

Rittal DCP – Direct Cooling Package



NEW

- New connection technology
- Absolutely safe mounting
- Type-tested

System solution for optimum cooling of
power electronics within enclosures

Rittal DCP – more efficient with liquid cooling



Rittal DCP – a new standard in switchgear and control system engineering

Liquid-cooled partial mounting plates with pressed-in copper or stainless steel tubes on their reverse face, integrated into closed recooling systems or an existing water circuit. With the pitch of Rittal partial mounting plates, installation into the TS 8 top enclosure system is child's play with system accessories for 25 mm mounting intervals.

At the same time, however, a 4-point attachment facility permits direct mounting on the mounting plate or any other surface.

DCP mounting technology means cooling without compromise

After all, only perfect contact to the heat sink provides effective transfer and dissipation of the power losses via the liquid cooled mounting plate. With this in mind, Rittal has implemented a fast, variable and above all device-neutral mounting technology for frequency converters and servo controllers from most manufacturers.



Attachment directly in the T-slot

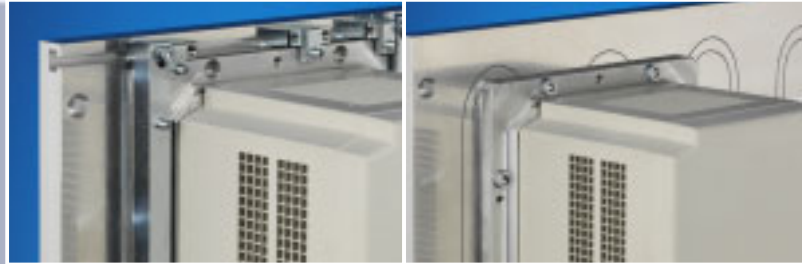
Direct and fast mounting by way of sliding nuts for components with suitable dimensions.

Direct earthing or equipotential bonding points are provided on the Cold Plate.

Power electronics components can be cooled more effectively by way of the liquid cooled DCP mounting plate (Direct Cooling Package). Heat losses are cleverly dissipated from the enclosure or housing without compromising a high enclosure protection category in any way. Furthermore, liquid cooling is both quiet and 1000 times more efficient than heat dissipation via air.



The Rittal DCP Cold Plate has received type-tested certification from the TÜV inspection authority and is approved for pressures up to 10 bar.



Attachment with retainers

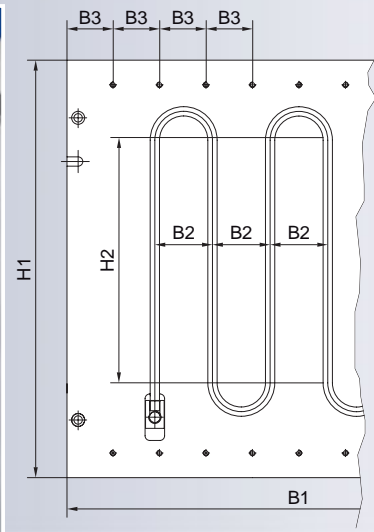
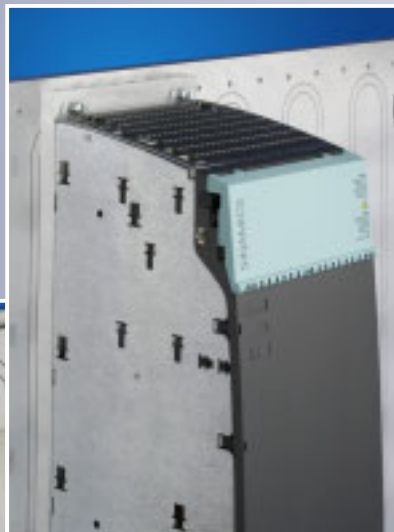
Frequency converters with dimensions marginally smaller than the T slot spacing can be secured with special retainers.

Attachment with tapped holes

Frequency converters can be mounted at any position over the whole surface by drilling tapped holes up to max. 12 mm in depth.

Safe mounting

The positions of the cooling coils are now marked to ensure **absolutely safe mounting**. Outside the areas of the cooling coils, it is also no problem to drill through-holes.



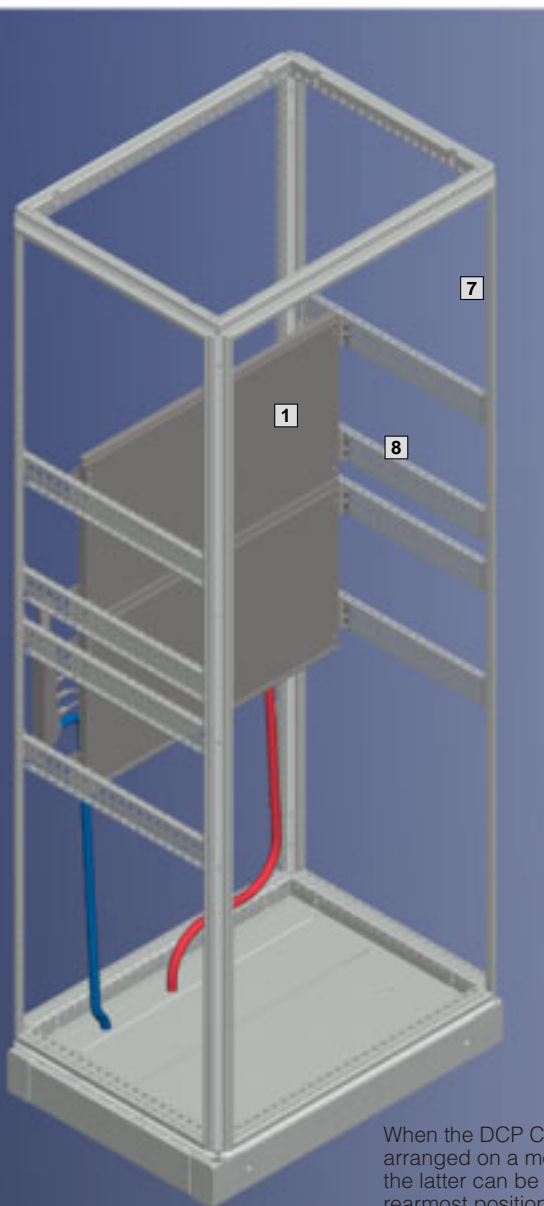
Attachment with variable clamping system

Permitting fast mechanical installation without drilling, independently of the original attachment points on the component.

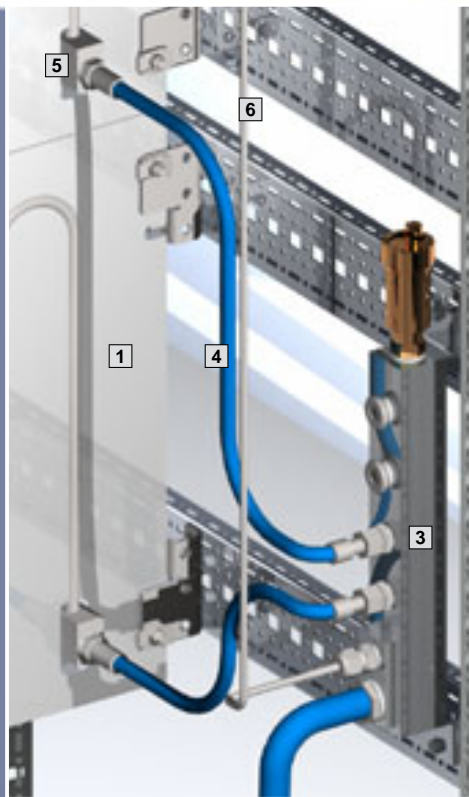
User-optimised DCP

It is also possible, upon prior agreement, to integrate customer-specific hole patterns for the mounting of power electronics into an individual project.

Complete solutions from a single partner



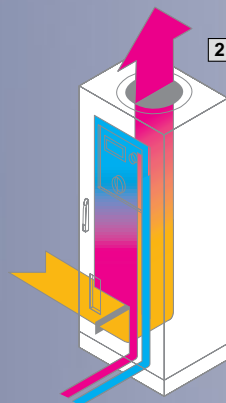
When the DCP Cold Plate is arranged on a mounting plate, the latter can be installed at the rearmost position.



- 1 Rittal DCP Cold Plate
- 2 Recooling system in the room or outside
- 3 Fluid distribution manifold with quick-action bleed valve
- 4 Flexible hose connection to the Cold Plate
- 5 G 1/4" connection
- 6 Temperature sensor to monitor the inlet and return temperatures
- 7 TS 8 Top enclosure system (without panelling)
- 8 Height and depth-variable mounting positions provided by the system mounting holes of the TS 8 sections and 17 x 73 mm punched sections (for the outer mounting level)

New connection technology

Thanks to the new G1/4" connections, the maximum space requirement behind the Cold Plate for hoses and manifold is now only 42 mm.



Tailored to your needs: Cooling with infrastructure in the TS 8 top enclosure system

What makes the Rittal DCP Cold Plate the perfect choice?

- Naturally the simple and safe mounting of frequency converters and other components.
- All components of the coolant supply and distribution system.
- Recooling systems with the desired individual outputs for central chilling of the coolant.
- Full control of the cooling process, including monitoring of all safety-relevant parameters of the cooling system and enclosure.
- Mounting and enclosure accessories to meet every individual demand.

With Rittal DCP, you receive a complete package for the efficient cooling of power electronics components using rear flat or cold plate technologies. Equipped in this way, even your "hottest contenders" will keep a "cool head"!

Further solutions for the cooling of frequency converters and other power electronics components are to be found on page 8.

You define the demands, we offer the solution!



Front



Rear

Cold Plate without T-slot

Liquid-cooled partial mounting plate with drilling surface

Whole surface can be used by the customer for own tapped holes (blind holes) to a maximum drilling depth of 12 mm.

Reverse:

Pressed-in copper or stainless steel tubes, dependent on the application, in closed recooling systems or existing (open) water circuit.

Supply includes:

Mounting accessories for system integration in TS 8.

Note:

Fittings for fluid distribution, see page 6/7.



Accessories:

TS punched section with mounting flange 17 x 73 mm for the external mounting level, see Catalogue 31, page 921.

Recooling systems for closed cooling circuits, see Catalogue 31, from page 608.

For installation in		Size mm	Material	Output*	P. of	Model No. DCP
Enclosure width mm	Enclosure depth (side) mm					
600	600	499 x 399 x 25	CU	2500 W	1	8616.610
600	600	499 x 399 x 25	VA	2500 W	1	8616.630
800	800	699 x 399 x 25	CU	3000 W	1	8616.810
800	800	699 x 399 x 25	VA	3000 W	1	8616.830
1000	–	899 x 399 x 25	CU	–	1	8616.010¹⁾
1000	–	899 x 399 x 25	VA	–	1	8616.030¹⁾
1200	–	1099 x 399 x 25	CU	–	1	8616.210¹⁾
1200	–	1099 x 399 x 25	VA	–	1	8616.230¹⁾

¹⁾ Available from July 2006.

* at 25 °C fluid inlet temperature and $T_U = 40$ °C



Front



Rear

Cold Plate with T-slot

Liquid-cooled partial mounting plate for fastening with a variable clamping system

Fast mounting of converters with system fastening and additional possibility for tapped holes (blind holes) to a maximum drilling depth of 8 mm.

Reverse:

Pressed-in copper or stainless steel tubes, dependent on the application, in closed recooling systems or existing (open) water circuit.

Supply includes:

Mounting accessories for system integration in TS 8.

Note:

Fittings for fluid distribution, see page 6/7.



Accessories:

TS punched section with mounting flange 17 x 73 mm for the external mounting level, see Catalogue 31, page 921.

Recooling systems for closed cooling circuits, see Catalogue 31, from page 608.

For installation in		Size mm	Material	Output*	P. of	Model No. DCP
Enclosure width mm	Enclosure depth (side) mm					
600	600	499 x 399 x 20	CU	2500 W	1	8616.600
600	600	499 x 399 x 20	VA	2500 W	1	8616.620
800	800	699 x 399 x 20	CU	3000 W	1	8616.800
800	800	699 x 399 x 20	VA	3000 W	1	8616.820
1000	–	899 x 399 x 20	CU	–	1	8616.000¹⁾
1000	–	899 x 399 x 20	VA	–	1	8616.020¹⁾
1200	–	1099 x 399 x 20	CU	–	1	8616.200¹⁾
1200	–	1099 x 399 x 20	VA	–	1	8616.220¹⁾

¹⁾ Available from July 2006.

* at 25 °C fluid inlet temperature and $T_U = 40$ °C



Cold Plate system fastenings for frequency converters

For mounting of frequency converters	Packs of	Model No. DCP
with all-round clamping surface	1	8616.700
with side clamping surfaces	1	8616.710
with clamping surfaces top and bottom	1	8616.720

DCP – Direct cooling package

Ordering information



Fluid distribution manifold in stainless steel

For the connection of up to 4 Cold Plates.

Supply includes:

2 fluid distribution manifold blocks (inlet and return),
screw plugs G1/4", G3/8",
hose sleeves G1/2",
including seals.

Packs of	Model No. DCP
1 set	8616.750

+ Accessories:

Flexible hose, see below
Quick-action bleed valve, see below
Temperature sensor, see page 7



Direct fluid connection

For connection of the Cold Plate through the rear or side panel of the enclosure.

Supply includes:

2 hose sleeves G1/2",
2 mini stop valves G1/2",
2 reducers G1/2" – G1/4",
including seals.

Packs of	Model No. DCP
1 set	8616.751

+ Accessories:

Flexible hose, see below
Double-nipple coupling, see page 7



Flexible hose

For connection of the Cold Plate to a fluid distribution manifold or direct fluid connection.

Supply includes:

2 flexible hoses G1/4" with stainless steel braid,
including seals.

Packs of	Length mm	Model No. DCP
1 set	500	8616.760
1 set	1000	8616.761

+ Accessories:

Elbow coupling, see page 7



Quick-action bleed valve

For air bleeding from the complete Direct Cooling Package system.
Simple mounting at the fluid distribution manifold.

Supply includes:

Quick-action bleed valve G3/8",
including seals.

Packs of	Model No. DCP
1	8616.762



Elbow coupling

For horizontal or vertical connection of the Cold Plate.

Supply includes:

4 L-form 90° fittings G1/4", including seals.

Packs of	Model No. DCP
1 set	8616.763



Double-nipple coupling

For connection of the flexible hose to the fluid distribution manifold.

Supply includes:

4 double-nipple fittings G1/4", including seals.

Packs of	Model No. DCP
1 set	8616.764



Temperature sensor TF25

For monitoring of the inlet and return temperatures in the fluid distribution manifold.

Supply includes:

Temperature sensor TF25 (NTC), stainless steel coupling G1/4", including seals.

Packs of	Model No. DCP
1	8616.765

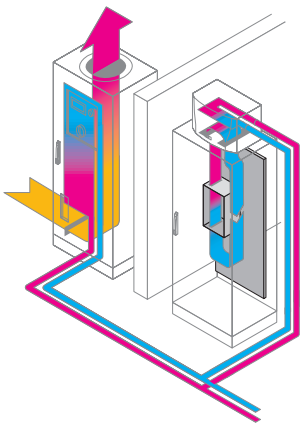


Splash protection, optional

Splash protection comprising side panels, front panel and base drain tray can be supplied as an option.

Three dimensions of frequency converter cooling

Rittal system integration: Enclosure + mountings + climate control components



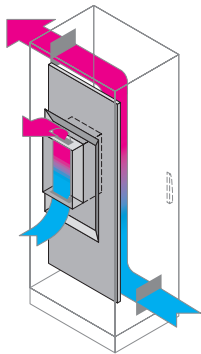
1. Conventional installation

The simplest form of installation: Frequency converter mounted **directly on the mounting plate** of the TS 8 top enclosure system.

The fans of the frequency converter draw cool air from the lower section of the enclosure and establish a flow over the heat sinks of the converter. The warmed air is returned to the enclosure interior.

The cooling output required for the whole enclosure is provided by cooling units, air/water heat exchangers and other Rittal climate control components (see Rittal Catalogue).

Higher heat loads are dissipated most effectively via air/water heat exchangers (diagram) in combination with an externally installed recooling system. This configuration avoids unnecessary heating of the ambient air.



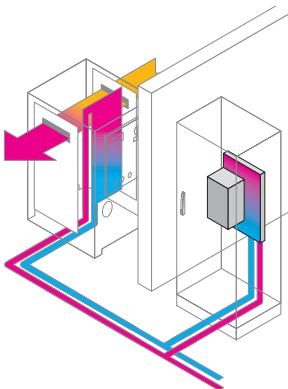
2. New solutions for pass-through technologies

An interesting alternative – and cost-effective: Where the ambient air is cool and clean, **pass-through solutions** are a very efficient possibility to remove a significant proportion of the heat losses from the enclosure. The condition is that the frequency converters and other heat loss sources possess protruding heat sinks.

Solution 1: A sealing frame between a cut-out in the rear panel of the enclosure and the mounting plate.

Solution 2: Blanking panels replace the original rear panel and close the space between the enclosure frame and mounting plate.

If necessary, the heat loss remaining in the enclosure can be dissipated by way of air/air heat exchangers, fan-and-filter units (diagram) or other climate control components.



3. Direct cooling package

Keep a “cool head”: Rittal DCP – the **fluid-cooled partial mounting plate** represents the new standard for the effective cooling of power electronics.

Compatibility to the mounting technology of the partial mounting plates of the TS 8 top enclosure system saves time and money.

Even high degrees of enclosure protection are in no way impaired by the DCP Cold Plate. Some 70 – 80 % of the heat loss of the frequency converter is dissipated to a recooler – absolutely quiet and directly from the source.

With an appropriate configuration, it may be possible to do away with further cooling components.

www.rittal.com/dcp

02/06 · E 160