Sophisticated Drive Solutions for High-Rating Single-Motor Drives

SINAMICS S150

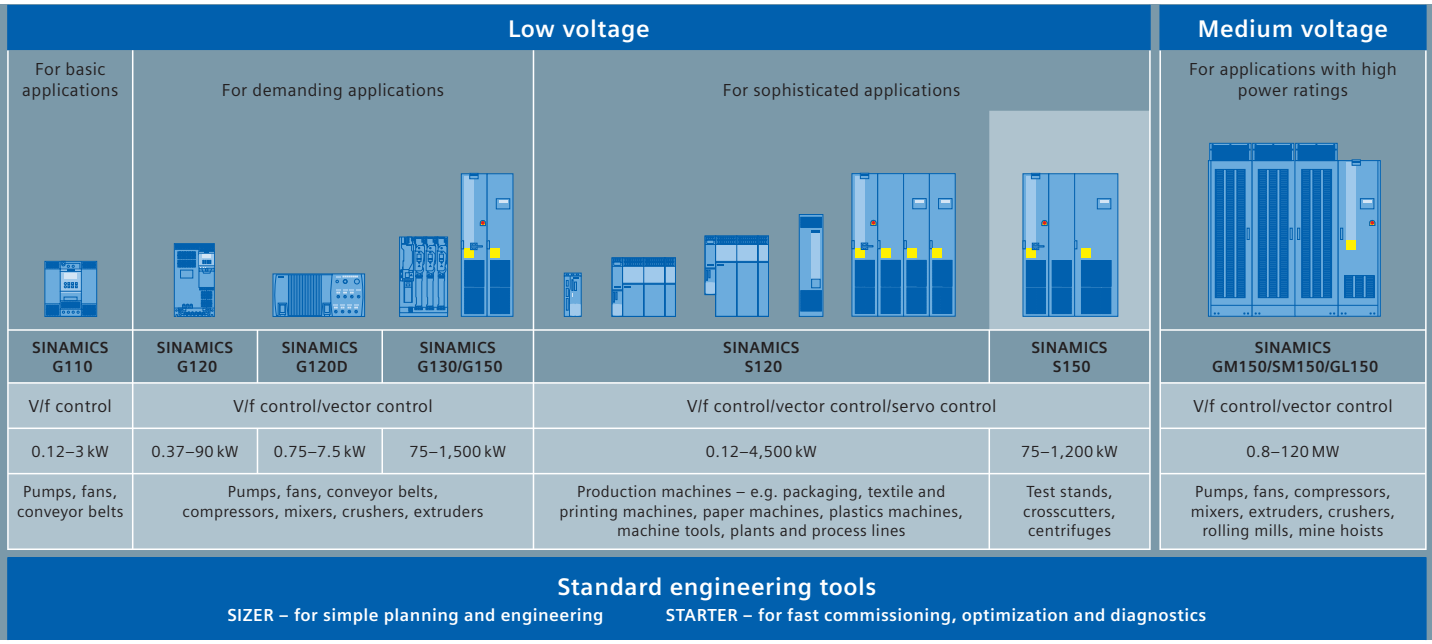
SINAMICS drives

Answers for industry.

SIEMENS

SINAMICS – the optimum drive for each and every application

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



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

SINAMICS – fit for every application

- Wide range of power ratings from 0.12 kW to 120 MW
- Available in low-voltage and medium-voltage versions
- Standard functionality using a common hardware and software platform
- All of the drives can be engineered using just two tools:
  SIZER – for engineering
  STARTER – for parameterizing and commissioning
- High degree of flexibility and combinability

The new drive quality

SINAMICS S150 drive converter

High precision and dynamic response

SINAMICS® S150 is a high-performance single-motor drive with closed-loop vector control for the power range from 75 to 1,200 kW. This drive converter is equipped, as standard, with Active Infeed (self-commutated regenerative feedback) into the line supply. This makes these drive converters especially line-friendly so that they can fulfil the stringent specifications of the power utility companies regarding the quality of the line supply (IEEE 519-1992).

Reliable solution for many applications

Variable-speed drives for high-performance process operations are especially applicable for machinery and plant construction in the process and production industries: Food and beverage, automobile and steel industries, underground/open-cast mining, marine engineering and cranes/conveyor technology profit from the precision of this drive. SINAMICS S150 makes sense for weak line supplies and those that fluctuate significantly. This is because it decouples the load from the line supply and intelligently compensates the voltage fluctuations.

Competitive advantages for plant and machinery construction

What makes plants and systems with SINAMICS S150 better than others? For instance, Active Infeed: This technology that Siemens has established in the market secures the high availability of a plant. This means that our Active Infeed makes the complete drive system insensitive to voltage fluctuations, it maintains operation during brief line supply interruptions in the millisecond range and not only this, but in regenerative operation there are no inverter commutation faults with fuses blowing when connected to weak line supplies. This is complemented by an extensive, long-term service concept rounded-off by the fact that the individual modules and power components have been designed so that they can be quickly replaced.

Significantly reduced: Space requirement and noise level

The SINAMICS S150 drive converter in a standard cabinet is especially quiet and compact because of its state-of-the-art IGBT power semiconductors together with an innovative cooling concept.

SINAMICS S150

- Vector control for the highest precision
- Active Infeed minimizes harmonics fed back into the line supply
- Simple to engineer, simple to handle
- Quiet
- Compact
- Can be easily integrated into higher-level automation solutions

SINAMICS S150 – precision drive with energy-saving and line-friendly technology

To efficiently use energy

For applications where the associated drives operate regeneratively as a result of frequent braking cycles and with high energy levels when braking, then it makes a lot of economic sense to regenerate this energy into the line supply. This is significantly more cost-effective than to convert the energy into heat, for example, using a braking chopper. SINAMICS S150 offers the best prerequisites because not only is it capable of regenerative feedback without any restrictions, but it does this with the highest precision and dynamic response.

Consequentially line-friendly

By impressing almost sinusoidal line currents, the harmonic losses known from conventional drive converters in the line transformer, low-voltage distribution and line feeder cables are avoided. Further, SINAMICS S150 does not cause any basic fundamental reactive power. This is because the line power supply factor cos φ is 1 independent of the load. However, SINAMICS S150 has an especially interesting positive feature as it can feed inductive or capacitive reactive current into the line supply over wide limits. This allows loads causing reactive power that are operating in parallel to be compensated, thus reducing expensive reactive power drawn from the public utility company.

As standard, SINAMICS S150 is supplied with an integrated EMC filter for the second environment (C3) according to EN 61800-3. This means that the drive converter doesn't result in any inadmissible noise even in the high-frequency range.

Precision and force for every production

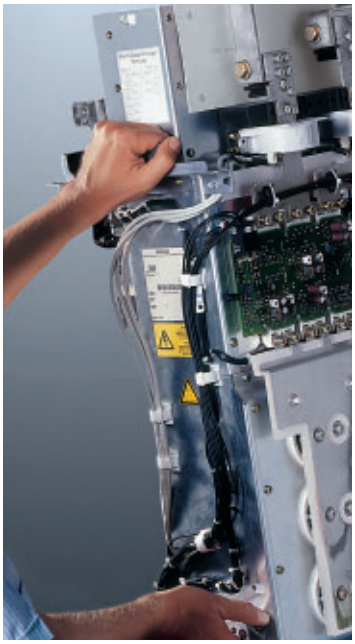
The optimized inverter functionality of the SINAMICS S150 allows high-precision closed-loop speed and torque control with and without an encoder. Further, the DC link voltage of the SINAMICS S150 is regulated to keep it constant.
This decouples the motor from the characteristics of the line supply voltage. This means that highest machine precision is guaranteed even when the drive system is connected to weak line supplies. This makes this drive the ideal solution, for example, for test stands, centrifuges, elevators, crosscutters, shears, conveyor belts, presses and cable winches.

Completely seamless: Totally Integrated Automation

High precision and fast processes profit because the intelligence has been shifted into the drive – even for large drives! This is because as the degree of automation increases, then it is essential that the drive system is integrated into the higher-level automation environment. It goes without saying that SINAMICS S150 is part of Totally Integrated Automation (TIA), the unique, common automation platform from Siemens. Totally Integrated Automation sets standards regarding integrated engineering, data management and communications.

The new level of simplicity

Planning, commissioning and operator control the easy way



**SIZER –
minimizes engineering costs**

The Siemens SIZER engineering tool contains all of the SINAMICS components that can be used. This means that a drive system can be quickly and reliably engineered. SIZER allows users to engineer a wide range of drive systems. It is extremely easy to get to know SIZER because the graphic interface means that the tool can be intuitively used. Once learned, SIZER can be used to quickly and reliably engineer any SINAMICS drive system. Result: The manufacturing costs are significantly reduced as a result of the lower engineering time.

**STARTER –
speeds up commissioning**

STARTER is the standard commissioning tool that is used for all of the SINAMICS drives. The commissioning engineer can even quickly start-up complex systems without any special system know-how thanks to the straightforward, menu-prompted operator interface. The functions can be checked using integrated tests and the various parameters can be optimized. Trace functions graphically display signal characteristics, which makes it easier to optimize drive systems and troubleshoot them. Further, it allows data to be imported from electronic rating plates – which significantly simplifies the parameterizing procedure. This is because the technician no longer has to transfer individual parameter numbers – which was a tedious time-consuming procedure.

**Digital DRIVE CLiQ interface:
Simply connect up!**

Seamless communications between the various components is a prerequisite for a modular drive system. The standard digital interface is known as DRIVE CLiQ and connects, as serial interface, the components in the cabinet and the motors.

SINAMICS S150: Extensive range of options (excerpt)

- Main breaker including fuses or circuit-breaker
- Motor temperature evaluation functions for PTC thermistors and PT 100
- EMERGENCY STOP, Category 0 or 1
- Extended customer terminal strip
- Power supply for external auxiliaries (e.g. a separately driven fan for the motor)
- Various mechanical options such as increased degree of protection up to IP54
- Line supply and motor connection from the top
- Options for the output, such as motor reactor, sinusoidal filter or dv/dt filter

Can be intuitively handled – thanks to the menu prompting

The user-friendly operator panel of the SINAMICS S150 drive converter provides a menu-prompted interface with plain text display. This reduces the number of operator errors and allows the drive to also be commissioned without the manual. Using the graphics-capable displays, analog setpoints and actual values can be displayed as bar diagram – allowing important drive operating quantities to be sensed at a glance.

Modular and compact

The SINAMICS S150 drive cabinet was consequentially designed with function blocks and modules to ensure good accessibility so that parts and components can be quickly replaced. This means the highest degree of service friendliness but at the same time an extremely small footprint.

SINAMICS S150

Rated power[1]	Rated output current	Dimensions[2]
P [kW]	I_N [A]	W x D x H [mm]
Voltage 380–480 V		
110	210	1,400 x 600 x 2,000
132	260	1,400 x 600 x 2,000
160	310	1,600 x 600 x 2,000
200	380	1,800 x 600 x 2,000
250	490	1,800 x 600 x 2,000
315	605	2,200 x 600 x 2,000
400	745	2,200 x 600 x 2,000
450	840	2,200 x 600 x 2,000
560	985	2,800 x 600 x 2,000
710	1,260	2,800 x 600 x 2,000
800	1,405	2,800 x 600 x 2,000
Voltage 500–690 V		
75	85	1,400 x 600 x 2,000
90	100	1,400 x 600 x 2,000
110	120	1,400 x 600 x 2,000
132	150	1,400 x 600 x 2,000
160	175	1,600 x 600 x 2,000
200	215	1,600 x 600 x 2,000
250	260	1,600 x 600 x 2,000
315	330	1,600 x 600 x 2,000
400	410	2,200 x 600 x 2,000
450	465	2,200 x 600 x 2,000
560	575	2,200 x 600 x 2,000
710	735	2,800 x 600 x 2,000
800	810	2,800 x 600 x 2,000
900	910	2,800 x 600 x 2,000
100	1,025	2,800 x 600 x 2,000
1,200	1,270	2,800 x 600 x 2,000

1) Rated power of a typical 6-pole standard induction motor based on IL for 3-ph. 500 or 690 V AC, 50 Hz.
2) The cabinet height is increased by 250 mm for degree of protection IP21, by 400 mm for degree of protection IP23, IP43, IP54 and by 405 mm for the options for line or motor connection from the top.

Additional informations on SINAMICS is provided under

www.siemens.com/sinamics

The adresses and contact partners are provided under

www.siemens.com/automation/partner

Through the A&D Mall you can directly order electronically through the Internet

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