

# SINAMICS G150 Converter Cabinet Units

Water-Cooled Version



## SINAMICS drives

Answers for industry.

**SIEMENS**

# SINAMICS – the optimum drive for every application

The drive family for drive solutions that are fit for the future

Low voltage				Medium voltage		
For basic applications	For demanding applications			For basic positioning applications	For sophisticated applications	For applications with higher power ratings
SINAMICS G110	SINAMICS G120	SINAMICS G120D	SINAMICS G130/G150	SINAMICS S110	SINAMICS S120	SINAMICS S150
V/f open-loop control	V/f open-loop/vector control			Servo control	V/f open-loop/vector/servo control	
0.12–3 kW	0.37–250 kW	0.75–7.5 kW	75–1,500 kW	0.12–90 kW	0.12–4,500 kW	75–1,200 kW
Pumps, fans, conveyor belts	Pumps, fans, conveyor belts, compressors, mixers, crushers, extruders			Single-axis positioning applications in machinery and plant construction	Motion control applications in production machines (packaging, textile and printing machines, paper machines, plastics machines), machine tools, plants and process lines	Test stands, crosscutters, centrifuges
<b>Standard engineering tools</b>						
SIZER – for simple planning and engineering				STARTER – for fast commissioning, optimization and diagnostics		

SINAMICS offers the optimum drive for each and every drive application – and all of these drives can be engineered, parameterized, commissioned and operated in a same standard fashion.

- Wide range of power ratings from 0.12 kW to 120 MW
- Available both in low-voltage as well as high-voltage versions
- Standard and unified functionality using a common hardware and software platform
- High degree of flexibility and combinability

Standard engineering using just two tools for all of the drives:

- SIZER for engineering, and
- STARTER for parameterizing and commissioning

## SINAMICS G150

SINAMICS® G150 is the Siemens drive solution for high-rating single-motor drives that do not require regenerative feedback into the line supply. These are predominantly applications with square-law load torque characteristics, i.e. pumps, fans and compressors, but also constant-torque applications such as extruders, mixers and crushers.

Modular packing design and extremely low-loss IGBT power semiconductors make SINAMICS G150 the quietest and most compact drive converter in a standard electrical cabinet. The ready-to-connect cabinet units are extremely easy to handle and their modular design simplifies service.

With the SINAMICS G150 converter cabinet units, a drive system is available where all of the line and motor-side components together with the power modules are integrated into the electrical cabinet. This results in a very compact design. The engineering and installation costs for users can be minimized in this way.

The SINAMICS G150 converters are convincing in every phase of the product lifecycle - cost-effectively and simply - from planning and procurement through installation and commissioning up to daily operation and service.

SINAMICS G150 offers an excellent price-performance ratio and can be completely integrated into any automation solution.

- Favorably-priced:  
Across the board - from planning through to service
- Energy-saving:  
Up to 50% less energy requirement for the drive system
- Precise:  
For flexible process adaptation
- Straightforward:  
Simple operator control across the board

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# Requirements



## Environmental conditions

In many industrial areas, rugged and tough environmental conditions are simply a given. For instance, aggressive air in the chemical industry and the high levels of dust in the ambient air in the mining and cement sectors place high demands on the converter system.

Dust, dirt and water also place a lot of stress on the electronics in many areas of the process and production industry.

When fine dust or moisture enters electronic equipment, then over time it damages it and can result in premature failure. The electronics of a converter must be protected against moisture and dust in order to guarantee reliable operation.

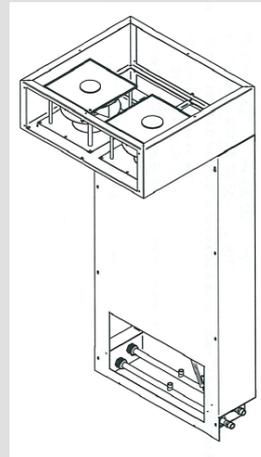
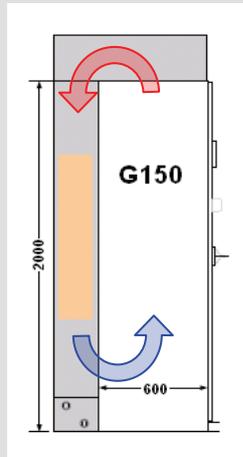
## Climate control

For certain applications - for instance in the automobile sector - it is not permissible to simply dissipate the power loss to the environment. The heat must be dissipated from the converter in another way.

## SINAMICS converter cabinet units in a water-cooled version

In order to also be able to address applications that place increased demands on the cooling of the converter cabinet units due to specific conditions at the installation site, we offer a version that very specifically takes into account these demands and requirements.

# Our solution



## Supplementary cabinet unit with air-water heat exchanger

We offer a standard solution for the complete power range of SINAMICS G150 (including parallel circuit configuration) to meet the specified requirements. This is a supplementary cabinet unit with integrated air-water heat exchanger in the rear cabinet section. This is based on the Rittal TS 8 cabinet system and is precisely tailored to the customer's requirements.

In the supplementary cabinet unit, the warm air that is generated by the converter power loss is withdrawn from the converter cabinet using radial fans in the upper supplementary cabinet unit. This warm air is routed through an air-water heat exchanger located in the rear supplementary cabinet unit.

The complete supplementary unit acts as an air duct and routes the cooled air from below back into the converter cabinet.

As a result of the separately mounted air-water heat exchanger, the water circuit remains separate from the electrical converter components.

The power supply and control for the circulating fans are integrated in the cabinet.

Only the cooling water circuit has to be connected-up using commercially available connecting elements.

The converter cabinet is an enclosed unit and complies with the requirements to achieve degree of protection IP54.

This means, for example, that no oil-containing air or dust can enter the cabinet.

The supplementary cabinet units are designed so that they can be used for a line-up of several water-cooled SINAMICS G150 converters. Depending on the power class, these supplementary units only increase the depth of the standard unit by a max. of 300 mm and the height by a max. of 350 mm.

Almost all of the options of our standard SINAMICS G150 cabinet, listed in Catalog D11, can be selected. Exceptions are the marine version (M66), line supply connection from the top (M13) and motor connection from the top (M78) options.

Maintenance only differs slightly from our standard solution. It is only necessary to ensure that the heat exchanger can be freely accessed.

The stainless steel cooler used in the heat exchanger only places low demands on the water quality.

Customers do not have to provide an additional external water-water heat exchanger.

# Customer benefits



## Advantages of water cooling

- The supplementary cabinet unit represents an extremely favorably-priced solution for the water-cooled version of the SINAMICS G150 cabinet unit.
- The version complies with degree of protection IP54.
- The heat generated by the power loss is dissipated by the cooling water and therefore does not enter the switchgear room or production area.  
As a consequence, additional climate control for the room or area is not required.
- No special demands are placed on the water quality. For instance, the converter cooling circuit can be combined with an existing motor cooling circuit.
- The water connections of several SINAMICS G150 units can be simply connected in series and the cabinets lined-up next to one another.

# References



## Reference plants and systems

Customer	Power rating	Sector	Application	Reason for use
Daimler AG	400 kW / 400 V	Automobile	Test stand	Not permissible to dissipate the heat in the room
Gemeinschaftskraftwerk Hannover (GKH)	710 kW / 690 V	Mining	Coal crusher	Air containing coal dust
Berstorff Service GmbH	800 kW / 690 V	Chemical	Extruder	Aggressive air
Bedelec BVBA	160 kW / 400 V	Waste disposal	Blower	Not permissible to dissipate the heat in the room Existing cooling water circuit
DMT	900 kW / 400 V	Process industry (plastic)	Drive for a foil line	High ambient temperatures (used in Saudi Arabia)

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