


What is your **drive**? **Simply** get started?
SINAMICS GM150: The uncomplicated
medium-voltage AC drive.

sinamics

GM150



SIEMENS



What is your **drive? Stay** fit?
Full power with maximum reliability:
SINAMICS GM150.

SINAMICS GM150

- Always easy – from planning to servicing
- Simple to integrate and install
- Operator-friendly
- Intelligent maintenance functions
- Power section up to 10 MVA with HV-IGBTs (up to 28 MVA with IGCTs)
- Wide range of voltages and power ratings



SINAMICS GM150 medium-voltage drives: **This is your drive!**

Simply straightforward – from the very start

Our SINAMICS® GM150 variable speed drive brings simplicity into the medium-voltage environment. This starts with standardized engineering using the SIZER engineering tool followed by the uncomplicated integration into the plant or system. This is continued with fast and user-friendly commissioning using STARTER and easy operator control. And in operation, SINAMICS GM150 distinguishes itself thanks to its ruggedness and service-friendliness.

SINAMICS GM150: The general purpose drive

The SINAMICS GM150 variable speed drive is the compact solution for all medium-voltage drive applications without regenerative feedback. For applications with a variable torque characteristic – i.e. pumps, fans and compressors – up to 50% of the energy can be saved thanks to variable speed operation. The SINAMICS GM150 with its high dynamic performance can also be used for constant-torque drives such as extruders, mixers, kneaders, crushers and wire rod mills – it truly is a versatile drive.

Hassle-free since it is seamlessly integrated:

Integration into higher-level communication systems

The advantages of the new SINAMICS family of drives with their universal technological concept can now be leveraged in the medium-voltage environment. Being a member of the SINAMICS family allows SINAMICS GM150 to be flexibly integrated into plants and systems because it is a part of Totally Integrated Automation (TIA), the unique automation platform from Siemens. In addition, technological functions can be integrated into the drive using SIMOTION. This means that automation solutions can be easily implemented using SINAMICS, shortening the total automation project timeline, reducing the operating costs and increasing productivity.

Reliability for every industry

Oil and gas, water/wastewater, power generation, mining, cement, marine, metals – a SINAMICS GM150 drive performs unaffected by environmental effects such as dust, corrosion and vibration. The control is insensitive to voltage fluctuations and electromagnetic disturbances, further increasing the overall reliability. All of this is complemented by the standardized technology of the SINAMICS family.

Siemens is the first supplier on the market to already use reliable HV-IGBT power modules in the second generation! In doing so, one of the most important innovations is the global introduction of 6.5 kV IGBT semiconductor modules, increasing the converter output voltage up to the 6 kV to 7.2 kV range.

Power rating and voltage ranges **SINAMICS GM150:**

Air-cooled	2.3 – 7.2 kV	600 – 7,900 kVA
Water-cooled	2.3 – 7.2 kV	2,000 – 10,000 kVA
Water-cooled, IGCT version	3.3 kV	8,000 – 28,000 kVA



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Less is more: Lower energy and operating costs with the SINAMICS GM150.

Simply smart: Integrated maintenance functions

The intelligent maintenance functions of the SINAMICS GM150 prevent non-scheduled downtimes with loss of production and costly repair service calls, since components automatically indicate when service is required. For instance, in air-cooled SINAMICS GM150 converters a differential pressure monitor determines the amount of dust in the air-inlet filter and then gives a warning when the filter must be changed. Another example is the ion exchanger used in water-cooled SINAMICS GM150. The analog conductivity measurement continuously checks the ion exchanger and signals in advance when the ion exchange performance decreases, giving plenty of time for replacement. The fans used for the air-cooled versions and the pumps for water-cooled versions are equipped with operating time counters. After a certain number of operating hours have been accumulated, a recommendation is issued to check the components.

Simply reliable: Rugged and low maintenance

By using simple and rugged HV-IGBT technology, power modules can be designed and constructed with the lowest number of components and with an extremely simple design. This is the reason that our SINAMICS GM150 has one of the highest reliability ratings in its class. For air-cooled converters, a redundant operating fan can be used that further increases the availability. For water-cooled versions, redundant pumps are used as standard. Maintenance-free and self-healing capacitors are used in the DC link: these are extremely reliable, safe and leak-proof.

Makes things a lot simpler: Service-friendly concept

All of the essential components and the terminals of the SINAMICS GM150 can be accessed from the front. This results in significant time saving during installation and makes it very easy to do service and maintenance on the drive. The components are arranged so that they can be replaced with just a few steps. One person can easily extract the new, light Powercards from the front without the need for special tools. A Teleservice module allows service personnel to remotely access the drive. This enables local service personnel to be easily supported by experts from the central customer support.

Up to 50 % less energy costs when compared to fixed-speed systems

SINAMICS GM150 variable speed drives enable dramatic energy savings to be made thanks to the fact that the drive power can be flexibly adapted to the actual plant requirement. Pumps and fans, in particular, frequently operate at partial-load due to fluctuating flow demand. Since the maximum flow is only infrequently required, the flow in fixed-speed systems is most of the time reduced by mechanical means, e.g. a throttle or valve, leading to large amounts of energy being wasted. However, when a SINAMICS GM150 is used, the motor only draws the exact amount of power that is required at that particular operating point.

Intuitive operator control

The user-friendly operator panel of the SINAMICS GM150 provides a menu-guided interface with plain-text display. This increases the reliability of operator inputs. Using the graphic display, analog set points and actual values can be displayed as bar diagrams. This allows important drive measurement values to be identified at a glance.



What is your **drive? Finally** relax?

The medium-voltage AC drive that reduces your expenses: SINAMICS GM150.



Simple operator control: User-friendly AOP 30 operator panel

- Plain-text display and display of process data using a quasi-analog bar-type display
- Guided navigation in the menu system
- Help function with a description of the possible causes and counter-measures
- Numerical key block for operational control of the drive
- LOCAL/REMOTE changeover to select the operator location

What is your **drive**? Making the **right decision**? Reliable plant integration through uncomplicated engineering.



Technical data:

At a glance.



Specification

Line supply connection

- Voltage: 2.3 to 36 kV, +/- 10 %
- Frequency: 50/60 Hz, +/- 3 %
- Power factor: 0.96
- Top or bottom cable entry

Motor connection

- Motor voltages: 2.3 to 7.2 kV
- Top or bottom cable entry

Auxiliary power supply:

- 400 V / 50 Hz or 460 V / 60 Hz

Line-side rectifier

- 12-pulse or optional 24-pulse diode rectifier without regenerative feedback

Motor-side inverter

- 3-level inverter (PWM) in NPC (Neutral-Point-Clamped) topology with 3.3 or 6.5 kV HV-IGBT for a minimum number of components, 4.5 kV IGCT in the power range above 8 MVA
- Plug-in Powercards for fast service, maintenance and repair
- Optional sinusoidal output filter for an absolutely sinusoidal motor current

Cooling

- Air-cooling with optional, redundant fans
- Water-cooling with integrated cooling system and redundant pumps as standard

Degrees of protection

- Air-cooling: IP21, optional up to IP42
- Water-cooling: IP23, optional up to IP54

Ambient conditions

- Temperature: 0 to 40° C, and up to 50° C with derating
- Installation altitude: Up to 1000 m, and up to 5000 m with derating
- Humidity: < 95 % without moisture condensation

Noise

- < 80 dB(A), at 1 m from enclosure

Safety features

- Integrated grounding breaker to safely and reliably ground the DC link
- Automatic door interlocking

Closed-loop control

- Closed-loop vector control with or without encoder
- Speed accuracy: +/- 0.01 % with encoder, +/- 0.2 % without encoder
- Torque accuracy: +/- 2 %
- Field-weakening range up to 1:3 without output filter, 1:1.15 with output filter
- Maximum output frequency: 250 Hz (without output filter)

Standards

- IEC, EN, CE, UL

A selection of additional SINAMICS GM150 options

- Integrated circuit-breaker (for 12-pulse rectifiers)
- Output reactors
- Bypass function
- Increased degree of protection (up to IP54)
- Suitable for marine applications (for water-cooled converters)
- Braking modules
- Teleservice module
- Closed-loop control for separately-excited synchronous motors

Closed-loop control, I/O

- Analog inputs: 2
Analog outputs: 2
Additional I/O using optional expansion modules
- Digital inputs: 4
Digital inputs/outputs (bi-directional): 24
Digital outputs (Relay): 2
Additional I/O using optional expansion modules
- Speed encoder
- Communications: Profibus-DP and ProfiNET, others on request

SINAMICS GM150 Air-cooling					
Motor voltage kV	Power range kVA	Motor power ²⁾ kW (HP)	Width mm (inch)	Depth mm (inch)	Height mm (inch)
2.3	1000 – 2400	840 – 2030 (1115 – 2720)	2420 (95)	1315 (52)	2580 (102)
3.3	1000 – 3400	860 – 2850 (1155 – 3825)	2420 (95)	1315 (52)	2580 (102)
	3800 – 6300	3140 – 5200 (4210 – 6965)	4220 (166)	1315 (52)	2580 (102)
4.16	1300 – 4300	1090 – 3600 (1455 – 4830)	2420 (95)	1315 (52)	2580 (102)
	4800 – 7900	4010 – 6550 (5380 – 8780)	4220 (166)	1315 (52)	2580 (102)
6.0	600 – 2800	510 – 2300 (685 – 3075)	2420 (95)	1315 (52)	2580 (102)
	3100 – 5100	2510 – 4170 (3360 – 5580)	4220 (166)	1315 (52)	2580 (102)
6.6	700 – 3100	570 – 2530 (755 – 3385)	2420 (95)	1315 (52)	2580 (102)
	3400 – 5600	2760 – 4580 (3695 – 6140)	4220 (166)	1315 (52)	2580 (102)
7.2	700 – 3400	620 – 2760 (820 – 3690)	2420 (95)	1315 (52)	2580 (102)
	3700 – 6100	3010 – 5000 (4035 – 6695)	4220 (166)	1315 (52)	2580 (102)

SINAMICS GM150 Water-cooling					
Motor voltage kV	Power range kVA	Motor power ²⁾ kW (HP)	Width mm (inch)	Depth mm (inch)	Height mm (inch)
2.3	2000 – 3200	1670 – 2640 (2240 – 3530)	3620 (143)	1315 (52)	2280 (90)
3.3	2000 – 4600	1680 – 3780 (2245 – 5065)	3620 (143)	1315 (52)	2280 (90)
	5100 – 8000	4200 – 6610 (5635 – 8860)	5420 (213)	1315 (52)	2280 (90)
	10000 ¹⁾	8260 (11075)	4100 (161)	1580 (62)	2535 (100)
	15000 ¹⁾	12560 (16835)	8200 (323)	1580 (62)	2535 (100)
	19000 ¹⁾	15700 (21045)	8200 (323)	1580 (62)	2535 (100)
	23000 ¹⁾	18830 (25250)	12300 (484)	1580 (62)	2535 (100)
	28000 ¹⁾	23540 (31565)	12300 (484)	1580 (62)	2535 (100)
4.16	2000 – 5800	1690 – 4760 (2265 – 6385)	3620 (143)	1315 (52)	2280 (90)
	6400 – 10000	5300 – 8330 (7100 – 11170)	5420 (213)	1315 (52)	2280 (90)
6.0	1800 – 4100	1450 – 3320 (1940 – 4445)	3620 (143)	1315 (52)	2280 (90)
	4500 – 7300	3660 – 5950 (4900 – 7975)	5420 (213)	1315 (52)	2280 (90)
6.6	1900 – 4500	1590 – 3650 (2130 – 4885)	3620 (143)	1315 (52)	2280 (90)
	4900 – 8000	4020 – 6540 (5390 – 8770)	5420 (213)	1315 (52)	2280 (90)
7.2	2100 – 4900	1740 – 3980 (2325 – 5330)	3620 (143)	1315 (52)	2280 (90)
	5400 – 8700	4390 – 7140 (5880 – 9565)	5420 (213)	1315 (52)	2280 (90)

¹⁾ SINAMICS GM150 with IGCT, dimensions of cooling unit not included

²⁾ The specified motor power is based on typical data of 6-pole motors at nominal supply voltage

Optional components such as output reactor, output sinusoidal filter, braking module or excitation equipment for synchronous motors are not included in the above-mentioned dimensions.



SINAMICS GM150: Planning and commissioning the easy way.

The SIZER engineering tool, minimizes engineering costs:

The Siemens SIZER engineering tool contains all available SINAMICS components. This means that the drive system can be planned and engineered quickly and reliably. SIZER allows the user to design and dimension a wide range of drive systems. It is easy to learn as the graphic interface enables the tool to be intuitively used. Once learned, SIZER can be used to quickly and reliably engineer any SINAMICS drive system. The result – project costs are reduced due to the accelerated engineering process and correct selection.

Speeds-up commissioning: the STARTER tool

STARTER is the standard commissioning tool for the entire SINAMICS drives family. Thanks to the simple, menu-prompted operator interface, the commissioning engineer can quickly commission even complex systems in a short time without requiring any special system know-how. Functions can be checked and parameters optimized using integrated test routines. Trace functions graphically represent signal characteristics and make it easy to optimize and troubleshoot drives. Parameterization is also a lot simpler as data from electronic rating plates can be easily imported. This means that the operator no longer has to transfer each individual parameter – an otherwise tedious and time-consuming procedure.



With no effort at all:

Mechanical integration into the plant

- Front access allows wall-mounting of drive cabinets
- Simple and safe transport thanks to the integrated base frame
- Either air- or water-cooled
- Compact design makes it easier to integrate into existing plants
- Space-saving cabinet design reduces the costs of the electrical room
- Transformer location can be freely selected: oil-filled transformer for outdoor installation or dry-type for indoor installation

Individual and fast:

Electrical integration into the plant

An extensive range of electrical options allows the drive to be flexibly adapted to specific requirements:

- Top or bottom cable entry
- All connections from the front
- Without filter as standard for new systems equipped with Siemens converter motors
- The best solution in the market for operation with motors that are designed for direct online operation, using a real sinusoidal filter
- Line-friendly using a 12-pulse diode rectifier – or alternatively a 24-pulse diode rectifier
- SINAMICS GM150 (IGBT) fulfills the requirements of Underwriter's Laboratories for the UL test mark. This significantly simplifies worldwide use, especially for OEMs and plant integrators.



Your Siemens partner worldwide

can be found in the Internet under the following address:

www.siemens.com/automation/partner



The information in this brochure only provides a general description and performance features. For a specific application, this information will not always be applicable in the form described here. This information can also change due to ongoing production development. The required performance features are only binding if they have been expressly agreed upon in the form of a written contract.

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