

High Current CDN

A Versatile high power CDN for IEC61000-4-6 and EN55022 testing

S46M5/9

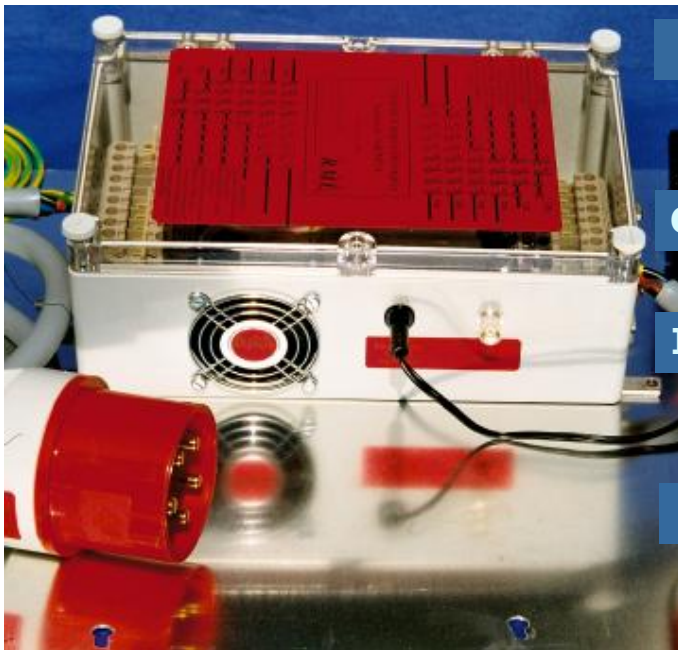
- Up to 100A /line for single phase products.
- Up to 50A/line for 3 phase requirements.
- High specification .. No compromises.
- Fully complies with EN61000-4-6.
- 4 high power lines plus 5 auxiliary lines.
- Reduce equipment costs and maximise flexibility due to the 'Versatile' feature. This CDN can be configured to suit a wide range different cable and EUT requirements.

The Coupling/Decoupling Network (CDN) facilitates the testing of EMC immunity by coupling RF directly to or from cables connected to the equipment under test. This technique is the preferred method for immunity testing according to IEC61000-4-6. CDNs can also be used for pre-compliant emissions measurements according to EN55022.

This Laplace S46M5/9 CDN is unique in offering the 'Versatile' feature.....

- Versatility.... The 46 series are programmable such that many different cable types can be accommodated with one CDN.
- High Power.... The S46M5/9 has 4 lines rated at 50A each which can be configured as 3 phase+N, or paralleled together to offer higher ratings .

Each model is shipped complete with instructions and power supply (for the fan). Calibration adaptors and modular ground plane sets also available.



Flexible

One model covers many applications, thus reducing the need to hold several CDNs in stock. This S46M5/9 can be configured for M2, M3, M4, M5 requirements, plus up to 4 auxiliary lines.

Compliance

The type 46 CDNs are completely compliant with the specifications as detailed in IEC61000-4-6.

Integration

These CDNs are offered as an integral part of a complete immunity testing system. They can be used with any standard IEC46000-4-6 system, or with the RFIC-4-6 system from Laplace.

Adaptable

This CDN can be used in M9 configuration in which up to 5 6amp lines can be used for feedback sensing lines, motor drive control or for energising the voltage measuring circuits of electricity meters (consumer units).



High power CDN for immunity testing to IEC61000-4-6

The S46M5/9 CDN is a unique solution to the problem of applying IEC61000-4-6 immunity testing to high power cables and/or multi-purpose cables carrying both power and control lines. It complies with the strictest interpretation of the standard. The generator source impedance forms a part of the EUT interface impedance thus requiring the use of the traditional input power attenuator and pre-test calibration procedure.

The type 46MZZ impedance adaptors facilitate this calibration process.

Note that conventionally, CDNs are not versatile, for instance an M4 cannot be used for an M3 or M5 application. The Laplace CDNs however, are designed such that this versatility is achieved whilst retaining full compliance with the standards.

Connectivity

Configuration	Connections	50Amp lines.	EUT power	Earth	Auxiliary lines
M2	L1, N	2 pairs	100A		Up to 5
M3	L1, N, E	2 pairs	100A	6A	Up to 4
M3 (delta)	L1, L2, L3	3	50A	6A	Up to 4
M4	L1, L2, L3, N	4	50A	6A	Up to 4
M5	L1, L2, L3, N, E	4	50A	6A	Up to 4
M6, M7, M8, M9	Any combination of the above				

The versatility of this CDN is achieved by the use of specially designed internal components and links at the input and output connectors. Novel anti-resonance elements reduce the leakage inductance of the common-mode choke and so allow use of only some of the network conductors without loss of accuracy. They also minimise the spurious differential-mode excitation of the equipment under test that has hitherto been a particular problem for the M3 application of the standard. (See paper 4F1, Zurich EMC Symposium, 2003)

SPECIFICATION

Injection/receiver circuit:

EUT rf common mode impedance

0.15MHz—26MHz: 150 ± 20Ω

26MHz—80MHz: 150 +60 -45Ω

Note that the CDN provides 100Ω and the rf source provides the balance (50Ω)

RF input/output BNC socket.

3W max cont. input power.

User Circuit:

This network can be configured as any of the networks for power cables as described in EN61000-4-6 and for a larger number of cores. As required in the standard the basic injection impedance of 150Ω in series with >30nF is applied by proportionately higher impedance injection components connected to each core. Physically the CDN carries 4 major circuits of 4.65mm² cross section, together with 5 minor circuits of 0.6mm² cross-section. The latter may be used in parallel as a ground wire for application as M1 to M5 inclusive, and used separately for M6 to M9.

Connectors:

EUT and AE cables are connected to screw terminal blocks that can accommodate 0.5 to 10mm² flexible stranded or solid conductors

Max voltage:

440Vac.

Max current per core:

At 30°C ambient. Halve these figures if fan not used.

M5, M4:

50amps on 3 phase and neutral or 4 wires carrying DC.

M3:

100Amps on 2 wires and 30 amps on third.

M2:

100Amps on 2 wires. Parallel major circuits in pairs.

M6-M9:

The above ratings apply to circuits 1 to 4.

Circuits 5 to 9 are rated at 6Amp each.

Max unbalanced current:

100mA Pk or DC per cable. (including M1 operation)

AE filter capacitance:

22nF on each major circuit. 4n7 on each minor circuit.

All capacitors are safety rated.

Longitudinal Conv. Loss:

Typically >40dB

Cooling fan:

12v dc 1.3W

Physical:

280 x 180 x 105mm excl. connectors

Weight: 1.6kg

Accessories included:

AC/DC adaptor for fan and User manual.

Recommended Accessories:

Calibration adaptor (pair). Model 46MZZ.

Designed & developed by
Richard Marshall Ltd
www.design-emc.co.uk