



CN SERIES COUPLING NETWORK (CN) FOR IEC / EN 61000-4-16, DC TO 150 kHz



CN M232-AC

- Coupling networks designed for IEC / EN 61000-4-16
- M series for DC or AC power ports
- A series for communication ports, intended for unscreened, unbalanced lines
- T series for unscreened balanced pairs
- 4 mm banana sockets for M and A series
- Terminal block for M type with 100 Amps
- RJ45 sockets for T series

IEC / EN 61000-4-16 specifies the design and performance of a range of coupling networks. Each coupling network is related to the type of cable and connector. An specific 60 dB decoupling network is required in addition to the coupling network type M and AF.

Please contact Teseq or visit www.teseq.com for the IEC / EN 61000-4-16 system solution.

Technical specifications M type

| Product name | Lines | EUT test port | Max. EUT current | Max. EUT voltage | Connectors EUT and AE port |
|----------------|-------|---------------|------------------|---------------------------|----------------------------|
| CN M232-DC | 2 | DC power | 32 A | 50 V* | 4 mm safety banana |
| CN M232-300-DC | 2 | DC power | 32 A | 300 V* (fans switched on) | 4 mm safety banana |
| CN M232-AC | 2 | AC power | 32 A | 250 V | 4 mm safety banana |
| CN M332-AC | 3 | AC power | 32 A | 250 V | 4 mm safety banana |
| CN M432-AC | 4 | AC power | 32 A | 250 V / 400 V** | 4 mm safety banana |
| CN M4100-AC | 4 | AC power | 100 A | 400 V / 690 V** | Terminal block |
| CN M432-3LN-AC | 4 | AC power | 32 A | 250 V / 400 V** | 4 mm safety banana |
| CN M532-AC | 5 | AC power | 32 A | 250 V / 400 V** | 4 mm safety banana |

*) Maximum potential free line to line voltage. The maximum disturbance test level is in relation to the EUT supply voltage. See the advice given in the user manual in case of EUT supply voltage with connection to ground.

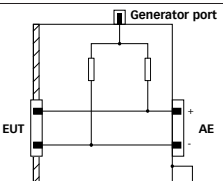
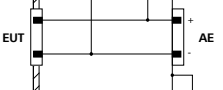
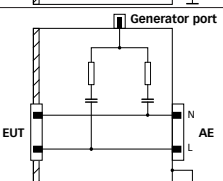
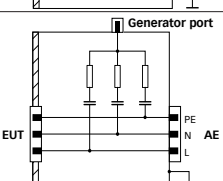
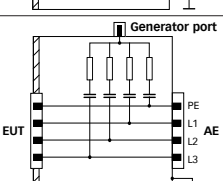
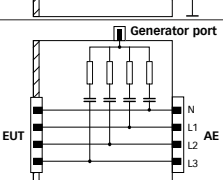
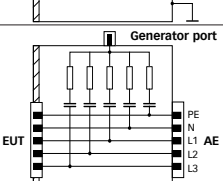
**) Maximum line to line voltage

CN SERIES

COUPLING NETWORK (CN)

FOR IEC / EN 61000-4-16, DC TO 150 kHz

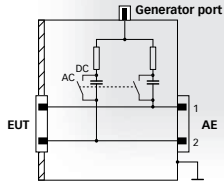
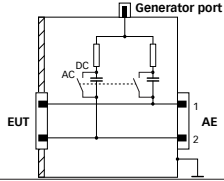
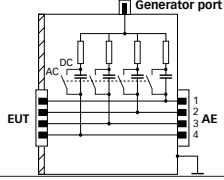
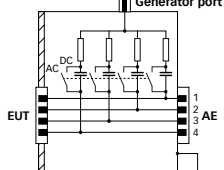
Technical specifications M type (continued)

| Product name | Schematic circuit example | Disturbance signal frequency range | Disturbance signal max. test level |
|-------------------------|---|------------------------------------|---|
| CN M232-DC |  | DC | 50 V* cont./300 V 1 s |
| CN M232-300-DC |  | | 300 V* cont./300 V* 1 s |
| CN M232-AC |  | 15 Hz to 150 kHz | 50 V cont./300 V 1 s at 16 ^{2/3} Hz, 50 Hz and 60 Hz |
| CN M332-AC |  | 15 Hz to 150 kHz | 50 V cont./300 V 1 s at 16 ^{2/3} Hz, 50 Hz and 60 Hz |
| CN M432-AC, CN M4100-AC |  | 15 Hz to 150 kHz | 50 V cont./300 V 1 s at 16 ^{2/3} Hz, 50 Hz and 60 Hz |
| CN M432-3LN-AC |  | 15 Hz to 150 kHz | 50 V cont./300 V 1 s at 16 ^{2/3} Hz, 50 Hz and 60 Hz |
| CN M532-AC |  | 15 Hz to 150 kHz | 50 V cont./300 V 1 s at 16 ^{2/3} Hz, 50 Hz and 60 Hz |

*) The maximum disturbance test level is in relation to the EUT supply voltage. See the advice given in the user manual in case of EUT supply voltage with connection to ground.

CN SERIES COUPLING NETWORK (CN) FOR IEC / EN 61000-4-16, DC TO 150 kHz

Technical specifications A type

| Product name | Lines | EUT test port | Max. EUT current | Max. EUT voltage | Connectors EUT and AE port | Schematic circuit example | Disturbance signal | |
|--------------|-------|---------------------------------------|------------------|--------------------|----------------------------|--|--|--|
| | | | | | | | Frequency range | Max. test level |
| CN A201-R | 2 | Communication: unshielded, unbalanced | 16 A | 50 V DC, 250 V AC* | 4 mm safety banana |  | DC, 15 Hz to 150 kHz (range remote switchable) | 50 V cont. / 300 V DC** 1 s, 100 V 1 s at 16 ² / ₃ Hz, 50 Hz and 60 Hz |
| CN A201-M | 2 | Communication: unshielded, unbalanced | 16 A | 50 V DC 250 V AC* | 4 mm safety banana |  | DC, 15 Hz to 150 kHz (range manually switchable) | 50 V cont. / 300 V DC** 1 s, 100 V 1 s at 16 ² / ₃ Hz, 50 Hz and 60 Hz |
| CN A401-R | 4 | Communication: unshielded, unbalanced | 16 A | 50 V DC 250 V AC* | 4 mm safety banana |  | DC, 15 Hz to 150 kHz (range remote switchable) | 50 V cont. / 300 V DC** 1 s, 100 V 1 s at 16 ² / ₃ Hz, 50 Hz and 60 Hz |
| CN A401-M | 4 | Communication: unshielded, unbalanced | 16 A | 50 V DC 250 V AC* | 4 mm safety banana |  | DC, 15 Hz to 150 kHz (range manually switchable) | 50 V cont. / 300 V DC** 1 s, 100 V 1 s at 16 ² / ₃ Hz, 50 Hz and 60 Hz |

*) Maximum operating voltage is in relation to the frequency: 250 V AC at 50/60 Hz, 50 V AC at 10 kHz

**) Maximum potential free line to line voltage.



EUT port of CN A401-R or CN A401-M



AE port of CN A401-R



AE port of CN A401-M

TESEO

Advanced Test Solutions for EMC

CN SERIES

COUPLING NETWORK (CN) FOR IEC / EN 61000-4-16, DC TO 150 KHZ

Technical specifications T type

| Model | CN T8-DC | CN T8-AC | CN T444-DC | CN T444-AC |
|--|---|---|---|---|
| Frequency range: | DC | 15 Hz to 150 kHz | DC | 15 Hz to 150 kHz |
| Line parameters: Connector (EUT and AE port): Application: PoE: | 4 pairs RJ45 1000BaseT no | 4 pairs RJ45 1000BaseT no | 2 pairs RJ45 10/100BaseT no | 2 pairs RJ45 10/100BaseT no |
| Power ratings (EUT and AE port) AC max. voltage (line to ground): DC max. voltage (line to ground): DC max. voltage (pair to pair): Current max.: Test voltage: Isolation voltage (EUT to AE): | 63 V (RF port open) 100 V (RF port open) dependent on test level 200 mA (line) 200 V DC, 2 s 1500 V _{rms} | 63 V 100 V 100 V 200 mA (line) 200 V DC, 2 s 1500 V _{rms} | 63 V (RF port open) 100 V (RF port open) dependent on test level 200 mA (line) 200 V DC, 2 s 1500 V _{rms} | 63 V 100 V 100 V 200 mA (line) 200 V DC, 2 s 1500 V _{rms} |
| Common mode impedance (EUT port) DC / 15 Hz to 150 kHz: | 150 Ω ±5 Ω | 150 Ω ±5 Ω (f >500 Hz) | 150 Ω ±5 Ω | 150 Ω ±5 Ω (f >500 Hz) |
| Coupling path (RF port / EUT port) Connector (RF port): RF voltage: | BNC 50 Ω <20 V | BNC 50 Ω <20 V | BNC 50 Ω <20 V | BNC 50 Ω <20 V |
| Voltage division factor (RF port to EUT port) DC / 15 Hz to 150 kHz: | 9.5 dB ±1 dB | 9.5 dB ±1 dB (f >500 Hz) | 9.5 dB ±1 dB | 9.5 dB ±1 dB (f >500 Hz) |
| Transmission bandwidth (EUT to AE)* (wanted signal) | >100 MHz sin. | >100 MHz sin. | >100 MHz sin. | >100 MHz sin. |
| Crosstalk (EUT and AE port) 1 MHz to 100 MHz: | ≥61 dB to ≥21 dB | ≥61 dB to ≥21 dB | ≥61 dB to ≥21 dB | ≥61 dB to ≥21 dB |
| Longitudinal conversion loss (LCL), (EUT port) 150 kHz: 1.5 MHz: 30 MHz: | >75 dB >60 dB >40 dB | >75 dB >60 dB >40 dB | >75 dB >60 dB >40 dB | >75 dB >60 dB >40 dB |
| Decoupling of common mode disturbance (RF port / AE port) DC / 15 Hz to 150 kHz: | >60 dB | >60 dB | >60 dB | >60 dB |

*) 3 dB bandwidth, all balanced parameters in relation to a symmetrical load of 100 Ω

CN SERIES

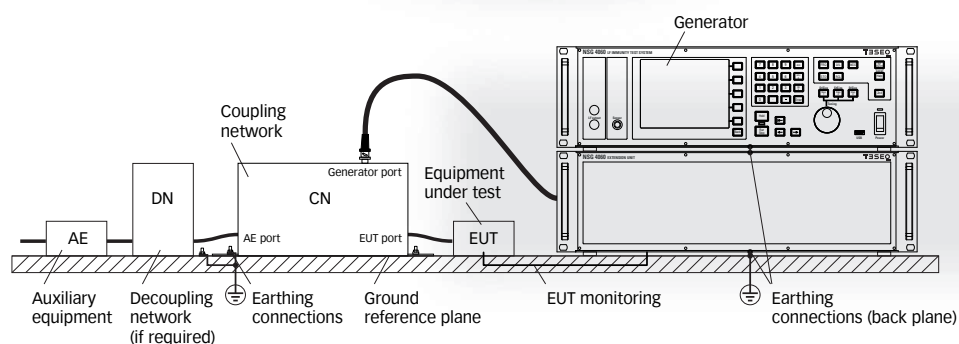
COUPLING NETWORK (CN)

FOR IEC / EN 61000-4-16, DC TO 150 kHz

EUT test set-up with Teseq NSG 4060



CN T series



CN M and A series (partly)

Mechanical specifications M and A series (except CN M232-300-DC and CN M4100-AC)

Size (W x H x D): 100 mm x 100 mm x 240 mm

Weight: approx. 1.5 kg

Mechanical specifications CN M232-300-DC and CN M4100-AC

Size (W x H x D): 200 mm x 200 mm x 470 mm

Weight: approx. 12 kg

Mechanical specifications T series

Size (W x H x D): 105 mm x 65 mm x 110 mm

Weight: approx. 0.5 kg

Power supply specifications for CN M232-300-DC

Power: 30 W

Input voltage: 90 to 264 VAC (plugs included for EU, UK, USA and AUS)

Output voltage: 24 V DC, ≥ 1.25 A, (DC plug, inner \varnothing 2.1 mm x outer \varnothing 5.5 mm)

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COUPLING NETWORK (CN) FOR IEC / EN 61000-4-16, DC TO 150 KHZ

Model No. and options

| Part number | Description |
|-------------|--|
| 255600 | CN M232-DC Coupling network accord. IEC 61000-4-16, M2, 32 A, DC |
| 257050 | CN M232-300-DC Coupling network accord. IEC 61000-4-16, M2, 32 A, 300 V DC |
| 255601 | CN M232-AC Coupling network accord. IEC 61000-4-16, M2, 32 A, AC |
| 255602 | CN M332-AC Coupling network accord. IEC 61000-4-16, M3, 32 A, AC |
| 255615 | CN M432-AC Coupling network accord. IEC 61000-4-16, M4, 32 A, AC |
| 258000 | CN M4100-AC Coupling network accord. IEC 61000-4-16, M4, 100 A, 690 V AC |
| 255614 | CN M432-3LN-AC Coupling network accord. IEC 61000-4-16, M4, 3xL,N (without PE line) 32 A, AC |
| 255613 | CN M532-AC Coupling network accord. IEC 61000-4-16, M5, 32 A, AC |
| 255603 | CN A201-R Coupling network accord. IEC 61000-4-16, AF2, 16 A, DC / AC, remote switch |
| 255604 | CN A201-M Coupling network accord. IEC 61000-4-16, AF2, 16 A, DC / AC, manual switch |
| 255605 | CN A401-R Coupling network accord. IEC 61000-4-16, AF4, 16 A, DC / AC, remote switch |
| 255606 | CN A401-M Coupling network accord. IEC 61000-4-16, AF4, 16 A, DC / AC, manual switch |
| 255607 | CN T8-AC Coupling network accord. IEC 61000-4-16, T8, 1000BaseT, AC |
| 255608 | CN T8-DC Coupling network accord. IEC 61000-4-16, T8, 1000BaseT, DC |
| 255609 | CN T444-AC Coupling network accord. IEC 61000-4-16, T4, 10/100BaseT, AC |
| 255610 | CN T444-DC Coupling network accord. IEC 61000-4-16, T4, 10/100BaseT, DC |
| 97-255600 | CN-TC Traceable calibration (ISO17025) for IEC 61000-4-16 requirements, order only with CN |

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