



## DCD 7 series

### 7 kV sr / st - series - coupling/decoupling network

The coupling networks from DCD 5 series are coupling/decoupling networks for a maximum amplitude of 7 kV for testing various test pulses on symmetrical and unsymmetrical interconnection lines.

#### DCD 7 sr

The AMETEK CTS DCD sr - series of coupling decoupling networks are multifunctional CDNs for the application of Surge and Ringwave pulses onto signal/data lines. The standard DCD sr - models combine three different applications; coupling of Surge pulse via capacitor or gas arrester and coupling of Ring wave pulses via capacitor being required by the relevant standards. The required coupling mode can easily be selected.

The surge coupling GTD (Gas Discharge Tube) is inside a simple jumper and can be changed depends the application with an ABD plug (Avalanche Breaking Diode). There are also two plugs for using an individual external coupling device.

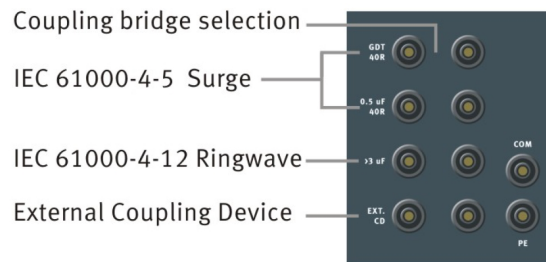
The DCD sr series also has the required decoupling inductors (20 mH) for each line. To protect the measuring system, an interchangeable, pluggable voltage protection module with overvoltage protection for 50 V DC is included in the delivery at the signal/data line inputs on the AE port. Each module protects 4 lines, so that coupling networks with 8 lines require two modules.

AMETEK CTS offers coupling networks for various voltage pulses up to 7 kV (see also DCD 5 series) as well as for signal currents up to 4 A. Various modules for 50 V DC and 250 V AC are available for pluggable voltage protection on the AE port.

#### MAIN FEATURES

- Coupling/decoupling networks according to IEC/EN 61000-4-5 and IEC/EN 61000-4-12
- Interchangeable AE port protection modules
- Test voltage up to 7 kV
- Line voltage 50 V, 250 V / up to 4 A
- sr - for unshielded unsymmetrical lines
- st - for unshielded symmetrical lines
- Designed for 4/8 lines (2/4 pairs)

#### Multifunctional coupling for Surge and Ringwave



The DCD sr - series of coupling decoupling networks are multifunctional CDNs for the application of Surge and Ringwave pulses onto signal/data lines.

Surge as per IEC 61000-4-5 Ed.3, Figure 9

- Capacitor 0.5 µF with 40 Ohm
- GDT gas arrester with 40 Ohm

Ringwave as per IEC 61000-4-12 Ed.3, Figure 8

- Capacitor >= 3 uF

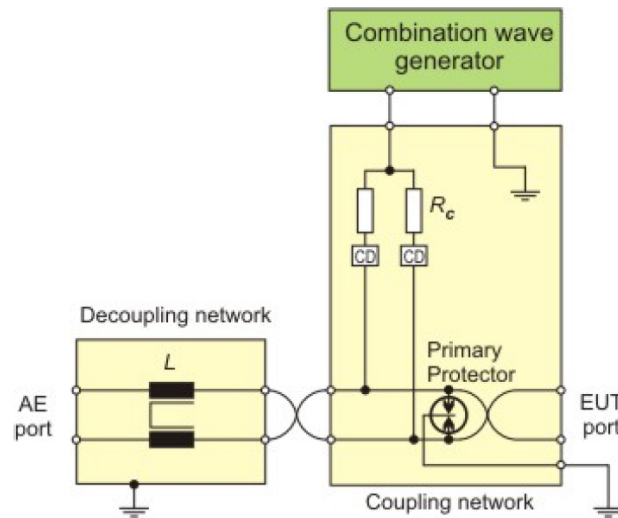
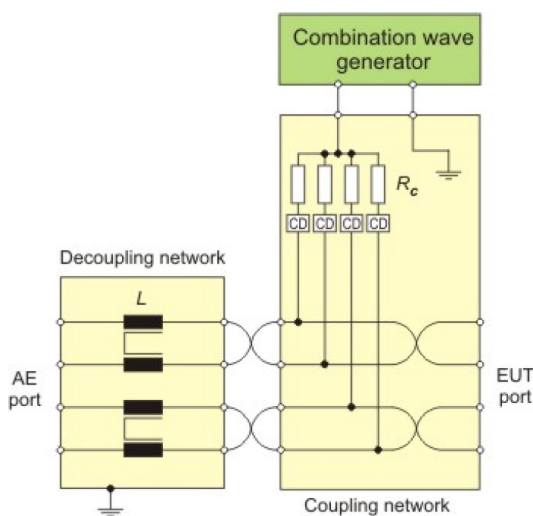
**DCD 7 st**

The DCD st - series of coupling decoupling networks are designed to couple Surge pulses (1.2/50 us - 8/20 us) and Telecom Surge pulses (10/700 us) onto unshielded symmetrically operated communication lines. The DCD st - models includes the external coupler (GTD) for coupling via gas arrestor plus the internal matching resistor  $R_c$  as per figure 10 of IEC 61000-4-5 Ed.3 with values as per the formula given by the standard. All lines are subjected to the test pulse simultaneously with respect to ground.

The DCD st - series also include the required decoupling inductors of 20 mH for each line (pairwise current compensated). To protect the auxiliary equipment being needed for testing the DUT an additional protection circuit is integrated at the communication line input.

**Surge 1.2/50 us**

**Telecom Surge 10/700 us**



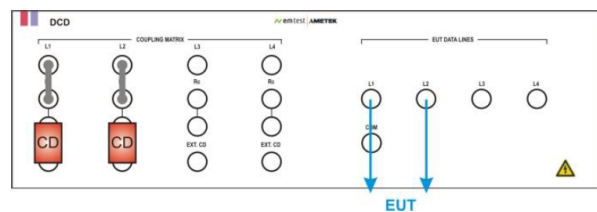
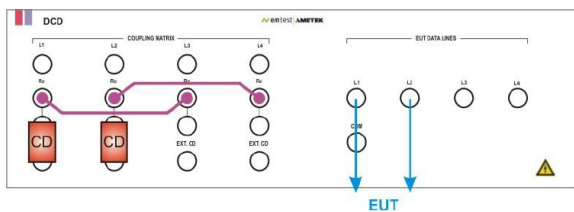
The DCD st - series is designed as per figure A4 of IEC 61000-4-5 Ed.3 without primary protector. If required, an additional primary protector must be integrated according the user specifications. With short circuit bridges and individual designed coupling devices the user can easy modify the coupling mode and number of tested lines to the requirements.

**Test setup for 1.2/50 μs**

**Test setup for 10/700 μs**

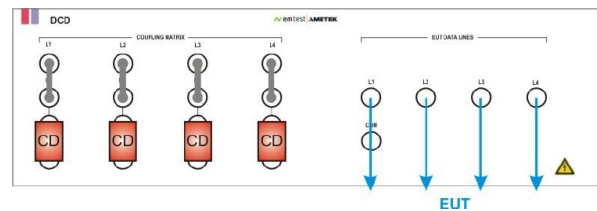
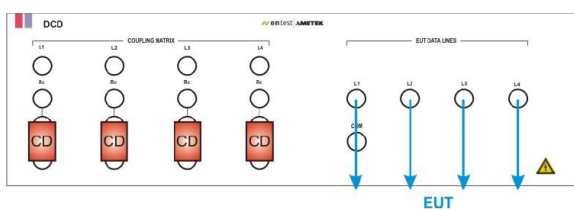
2 Data line setup: Two lines are switched in parallel. Each of the 2 lines has an impedance of 80 Ohm (160 // 160).

2 Data line setup (1 symmetrical lines; 1 pair): 25 Ohm impedance by use of Bridge (grey) and coupling device CD (GDT/ABD).



4 Data line setup: Each of the 4 lines has an impedance of 160 Ohm.

4 Data line setup (2 symmetrical lines; 2 pairs): 25 Ohm impedance by use of Bridge (grey) and coupling device CD (GDT/ABD).



Technical Specifications manual coupling networks

	DCD 7 sr
DCD 7 sr-4-1	7 kV, 4 lines, 1 A
DCD 7 sr-4-4	7 kV, 4 lines, 4 A, intermittent 5 A
DCD7 sr-8-1	7 kV, 8 lines, 1 A
DCD 7 sr-8-4	7 kV, 8 lines, 4 A, intermittent 5 A
Line voltage	Depends on AE protection module
<b>General data</b>	
Surge coupling	as per Fig. 9 IEC 61000-4-5 Ed. 3, - 0.5 µF capacitor via 40 Ohm - GDT gas arrester (90 V) via 40 Ohm
Ringwave coupling	as per Fig. 8 IEC 61000-4-12 Ed. 3, > 3 µF capacitor
Decoupling inductance	20 mH, each line
<b>AE Protection modules</b>	
DPM 50-1, included	Diode Protection Module 50 V, Impedance to GND: 1 kOhm 1 module is included for every 4 lines. Line voltage: max. 35 V AC, 50 V DC
DPM 50, optional	Diode Protection Module 50 V, Impedance to GND: open circuit 1 module is required for every 4 lines. Line voltage: max. 35 V AC, 50 V DC
VPM 250-100, optional	Varistor Protection Module 250 V, Impedance to GND: 100 kOhm 1 module is required for every 4 lines. Line voltage: max. 250 V AC, 350 V DC
Required modules	DCD with 4 lines: 1 DCD with 8 lines: 2
<b>Optional coupling device</b>	ABD Plug: Avalanche Breaking Diode (140 V), for Surge & Ringwave, max. 7 kV
<b>Connectors</b>	
Input from generator	4 mm safety banana plugs at back
EUT	4 mm safety banana plugs

	DCD 7 st
DCD 7 st-4-1	7 kV, 4 lines (2 pairs), 1 A
DCD 7 st-8-1	7 kV, 8 lines (4 pairs), 1 A
Line voltage	Depends on AE protection module
<b>General data</b>	
Coupling	Selectable: - GDT gas arrester (90 V) - ABD Plug: Avalanche Breaking Diode (140 V) - Individual CD (coupling device)
Matching resistor Rc	Surge Pulse 1.2/50 µs, 8 x 320 Ohm (4 pairs), 4 x 160 Ohm (2 pairs), 2 x 80 Ohm (1 pair)
Matching resistor Rc	Telecom Surge 10/700 µs, 8 x 25 Ohm (8 lines, 4 pairs) 4 x 25 Ohm (4 lines, 2 pairs)
Decoupling	20 mH, pairwise current compensated
Residual voltage at AE port, 5 kV pulse	st-4-1: 88 V (1.2/50 µs), 80 V (10/700 µs) st-8-1: 85 V (1.2/50 µs), 60 V (10/700 µs)
Signal Bandwidth	100 kHz with 600 Ohm load
Data rate	up to 1MBit/s
<b>AE Protection modules</b>	Similar to DCD 5 sr
Included accessories	st-4-1: 1 x DPM 50-1, 4 x GDT (90 V), 4 x ABD (140 V) 4 x short circuit connectors 2 x 0.25 m safety lab cables  st-8-1: 2 x DPM 50-1, 8 x GDT (90 V), 8 x ABD (140 V) 8 x short circuit connectors 6 x 0.25 m safety lab cables

<b>DIMENSION AND WEIGHT</b>	
DCD 7 sr	3 HU, 19", 447 mm x 500 mm x 153 mm (LxWxH), 14-18 kg
DCD 7 st	6 HU, 19", 447 mm x 500 mm x 286 mm (LxWxH), 20-27 kg
<b>ENVIRONMENT</b>	
Temperature	10 °C to 40 °C
Humidity	10 % to 80 %, non condensing
Atmospheric pressure	86 kPa (860 mbar) to 106 kPa (1060 mbar)