



# DC-LISN-M2-100 DUAL-LINE-V-Y-Δ-LISN FOR GCPC



DC-LISN-M2-100

- Frequency range 150 kHz to 30 MHz
- 150 Ω DC-LISN for photovoltaic inverters
- Switch for selecting the LISN type: V, Y, Delta
- 150 A for 30 min

Teseq introduces a new Line Impedance Stabilization Network (LISN) for conducted emissions testing of Grid Connected Power Conditioners (GCPC). The DC-LISN-M2-100 is designed for measuring disturbances on DC power ports in the frequency range from 150 kHz to 30 MHz. Research results have shown that a typical artificial mains V-network as described in CISPR 16-1-2 can not be used for the assessment of unsymmetrical disturbances of a photovoltaic inverter's DC port. CDNs based on IEC/EN 61000-4-6 are typical not specified for high common-mode currents and differential-mode disturbances. Additionally, they are undefined below 150 kHz.

The DC-LISN-M2-100 provides enhanced LISN performance with a common-mode impedance of 150 Ω and a differential-mode impedance of 100 Ω. Depending on the switch position, the LISN works as V, Y or Delta shape LISN. Further, the DC-LISN offers defined termination impedance in the frequency range 1 kHz to 150 kHz.

The DC-LISN-M2-100 conforms to the latest requirements of the international standard working group MT GCPC: GRID CONNECTED POWER CONDITIONERS.

### Technical specifications

Nominal voltage:	1000 VDC (between the lines)	
Max. operating voltage:	1500 V (VDC + VAC ripple voltage)	
Max. CM voltage ≤100 Hz:	750 VDC, 500 VAC (line to ground)	
Test voltage:	2 kV, DC, 2 sec (line to ground)	
Voltage drop:	3 V @ 100 A	
CM decoupling capacitance:	<100 nF	
Nominal current (CM + DM):	100 A with fans on	
Max. operating current (CM + DM):	150 A with fans on, 30 min	
Mains sockets EUT/AE:	butterfly screw for binding posts with flat clamp	
RF socket:	N, 50 Ω	
Frequency range:	150 kHz to 30 MHz	1 kHz to 150 kHz
Common-mode impedance:	150 Ω ±20 Ω	≥ 10 Ω (AE open)
Phase angle:	0° ± 40°	not specified
Differential-mode impedance:	100 Ω ±20 Ω	≥ 10 Ω (AE open)
Phase angle:	0° ± 40°	not specified
Voltage division factor:	20 dB ± 2 dB	> 68 dB to > 18 dB
Insertion Loss (EUT – AE, CM):	> 20 dB	decreasing with 40 dB/dec.
Insertion Loss (EUT – AE, DM):	> 20 dB	decreasing with 40 dB/dec.
LCL:	> 26 dB	> 26 dB (10 kHz to 150 kHz)
Discharge resistors:	>1.5 MΩ	
Notes: All symmetrical parameters are only valid for a symmetrical impedance of 100 Ω.		
CM = Common-mode, DM = Differential-mode		

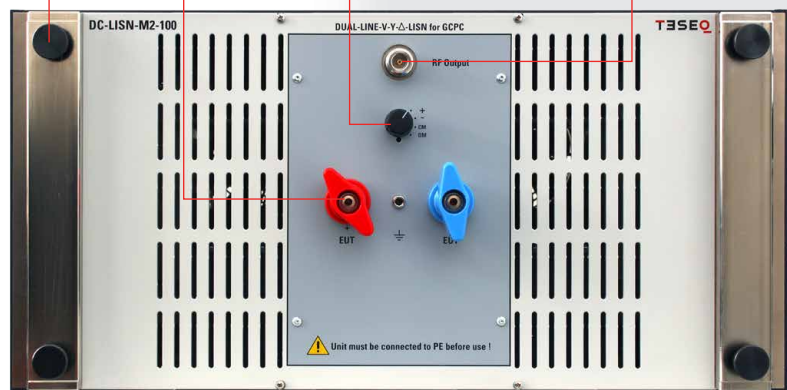


Advanced Test Solutions for EMC

# DC-LISN-M2-100 DUAL-LINE-V-Y-Δ-LISN FOR GCPC

## Front panel

- Bar for plane earth connection
- EUT port (connected to DC port of PV inverter)
- Switch for selecting the LISN type: V shape +, V shape -, Y shape (CM) and Δ shape (DM)
- Receiver port



## Back panel

- Fans power input, selectable for 230 V or 110 V range
- Fans
- EUT power input (PV generator/simulator)
- Protective earth connection



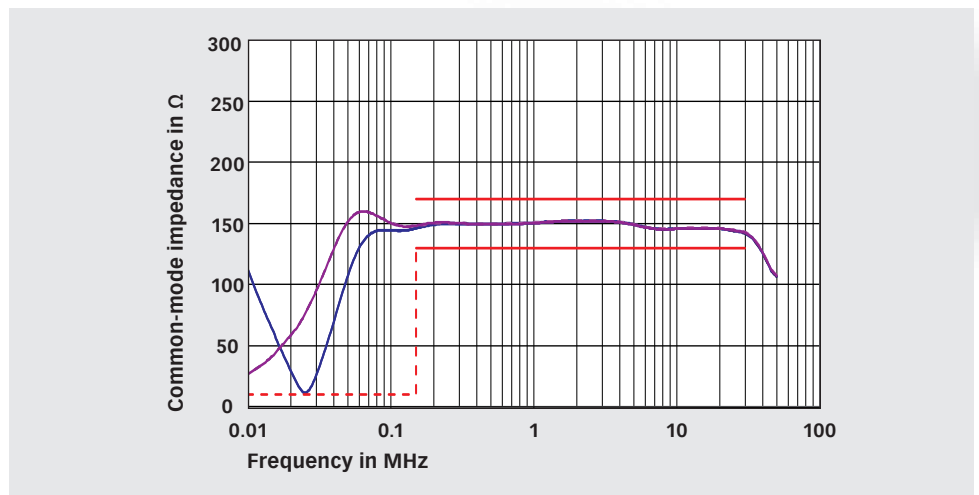
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Advanced Test Solutions for EMC

# DC-LISN-M2-100 DUAL-LINE-V-Y- $\Delta$ -LISN FOR GCPC

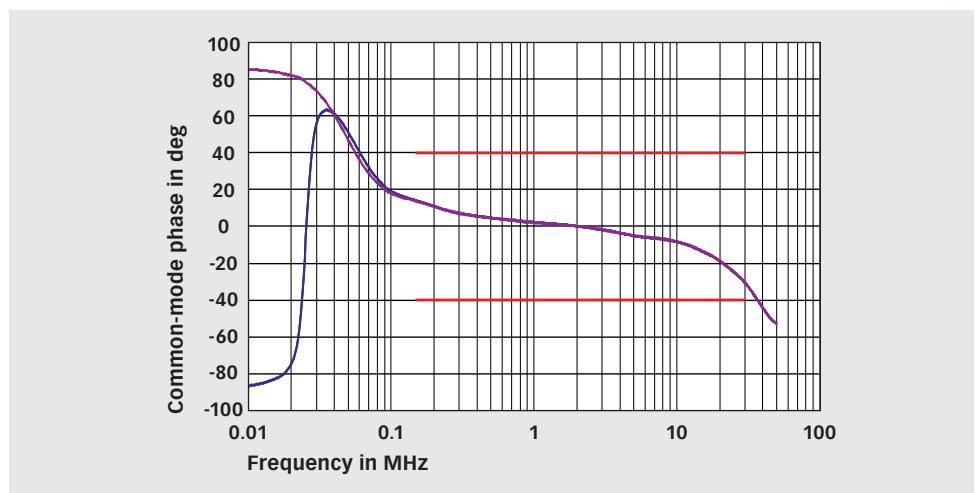
Typical common-mode impedance for +, -, CM and DM

— AE open, — AE short, - - - Limit AE open < 150 kHz — Limit



Typical common-mode phase for +, -, CM and DM

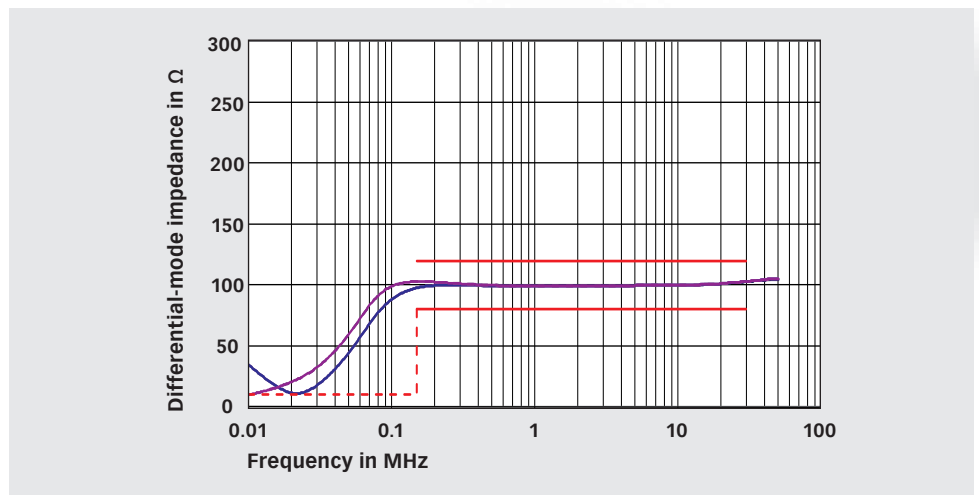
— AE open, — AE short, — Limit



# DC-LISN-M2-100 DUAL-LINE-V-Y- $\Delta$ -LISN FOR GCPC

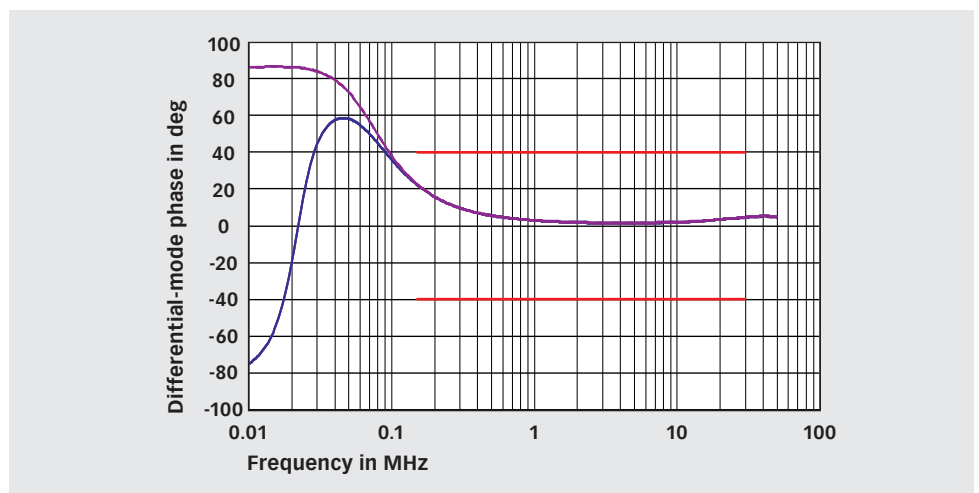
Typical differential-mode impedance for +, -, CM and DM

— AE open, — AE short, - - - Limit AE open < 150 kHz — Limit



Typical differential-mode phase for +, -, CM and DM

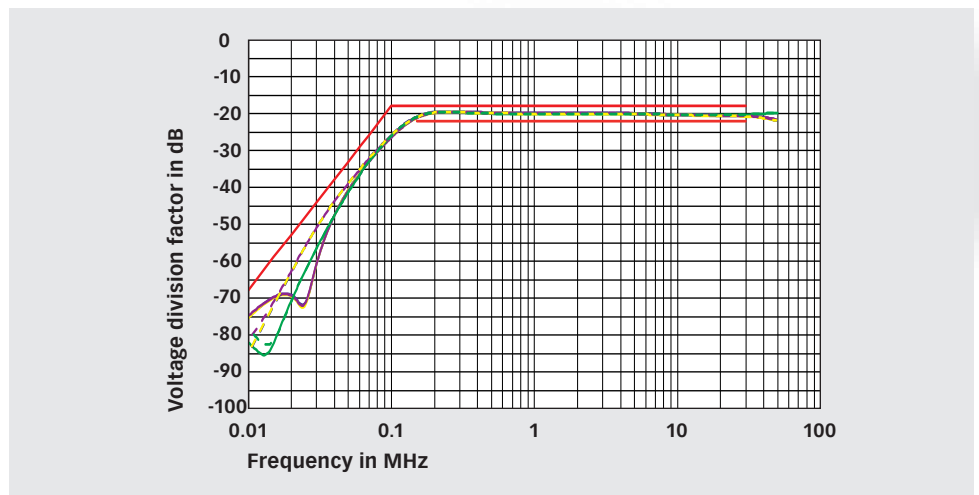
— AE open, — AE short, — Limit



# DC-LISN-M2-100 DUAL-LINE-V-Y- $\Delta$ -LISN FOR GCPC

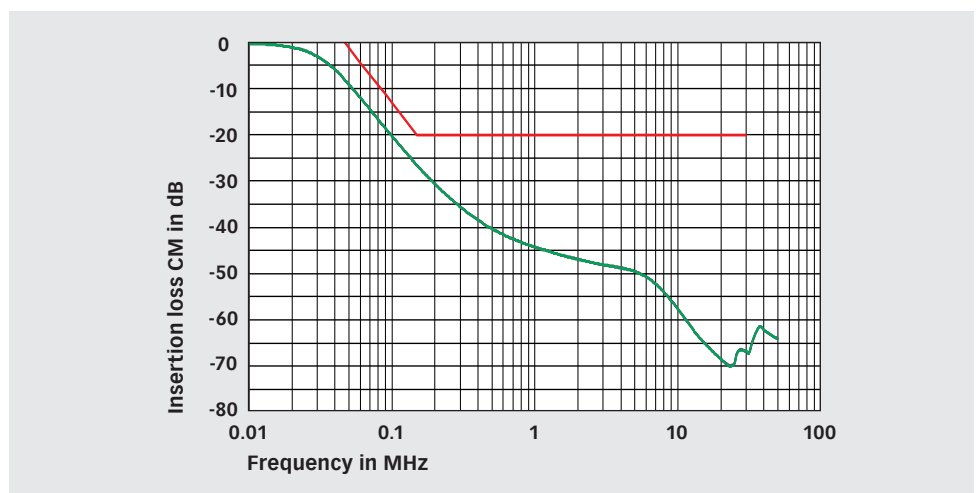
Typical voltage division factor (EUT - RF port, dotted line for AE shorted)

— + Port, — - Port, — CM, — DM, — Limit



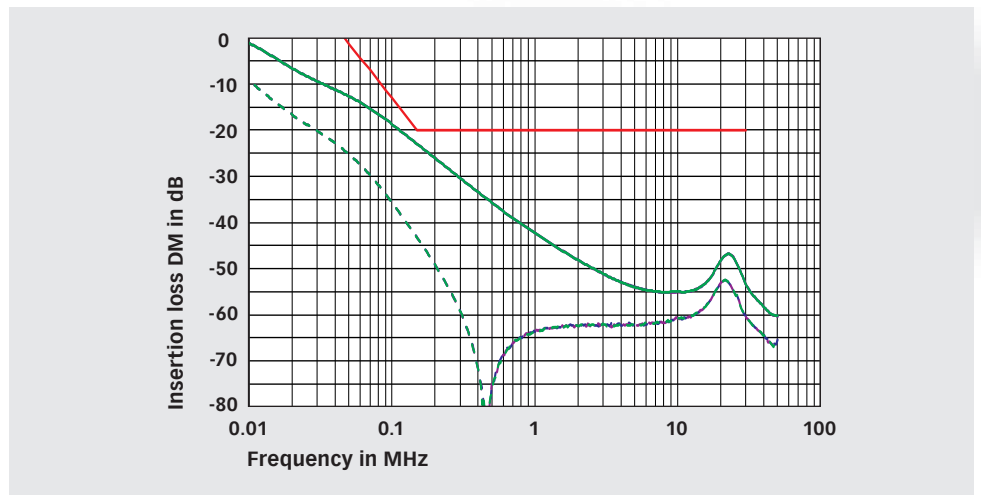
Typical insertion loss (common-mode, EUT - AE)

— + Port, — - Port, — CM, — DM, — Limit

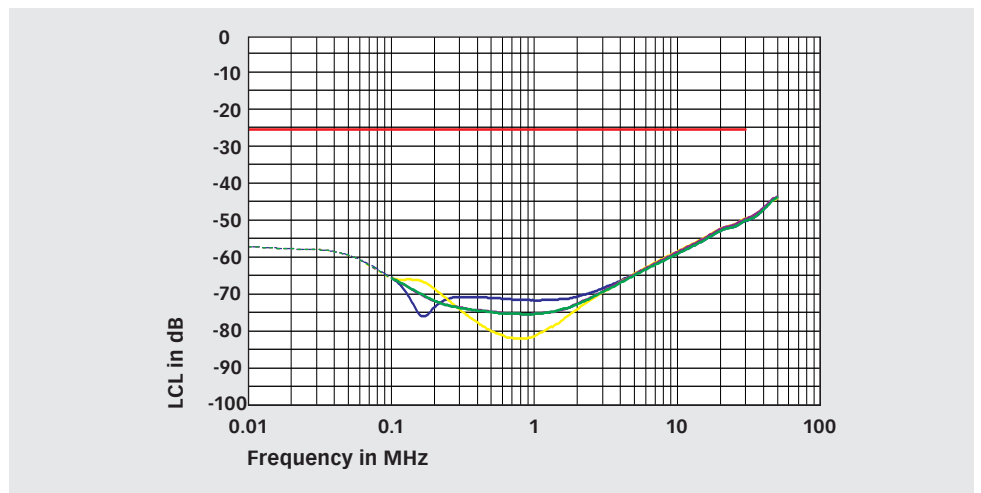


# DC-LISN-M2-100 DUAL-LINE-V-Y- $\Delta$ -LISN FOR GCPC

Typical insertion loss (differential-mode, EUT - AE, dotted line for additional 1  $\mu$ F)  
— + Port, — - Port, — CM, — DM, — Limit

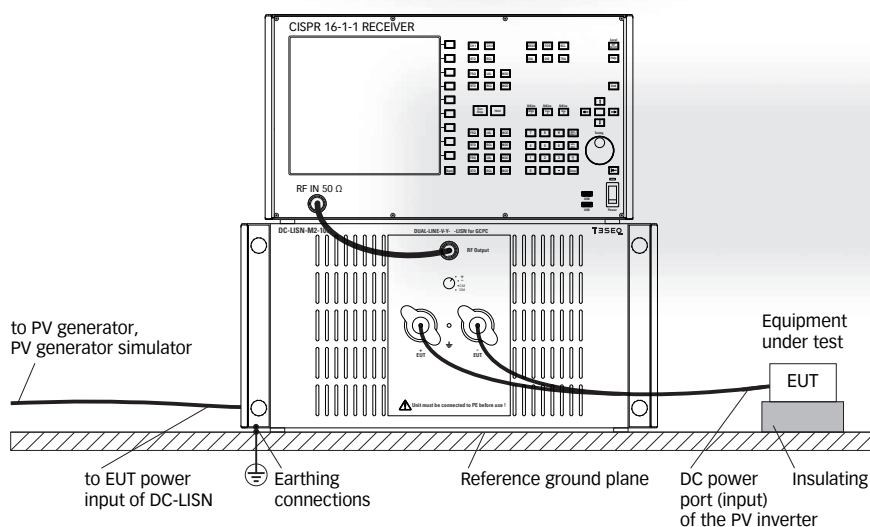


Typical longitudinal conversion loss (EUT)  
— + Port, — - Port, — CM, — DM, — Limit



# DC-LISN-M2-100 DUAL-LINE-V-Y-Δ-LISN FOR GCPC

## Measuring setup



## Mechanical specifications

Size (L x H x D):	484 mm x 237 mm x 564 mm (handles and unit supports can be removed for 19" / 6 HU format)
Weight:	approx. 27 kg

## Delivery information

Part number	Description
243885	DC-LISN-M2-100 Dual-Line-V-Y-Δ-LISN for GCPC, 100 A
243985	CAS DC-LISN-100 Calibration kit for DC-LISN-M2-100
97-243710	DC-LISN-TC Traceable calibration (ISO17025), order only with DC-LISN

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