHz to 6 GHz
- 9180: EMI Receiver 6 GHz to 18 GHz
- ER9000/00: EMI Receiver 10 Hz to 30 MHz
- ER9000/01: EMI Receiver 10 Hz to 3 GHz
- FR4003: Field Receiver 9 kHz to 30 MHz
- CA0010: Click Analyzer 150 kHz to 30 MHz

Antennas

- BC-01: Biconical Antenna 30 to 200 MHz
- BL-01: Biconical Log Periodic Antenna 30 MHz to 6 GHz
- DR-01: Double-ridged Horn Antenna 6 to 18 GHz
- LP-02: Log Periodic Antenna 200 MHz to 3 GHz
- LP-03: Log Periodic Antenna 800 MHz to 6 GHz
- LP-04: Log Periodic Antenna 200 MHz to 6 GHz
- VDH-01: Van der Hoofden Test Head 20 kHz to 10 MHz
- TR-01: Antenna Tripod
- Antenna Set AS-02 / AS-03 / AS-04 / AS-05 / AS-06 / AS-07 / AS-08
- RA-01: Rod Antenna 9 kHz to 30 MHz
- RA-01-HV: Rod Antenna 150 kHz to 30 MHz
- RA-01-MIL: Rod Antenna 9 kHz to 30 MHz

LISN/Probes

- L2-16B: single phase AMN, 16 A
- L3-32: 4 lines, 3-phase AMN, 32 A
- L3-64: 4 lines, 3-phase AMN, 63 A
- L3-64/690V: 4 lines, 3-phase AMN, 63 A
- L3-100: 4 lines, 3-phase AMN, 100 A
- L1-150M: single-path, 50 Ohm AMN, 150 A
- L1-150M1: single-path, 50 Ohm AMN, 150 A
- L1-500: single phase AMN, 500 A
- L3-500: 4 lines, 3-phase AMN, 500 A
- SBRF4: RF Switching Box
- SHC-1/1000: Voltage probe, 1000 Vac, 35 dB
- SHC-2/1000: Voltage probe, 1000 Vac, 30 dB



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