

# CA0010

- 
- Full compliance with embedded preselector, attenuator and preamplifier
  - Designed to fully match CISPR 16-1-1 and CISPR 14-1 Standards
  - Highly flexible selection of number of rates, quartiles and runs operating mode
  - Test duration reduced to the minimum theoretically achievable
  - Built-in two-lines 16A Line Impedance Stabilization Network (LISN)
  - User port for driving any external LISNs
  - Embedded switch operation counting unit
  - CISPR 16-1-1 embedded click and pulse generator output for internal or external use
  - Autocheck and calibration
  - Stand alone or PC driven operations
  - Free PCA PMM Click Analysis software
  - Free PCG PMM Click Generation software
  - Full IF and QP history 500us resolution
  - Compact yet sturdy construction
  - 140 dBμV (2 W) maximum input level without damage

The innovative CA0010 is the full compliance companion for the 9010 EMI FFT receiver allowing performing any kind of click (discontinuous disturbance) analysis and measurement.

The conjunction of the 9010F FFT EMI receiver with this click analyzer is capable of four simultaneous measurements at the frequencies of 150 kHz, 500 kHz, 1.4 MHz and 30 MHz and can work as a standalone setup for compliant tests. In addition, when connected to a PC, a dedicated software produces a full trace with additional information like IF and QP time diagram of every channel, graph of the detected clicks for each channel and a complete trace with offline Rewind-Play-Pause-Forward capability for any possible use.

This software can also manage a unique internal click calibrator able to generate all the signals required to check the analyzer performance in compliance with CISPR 16-1-1 requirements. It is possible to set all the relevant parameters such as amplitude and duration of each click, the interval between them, the number of click repetition and, last but not least, the amplitude of CISPR pulses. Indeed, unique on the market the CA0010 Calibrator embeds a full compliance B-Band Cispr16-1-1 pulse generator allowing thus performing the test #2 and #3 of table 14 Cispr16-1-1 without the need of any external additional generator.

The internal click generator is full compliance with the requirements specified in CISPR 16-1-1 and can be used to self-calibrate the CA0010 or any other external click meter.

The same high versatility is also reflected in the User selectable operating modes: two rates/two upper quartiles, two rates/four upper quartiles, four rates/four upper quartiles and single run/double run (not conditioned by the previous ones).

Full compliant to all old and new "click" existing standards: CISPR 16-1-1:2015 Ed. 4 and previous editions, CISPR 14-1:2016 Ed. 6 and previous editions, CENELEC old and new equivalent versions of these two standards (EN 55016-1-1 and EN 55014-1). This Click Meter also features an internal 16 ampere LISN (although an external one can always be connected) and a switch operations counting unit too.

# CA0010

## SPECIFICATIONS

<b>Frequency range</b>	150 kHz, 500 kHz, 1.4 MHz, 30 MHz
<b>RF Input</b>	Zin 50 Ω, Internal switch from LISN or BNC fem.
<b>VSWR</b>	< 1.2
<b>Attenuator</b>	0 dB to 35 dB (5 dB steps) one per channel, independent setting
<b>Preamplifier</b>	15 dB one per channel, independent setting
<b>RF Output</b>	Zout 50 Ω, BNC fem.
<b>VSWR</b>	< 1.2

<b>Max input level</b> (without equipment damage)	140 dBμV / 2 W
--	----------------

<b>Preselector</b> (Permanent built-in)	(four BP filters) 150 kHz : 60 kHz BW @ 6dB 500 kHz : 120 kHz BW @ 6dB 1.4 MHz : 220 kHz BW @ 6dB 30 MHz : 180 kHz BW @ 6dB
--	---

<b>Insertion loss</b> (Att 0 dB)	< 10 dB
----------------------------------	---------

<b>RF generator</b>	
<b>CW</b>	
Frequency range:	150 kHz to 30 MHz
Frequency resolution:	100 Hz
Accuracy:	10 ppm
Amplitude range:	20 to 95 dBμV
Amplitude resolution:	0.1 dB

<b>Click (GOK)</b>	
Minimum ON time:	100 μs
Minimum separation:	100 μs
Time resolution:	10 μs
<b>CISPR PULSES</b>	
Spectral density range:	80 to 101 dBμV/MHz
Amplitude resolution:	0.1 dB
Flatness:	1.8 dB from 150 kHz to 30 MHz
PRF:	1 to 500 Hz
PRF resolution:	1 Hz

<b>RF output</b>	Internal switch or BNC fem.
------------------	-----------------------------

<b>Autocalibration</b>	Embedded generator for autocalibration and system test
------------------------	--

<b>CISPR conformity</b>	CISPR 14-1, CISPR 16-1-1, CISPR 16-1-2
-------------------------	--

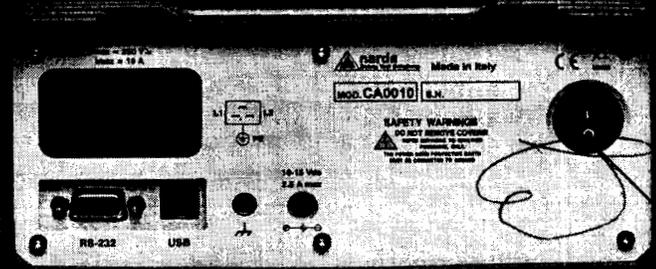
<b>I/O Interface</b>	USB 2.0, RS-232
----------------------	-----------------

<b>Application software</b>	PCA PMM Click Analysis software, Four channels IF and QP time diagram with click detection and analysis, Measurement log and report PCG PMM Click Generation software, CISPR 16-1-1 standard, annex F and user's definable test generation
-----------------------------	---

<b>Operating temperature</b>	-5° to +45° C
------------------------------	---------------

<b>Power supply</b>	12 Volt DC, 0.7 A (AC universal adapter)
---------------------	--

<b>Built-in LISN (compliant to CISPR 16-1-2)</b>	
Frequency range:	150 kHz to 30 MHz
Continuous rated output current:	16 A
Max permissible operating voltage:	250 Vac - 350 Vdc
EUT supply frequency range:	DC to 60 Hz
CISPR equivalent circuit:	50 Ω // 50 μH
EUT power connector:	Schuko 2P+E
Line plug:	IEC 60320 C20
Artificial hand:	4 mm socket
<b>RF Output</b>	Internal switch or BNC fem.
<b>Dimensions (W x H x D)</b>	235 x 105 x 335 mm
<b>Weight</b>	4.1 kg



### CA0010 Click Analyzer

Includes: LISN mains cable, DB9 male - DB9 male cable for 9010F, USB cable, BNC-BNC cable, AC/DC power adapter, PCA PMM Click Analysis software, PCG PMM Click Generation software, soft carrying case, user's manual, standard calibration certificate

### LISN service kit

(AC-BNC adapter for LISN verification and calibration)

## Related products and services

### Generators/Receivers/Systems

- 1008: Magnetic field generator system
- 7010/00: EMI Receiver 150 kHz to 1 GHz
- 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
- 9010: EMI Receiver 10 Hz to 30 MHz
- 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
- FR4003: Field Receiver 9 kHz to 30 MHz
- COND-IS: RF Conducted Immunity System
- RAD-IS: RF Radiated Immunity System
- AUT-IS: Automotive Immunity System

### Antennas/Calibration services

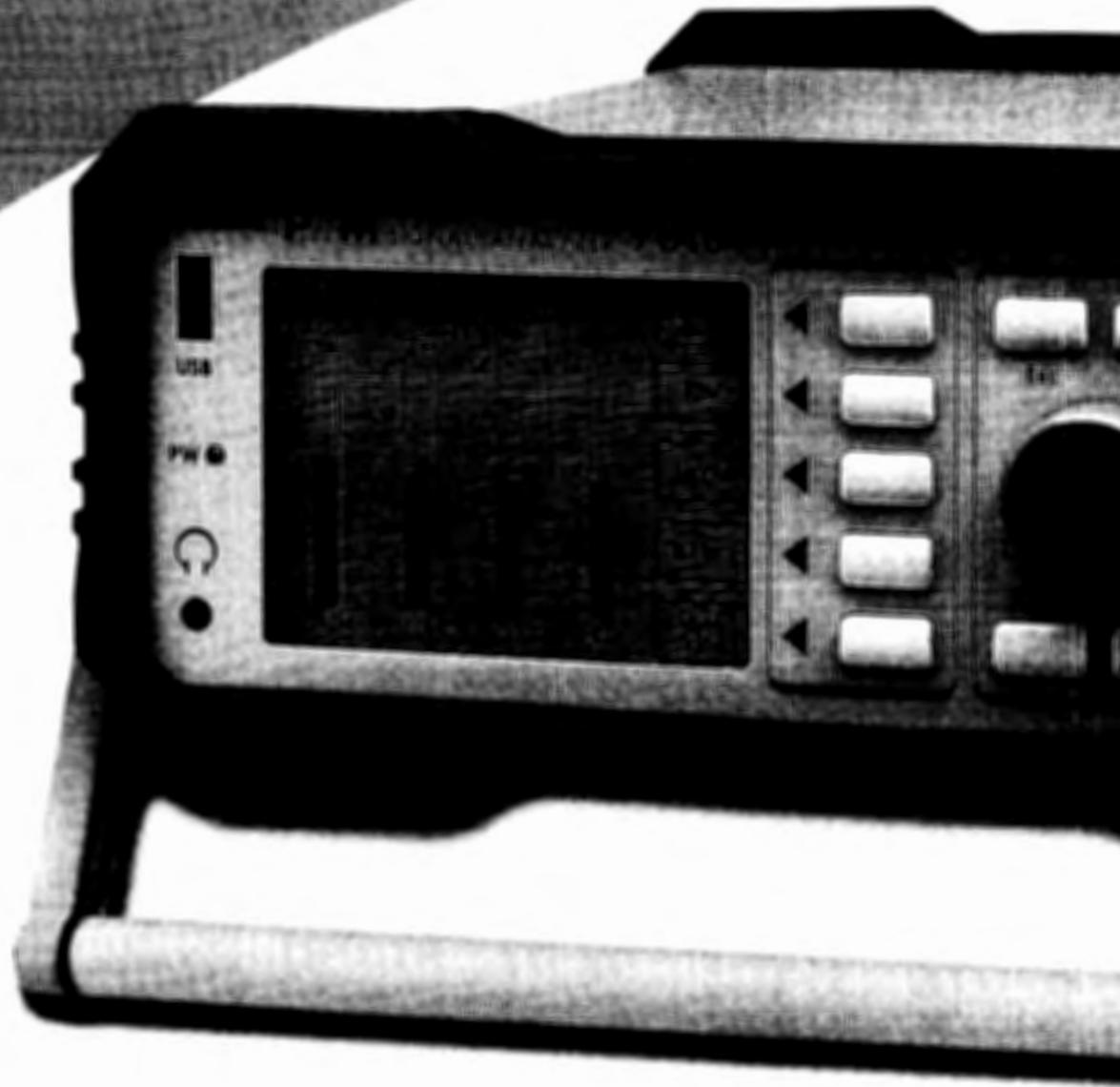
- BC-01: Biconical Antenna 30 to 200 MHz
- BL-01: Biconical Log Periodic Antenna 30 MHz to 6 GHz
- DR-01: Double-ridged horn Antenna 6 to 18 GHz
- LP-02: Log Periodic Antenna 200 MHz to 3 GHz
- LP-03: Log Periodic Antenna 800 MHz to 6 GHz
- LP-04: Log Periodic Antenna 200 MHz to 6 GHz
- TR-01: 60-180 cm wooden extendable tripod
- VDH-01: Van der Hoofden Test Head 20 kHz to 10 MHz
- Antenna Set AS-02 (BC01+LP02+TR01)
- Antenna Set AS-03 (BC01+LP02+LP03+TR01)
- Antenna Set AS-04 (BC01+LP04+TR01)
- Antenna Set AS-05 (BC01+LP04+DR01+TR01)
- Antenna Set AS-06 (BC01+LP-02+LP03+DR01+TR01)
- Antenna Set AS-07 (BL01+TR01)
- Antenna Set AS-08 (BL01+DR01+TR01)
- 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
- Ansi 63.5 Antenna Factor
- SAE ARP 958-D
- Free-Space Antenna Factor
- CAL-6630: Traceable calibration

### LISNs/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
- RF-300: Van Veen Loop
- SBRF 4: RF Switching Box
- SHC-1/1000: Voltage probe, 1000 Vac, 35 dB
- SHC-2/1000: Voltage probe, 1000 Vac, 30 dB

# PMM

PMM 9010: the new fully digital receiver that outperforms competition is here



Once more Narda STS is anticipating the market and competition by introducing the first Fully Digital EMC Receiver and Analyzer that meets all the requirements of the latest civilian and military standards (CISPR-16-1-1 & MIL-STD-461F).

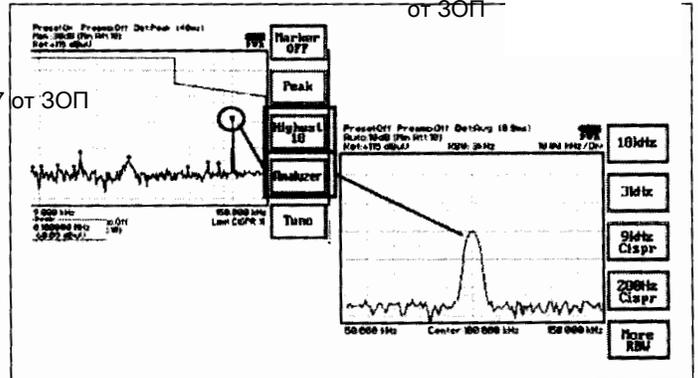
Every circuit in the receiver is digital now, with the only exception of the attenuator

This architecture, carefully designed to deliver outstanding performances in a very small volume, is the latest development of Narda STS R&D Labs, well known all around the world with the former name "PMM" for their original and effective technical solutions.

Add the usual "Easy-to-Use" Narda STS

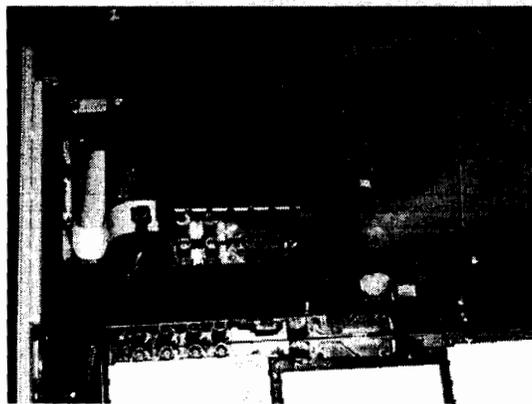
Информацията в този документ е заличена на основание чл. 37 от ЗОП

Информацията в този документ е заличена на основание чл. 37 от ЗОП



The PMM 9010 features several useful functions: as an example, pictures above show the automatic highest peaks finder and the intuitive way to observe the selected peak in Analyzer mode: from measurement to debugging at users' fingertips!

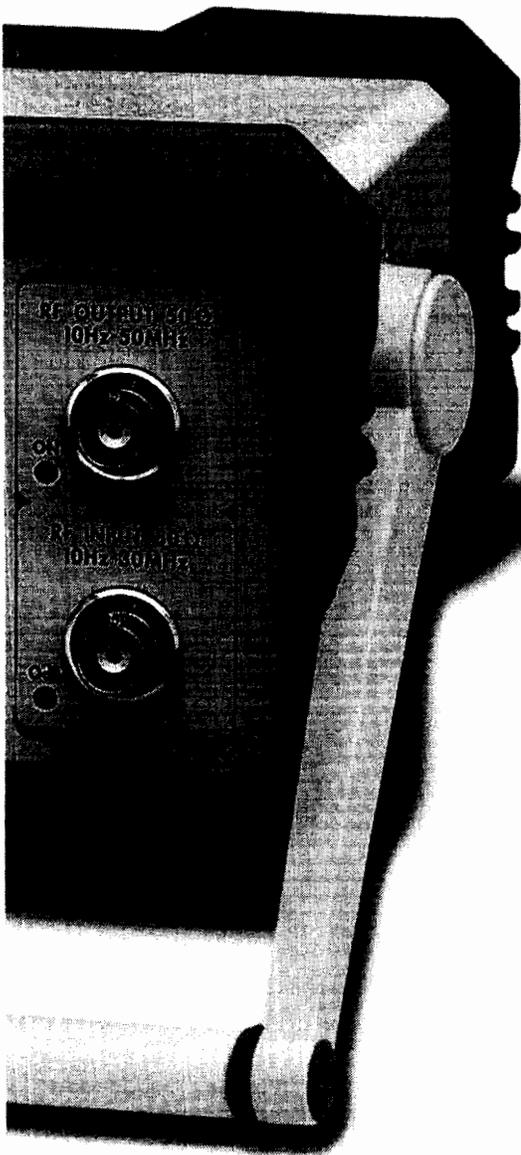
Practically maintenance-free and exceptionally stable, the PMM 9010 EMI Receiver is the ideal solution for reliable measurements day after day, month after month, year after year.



Moreover, the outstanding feature that service can be easily done by simply replacing plug-in pre-calibrated subassemblies, represents a highly valued advantage in case, for example, of damage to the RF front-end.

Indeed, even when an excess of energy or a too high signal would burn the input stage, the Customer can be back in operation and continue his work in the shortest possible time, being sure that his receiver is still perfectly calibrated.

The Narda STS Sales Network is highly qualified and will be your consultant for every measurement problem: ask the experts and make your job easier with PMM 9010, the guiding star in the EMC market.



of the new PMM 9010 is almost complete. PMM 9010: the new fully digital receiver that outperforms competition is here. Continuing the tradition of offering innovative technical solutions for easy and practical measurements applications, the PMM 9010 - a fully digital receiver in the 10 Hz to 30 MHz range - is the first cornerstone of a system which q1

upgrading the PMM 9010 with specific options, e.g. Click Meter, MIL-STD filters, and accessories - LISNs and probes - providing a full compliance with almost all international standard or proprietary specifications. Moreover, the modular construction, based on pre-calibrated subassemblies, offers the fastest and most convenient recalibration

Информацията в този документ е заличена на основание чл. 37 от ЗОП

# PMM

## Technical Specifications

Информацията в този документ е заличена на основание чл. 37 от ЗОП

### PMM 9010 - CISPR 16-1-1 & MIL-STD-461F Compliant

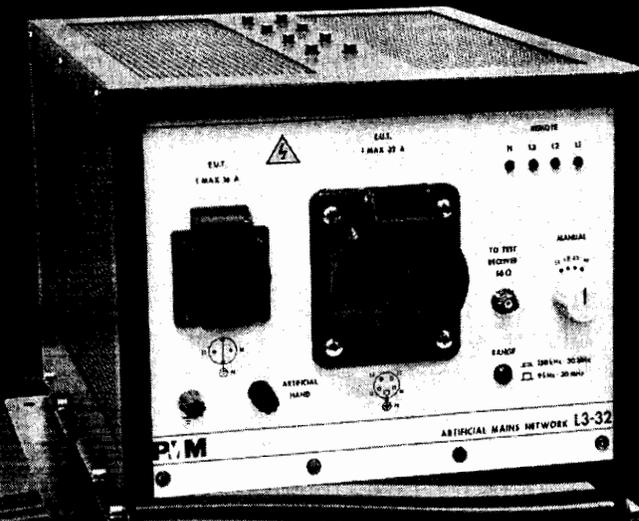
<b>Frequency range</b> Resolution Reference frequency	10 Hz to 30 MHz 0,1 Hz < 1 ppm	<b>Display units</b> Displayed dynamic	dBm, dB $\mu$ V, (dB $\mu$ A, dBpW, dB $\mu$ V/m, dB $\mu$ A/m by PMM Emission Suite) 80, 100, 120 dB selectable
<b>RF input</b> VSWR 10 dB RF att. 0 dB RF att. Attenuator Preamplifier gain Pulse limiter	Zin 50 $\Omega$ , BNC fem. < 1,2 < 2 0 dB to 35 dB (5 dB steps) 20 dB (after preselector) Built in (selectable)	<b>Spectrum Analyzer mode</b> Span/division	100 Hz $\div$ 3 MHz
<b>Max input level</b> (without equipment damage) Sinewave AC voltage Pulse spectral density	137 dB $\mu$ V (1 W) 97 dB $\mu$ V/MHz	<b>Measurement accuracy</b>	S/N > 20 dB 10 Hz to 9 kHz $\pm$ 1,0 dB Typ. 9 kHz to 30 MHz $\pm$ 1,0 dB
<b>Preselector</b> Frequency ranges	(One LP and six BP filters) < 9 kHz 9 kHz to 150 kHz 150 kHz to 500 kHz 500 kHz to 3 MHz 3 MHz to 10 MHz 10 MHz to 20 MHz 20 MHz to 30 MHz	<b>RF output</b> Tracking & CW Generator Frequency range Level Level accuracy (10 Hz to 30 MHz)	Zout 50 $\Omega$ , BNC fem. 10 Hz to 50 MHz 60 to 90 dB $\mu$ V (0.1 dB step) $\pm$ 0,5 dB
<b>IF bandwidth</b> 3 dB bandwidth 6 dB bandwidth	3, 10, 30, 100, 300 kHz 0,2 and 9 kHz (CISPR 16-1-1) 10, 100 Hz; 1, 10 kHz (MIL-STD-461) (100 kHz, 1 MHz MIL-STD-461 when operated with 9030 or 9060)	<b>Demodulation</b>	AM; volume setting by knob
<b>Noise level</b> (Preamplifier ON)	9 - 150 kHz < -8 dB $\mu$ V (QP) (200 Hz BW) < -15 dB $\mu$ V (AV)  0,15 - 30 MHz < -4 dB $\mu$ V (QP) (9 kHz BW) < -10 dB $\mu$ V (AV)	<b>Autocalibration</b>	Internal reference source
<b>Detectors</b> (simultaneous on PMM Emission Suite)	Peak, Quasi-Peak, Average, RMS, RMS-Average, C-Average, APD Smart Detector function	<b>I/O Interface</b>	RS-232 High Speed Optical (2 channels; 2nd for future extension) USB Rear USB Front (future extension) User Port (drives PMM LISNs) Bluetooth (optional) IEEE-488 (optional)
<b>Level measuring time</b> (Hold time)	CISPR 16-1-1 as default Variable, 1 ms to 30 sec.	<b>Click meter</b> (Optional)	1 to 4 simultaneous channels Full compliant to EN 55014-1
<b>Stand-alone display &amp; measure functions</b>	Marker; marker peak; marker to center; highest peaks; move peak to Analyzer & Manual modes Store & Load: - up to 11 traces (sweep mode)	<b>Operating temperature</b>	0° to 40°C
		<b>Power supply</b>	10 - 15 Vdc, 2.5A Li-Ion rechargeable plug-in battery (8h avg. duration) AC universal adapter/charger
		<b>Dimensions</b>	235x105x335 mm
		<b>Weight</b>	4,1 kg

C

Информация в този документ е заличена на основание чл. 37 от ЗОП

<b>SPR conformity</b>	CISPR 14-1, CISPR 16-1-1, CISPR 16-1-2
<b>Interface</b>	RS-232, USB
<b>Application software</b>	PCA - PMM Click Analysis software. Four channels IF and QP time diagram, with click detection and analysis. Measurement log and report. PCG - PMM Click Generation software. CISPR 16-1-1 standard, annex F and user's definable test generation.
<b>Power supply</b>	12 Vdc, 0,7 A
<b>Built-in LISN</b>	
Measuring frequency range	150 kHz to 30 MHz
Continuous rated output current	16 A
Max permissible operating voltage	250 Vac – 350 Vdc
AC supply frequency range	DC to 60 Hz
CISPR equivalent circuit	50 Ω // 50 μH
Test socket	SCHUKO 2P+E
Line plug	IEC 60320 C20
Artificial hand	4 mm plug
RF output	Internal switch or BNC fem.
<b>Operating temperature</b>	-5° to 45°C
<b>Dimensions</b>	235 x 105 x 335 mm
<b>Weight</b>	4.1 kg
<b>Standard accessories</b>	LISN mains cable, 25 cm BNCm - BNCm cable, 25 cm DB9m - DB9m cable, USB cable, AC/DC power adapter, PCA PMM Click Analysis software, PCG PMM Click Generation software, user's manual, standard calibration certificate; soft carrying case .

# L3-32



## FEATURES

- 10 kHz to 30 MHz frequency range
- Up to 32A continuous rated output current
- Built-in, selectable 150 kHz high pass filter
- Artificial Hand circuit
- Suitable for DC to 60 Hz power lines
- Local and remote control from PMM EMI receivers
- Meets the requirements of several standards including CISPR 16-1-2, VDE 0876, FCC part 15, MIL-STD 461F
- Powering the EUT
- EUT termination to a standardized impedance with respect to ground
- Couples the measuring receiver to the disturbance generated by the EUT
- Decouples the measuring receiver from unwanted RF signals from the power line

Artificial networks or Line Impedance Stabilization Networks (LISNs) are ancillary devices for the repeatable, accurate measurement of the disturbance voltage that EUT (equipment under test) may inject into the power mains.

This is accomplished through the use of reference impedance values and phase responses across the frequency range of the test.

L3-32 is suitable for measurement on AC 3-phase power circuits from DC to 60 Hz.

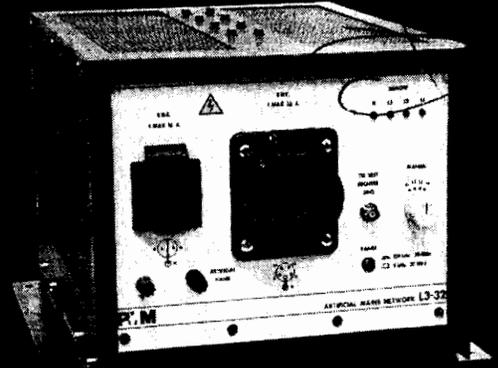
The equivalent V-Network circuit of  $50 \Omega // (5 \Omega + 50 \mu\text{H})$  with  $250 \mu\text{H}$  choke is fully compliant with common standards.

PMM LISNs feature robust and stable mechanical construction, high quality electric components, easy and perfect grounding and solid input-output power connections. They can be used in conjunction with any EMI receiver or spectrum analyzer and are built to provide safe, repeatable and accurate measurements.

# L3-32

## SPECIFICATIONS

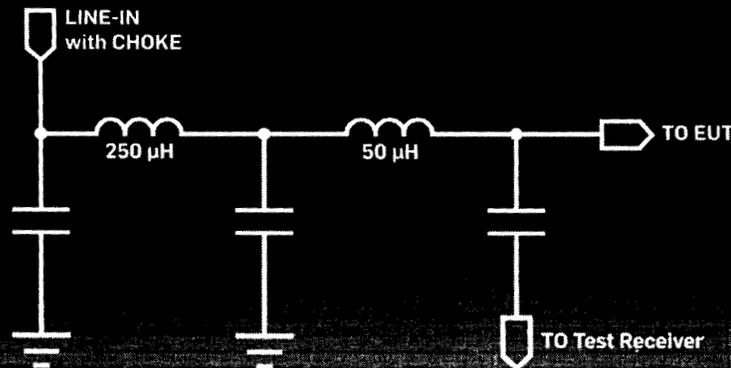
Frequency range	9 kHz to 30 MHz
Max. continuous rated output current	IEC plug 32 A Schuko plug 16 A
Max. operating voltage	
Single-phase (L/N) (L/PE) (N/PE)	230 Vac; 325 Vdc
Three-phase (L/PE) (N/PE) (L/L) (L/N)	230 Vac; 325 Vdc 400 Vac; 565 Vdc
Input mains frequency range	DC to 60 Hz
Equivalent circuit	50 Ω // [5 Ω + 50 μH] with 250 μH choke
RF output	BNC female
Test item	32 A IEC connector 16 A SCHUKO connector
Operating temperature	-10 °C to +40 °C
Storage temperature	-25 °C to +75 °C
Dimensions (W x H x D)	342 x 254 x 510 mm
Weight	16,5 kg



**L3-32** 3-phase Artificial Mains Network  
Includes: IEC mains plug, RF cable, LISN remote control cable, user's manual, calibration certificate.

**LISN service kit**  
(AC-BNC adapter for LISN verification and calibration)

- As a safety precaution, due to the ground protection relays, properly rated insulating transformers must be installed between the power mains and the LISN inputs.
- Noise levels may require the installation of properly rated mains filters to reduce unwanted signals.



L3-32 equivalent circuit

## Related products

### Receivers

- 7010/00: EMI Receiver 150 kHz to 1 GHz
- 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
- 9010: EMI Receiver 10 Hz to 30 MHz
- 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

### LISNs

- L2-16B: single phase AMN, 16 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

### RFI Filters

- FIL-L2-16F: single phase RFI filter, 16 A
- FIL-L2-24M: single phase RFI filter, 24 A
- FIL-L3-32M: 3-phase+neutral RFI filter, 32 A
- FIL-L3-70M: 3-phase+neutral RFI filter, 70 A