



# SINAMICS S120 CM





***Sinamics S120 CM (Cabinet Modules)*** are cabinet units for industrial engineering solutions where work of several coordinated drives is required. They widely used in paper-making industry, roller mills projecting or testing stands.

### What are the main features of the S120 cabinet system?

- That drives system includes different modules such as line modules basic and smart modules both and braking modules of various types.
- It has a high degree of flexibility adapting to the customer's requirements.
- Fast combination of the individual cabinet modules into the optimal drive system.
- Modernized air cooling up to IP20 and possibility of innovative liquid cooling are performed here.
- Ability to use modules in marine motor systems and hazardous environment.
- Ideal combination with the Sinamics G150 and S150 drive series.

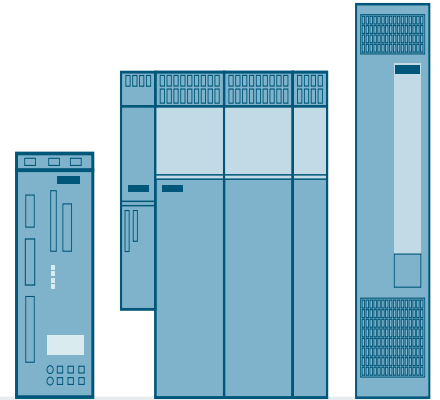
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# General description

## SINAMICS S120 CM



A modular cabinet unit solution for high performance applications in industrial mechanical engineering and plant construction is available together with the SINAMICS S120 cabinet modules. The cabinet modules are particularly suited to applications where several drives must work together coordinated. The drive system is thereby normally made up of several motor modules which are connected to the common DC link.

The Motor Modules are in turn powered by a central Line Module.

This kind of configuration allows an interchange of energy between the individual drives, as well as offering a compact and cost-effective design. By this, the power supply is relieved. It is often possible to use Line Modules with a lower rated power than the total power of the connected Motor Modules. This in turn reduces space and expenditure. The SINAMICS S120 cabinet modules also allow to build up single motor drives with greater power outputs. E.g. a 4.5 MW drive with 24-pulse-input can be realized by connecting several Line and Motor Modules.

# Technical data overview

The SINAMICS S120 cabinet modules system can be supplied for line voltages between 3 AC 380 V - 3 AC 690 V.

The cabinet units offer protection ranging from IP20 to IP54; liquid cooling: up to IP55.

Cooling methods: air and liquid cooling

The following cabinet modules are available at present:

Brief overview - Air cooling

Model	Function	Power range
Motor Modules	Inverter for the connected	380 - 480 V: 4.8 kW - 800 kW / 3000 kW *)
Motor Modules	Inverter for the connected motors	380 - 480 V: 315 kW - 800 kW / 4800 kW *)
Basic Line Modules	6 pulse unregulated supply unit to feed the connected motor	380 - 480 V: 200 kW - 900 kW / 3500 kW *) 500 - 690 V: 250 kW - 1500 kW / 5800 kW *)
Smart Line Modules	6 pulse regulated supply / regenerative feedback unit to feed the connected motor	380 - 480 V: 250 kW - 800 kW 500 - 690 V: 450 kW - 1400 kW
Active Line Modules	6 pulse regulated supply / regenerative feedback unit incl. clean power filter to feed the	380 - 480 V: 132 kW - 900 kW / 3500 kW *) 500 - 690 V: 560 kW - 1400 kW / 5400 kW *)
Braking Modules	Central brake chopper as cost effective alternative to the regenerative line modules when regenerative operation <b>occurs</b>	380 - 480 V: 500 kW, 1000 kW 500 - 600 V: 550 kW, 1100 kW 660 - 690 V: 630 kW, 1200 kW 200 kW Braking modules can be supplied as

Line Connection Modules	Power connection module with components attached to the mains, such as load disconnectors i. e. circuit	380 - 480 V: 250 A - 3200 A 500 - 690 V: 280 A - 3200 A
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#### Brief overview - Air cooling

Model	Function	Power range
Motor Modules	Inverter for the connected	380 - 480 V: 110 kW - 800 kW / 3040 kW *)
Basic Line Connection	6 pulse unregulated supply unit to feed the connected motor	380 - 480 V: 360 kW - 830 kW / 3070 kW *) 500 - 690 V: 355 kW - 1370 kW / 5070 kW *)
Active Line Connection Modules	6 pulse regulated supply / regenerative feedback unit incl. clean power filter to feed the	380 - 480 V: 380 kW - 900 kW / 3420 kW *) 500 - 690 V: 800 kW - 1700 kW / 6460 kW *)
Heat Exchanger Modules	This is used to dissipate the power loss from the liquid-cooled converter. It basically consists of pumps, closed-loop control and a heat exchanger, which means that the inner and outer water cooling circuits are	400 V / 690 V: 32, 48, 72 und 110 kW Cooling power

**Brief overview - Liquid cooling**

Model	Function	Power range
Motor Modules	Inverter for the connected motors	380 - 480 V: 110 kW - 800 kW / 3040 kW *) 500 - 690 V: 90 kW - 1500 kW / 5700 kW *)
Basic Line Connection Modules	6 pulse unregulated supply unit to feed the connected motor modules	380 - 480 V: 360 kW - 830 kW / 3070 kW *) 500 - 690 V: 355 kW - 1370 kW / 5070 kW *)
Active Line Connection Modules	6 pulse regulated supply / regenerative feedback unit incl. clean power filter to feed the connected motor modules	380 - 480 V: 380 kW - 900 kW / 3420 kW *) 500 - 690 V: 800 kW - 1700 kW / 6460 kW *)
Heat Exchanger Modules	This is used to dissipate the power loss from the liquid-cooled converter. It basically consists of pumps, closed-loop control and a heat exchanger, which means that the inner and outer water cooling circuits are separated from one another.	400 V / 690 V: 32, 48, 72 und 110 kW Cooling power

\*) Power during parallel connection

# Customer benefits

The SINAMICS S120 Cabinet Modules system comprises several individual modules that are perfectly harmonized with one another. Standardized interfaces for the power and communication connections mean that the individual cabinet modules can be combined as required. This allows the user to configure the optimal drive for his application. Not only this, but an extensive range of options allows plant-specific requirements to be very flexibly fulfilled. An extremely compact design and the possibility of pre-configuring the drive system in the plant saves space and minimizes the time and costs associated with installation and commissioning on-site.

Of course, it goes without saying that the cabinet modules also offer the advantages of the SINAMICS S120 Drive System:

- ▶ A higher degree of flexibility is achieved by separating the control module and power section.
- ▶ Up to 4 vector drives can be connected to one control module. In addition to a safe and cost-saving design, it also allows information to be directly exchanged between the individual drives - therefore relieving the higher-level fieldbus.
- ▶ DRIVE-CLiQ, the new interface inside the drive, allows fast and reliable communications between the essential SINAMICS S120 drive components including motors and encoders.
- ▶ The PROFIBUS or PROFINET interface integrated as standard allows the SINAMICS S120 Cabinet Modules to be connected to higher-level automation systems such as SIMATIC or SIMOTION.
- ▶ The standard and integrated SIZER and STARTER tools provide valuable support when engineering the drive, commissioning it and troubleshooting (diagnostics).



# Cooling concept

In addition to air cooling, SINAMICS S120 Cabinet Modules are now also available with an innovative liquid-cooled concept.

Liquid cooling facilitates a significantly more efficient heat dissipation, so that it is not necessary to control the climate of rooms. High levels of energy can be saved as a result of the low energy consumption associated with the liquid cooling. In addition to the energy savings as a result of efficient cooling concept, heat can also be recovered. The cooling water that is heated up as part of the cooling process can be used as a source of heat for the process or for heating.

The advantages of liquid cooling for high power ratings when compared to air cooling are the smaller mounting footprint, lower weight and quiet converter operation. It is predestined for applications where space is restricted or poorly ventilated and in harsh environmental conditions, for example onboard ships, in mining and in the industrial environment as a whole.

Configuring a redundant cooling system by using two pumps in the Heat Exchanger Modules is far more cost effective and can be implemented with lower costs when compared to a redundantly configured climate control system. The maintenance work for the units is less as there are no filter mats to replace.



# Typical applications

The modular drive system SINAMICS S120 cabinet modules are particularly suitable for drive tasks where several motors work together. Some typical examples of this are:

- ▶ Belt conveyors, cranes, ship's drives, test stands, cross cutters, roll changers, roller feeds
- ▶ Winders / unwinders, leadin / following drives, calenders, mechanical presses, rolling mill drives
- ▶ Branch Chemical Industry
- ▶ The ideal sector solution
- ▶ SINAMICS S120 CM air cooled for industrial applications
- ▶ SINAMICS S120 CM liquid cooled for industrial applications specially involving drives in harsh environmental conditions, for instance in the process industry, automotive industry, test stands as well as mining
- ▶ SINAMICS S120 CM Application Marine Drive for marine applications with the certificates for the relevant marine classification societies (e.g. DNV-GL, ABS, LR, BV, CCS).
- ▶ SINAMICS S120 CM Application Shaft Generator Drive for the onboard ship supply using shaft-mounted generators and for supplying stand-alone systems (island operation)

We supply:

- **SINAMICS G150**
- **SINAMICS G180**
- **SINAMICS S120**
- **SINAMICS V20**
- **SINAMICS Perfect Harmony**
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