SIEMENS

SINAMICS Drives

SINAMICS G150 NEMA

Type A enclosed drive 150 – 800 HP

Introduction

This specification sheet provides a short overview of the most important characteristics of the NEMA version of SINAMICS G150 type A. For more comprehensive information about the drive and options, as well as more detailed technical data, refer to the SINAMICS G150 NEMA catalog D11.7.

The SINAMICS G150 type A enclosed drive is a stand-alone variable speed enclosed drive ideal for all applications that involve moving, conveying, pumping or compressing solids, liquids or gases. In particular, this includes variable torque applications such as pumps, fans, blowers, and compressors, as well as constant torque applications such as mixers, extruders and mills that do not require regeneration.

This compact and quiet drive uses IGBT power semi-conductors and an innovative cooling concept. The control can be operated in either Volts/Hertz, sensorless vector or closed loop vector (with speed feedback encoder) control modes.

Standard features

The G150 type A enclosed drive is ready to install and run, complete with all necessary accessories. It is offered with a large variety of standard and custom input and output options, such as contactors, across the line or solid state bypass circuits, and output reactor.

SINAMICS G150 type A is delivered with the following standard features:

- Basic NEMA 1 enclosure
- Circuit breaker disconnect (per NEC requirements for motor branch circuit protection), mechanically interlocked with the enclosure door
- Fuses as required for SCCR (short circuit current rating)
- Input line reactor
- Controller CU320-2 DP with integral PROFIBUS DP communication port and Ethernet programming port
- Input/output module TM31, with digital and analog I/O
- Advanced Operator Panel AOP30 for easy start-up and operation
- Windows-based start-up STARTER software – common to all models of the SINAMICS drives family
- CE mark

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Product Specifications

Light Overload			High Overload					
Output (at 460V, or 575V, 60 Hz) HP	(at 400V or 500V 50Hz) kW	Base load current I_L [1] A	Output (at 460V or 575V, 60 Hz) HP	(at 400V or 500V, 50Hz) kW	Base load current I_H [1] A	Rated Output current I_N [1] A	Rated input current [2] A	SINAMICS G150 NEMA Type A Enclosed Drive Order No.
Supply voltage 380 V to 480 V 3 ph. AC								
150	110	205	**125**	90	178	**210**	239	**6SL3710-1GE32-1AU3**
200	132	250	**150**	110	233	**260**	294	**6SL3710-1GE32-6AU3**
250	160	302	**200**	132	277	**310**	348	**6SL3710-1GE33-1AU3**
300	200	370	**250**	160	340	**380**	405	**6SL3710-1GE33-8AU3**
400	250	477	**350**	200	438	**490**	519	**6SL3710-1GE35-0AU3**
500	315	590	**400**	250	460	**605**	639	**6SL3710-1GE36-1AU3**
600	400	725	**500**	315	570	**745**	785	**6SL3710-1GE37-5AU3**
700	450	820	**600**	400	700	**840**	883	**6SL3710-1GE38-4AU3**
800	560	960	**700**	450	860	**985**	1034	**6SL3710-1GE41-0AU3**
Supply voltage 500 V to 600 V 3 ph. AC								
150	110	171	**150**	90	157	**175**	201	**6SL3710-1GF31-8AU3**
200	132	208	**200**	110	192	**215**	234	**6SL3710-1GF32-2AU3**
250	160	250	**250**	132	233	**260**	280	**6SL3710-1GF32-6AU3**
300	200	320	**300**	160	280	**330**	353	**6SL3710-1GF33-3AU3**
400	250	400	**350**	200	367	**410**	436	**6SL3710-1GF34-1AU3**
450	315	452	**450**	250	416	**465**	493	**6SL3710-1GF34-7AU3**
600	400	560	**500**	315	514	**575**	608	**6SL3710-1GF35-8AU3**
700	500	710	**600**	450	657	**735**	774	**6SL3710-1GF37-4AU3**
800	560	790	**700**	500	724	**810**	852	**6SL3710-1GF38-1AU3**

[1] For a NEMA 12 (ventilated) enclosure (option M54), current values must be reduced to 95% of the values in this table.
[2] The input current is based on the rated output current and includes 10A to power optional auxiliary circuits in the drive (such as L17, L50, N70).
Note: HP ratings are based on rated current, and provided as a guide only, for standard 2, 4 or 6 pole motors. Select drive based on motor FLA and overloads.

Options

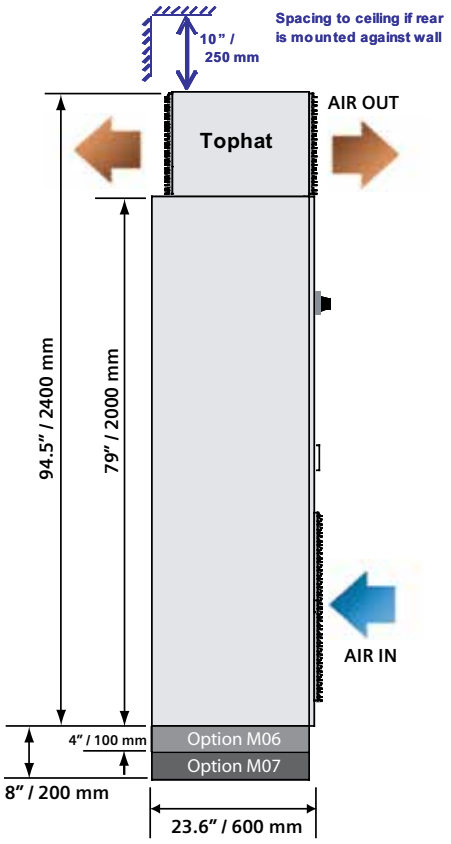
Option Code	Description
Enclosure Options	
M06	Base (plinth) 4" (100mm)
M07	Base (plinth) 8" (200mm)
M23	Enclosure NEMA 1 filtered
M39	Mechanical door interlock (slam latch) [for doors without c/b operator]
M43	Enclosure IP43
M54	Enclosure NEMA 12 (ventilated) [Requires current derate to 95%]
M78	Motor side top cable exit
M90	Lifting beam/eye bolts [Recommended: Required to lift the drive off pallet]
Y09	Special enclosure paint color (specify color)
Power Options	
L08	Motor reactor
L10	Output dV/dt-Filter with VPL [Requires add-on options cabinet]
L13	Input contactor
L22	Without input line reactor
L61	Braking unit 100 kW (for 150 HP and 200 HP only)
L62	Braking unit 200 kW (for 250 HP to 800 HP only)
Miscellaneous Options	
L17	Feeder for external auxiliaries 460V 3ph. AC, max. 10 A
L50	Enclosure light with power outlet 120 V, 1 ph AC, 5 A
L55	Enclosure space heater
U90	UL listing per UL508A [Requires M23, M43 or M54]
U91	cUL listing per UL508A [Requires M23, M43 or M54 & T58]
Testing	
F03	Visual inspection by customer
F71	Witnessed function test without motor
F75	Witnessed function test with test-bay motor, no load
F77	Witnessed test incl. high-voltage and isulation test
F97	Witnessed customer specific test (on request)

Option Code	Description
Bypass Options	
L29	3 contactor bypass [Requires add-on options cabinet]
L30	Soft start bypass [Requires add-on options cabinet]
Control Options	
G20	Communication board CBC10 (CAN-open)
G22	Modbus RTU communication
G27	MODBUS TCP/IP communication
G33	CBE20 for SINAMICS link or PROFINET or EtherNet/IP
G51	TM150 Terminal Module for RTD monitoring
G52	Qty. 2 of TM150 Terminal Module for RTD monitoring
G61	Additional TM31 terminal module for digital and analog I/O
G65	TM31 I/O wired to customer terminal strip
G66	2nd TM31 (opt. G61) I/O wired to customer terminal strip
K01	Safety license (for 1 axis)
K50	SMC30 sensor module for speed feedback
K51	VSM10 voltage sensing module
K52	Additional SMC30 sensor module
K82	Terminal interface for Safety Integrated functions STO and SS1
K87	TM54F Terminal Module (requires option K01)
K88	Safe Brake Adapter SBA, 230 V AC (not UL listed)
K95	Control unit CU320-2 PN (PROFINET)
L87	Insulation Monitor for ungrounded supplies
L96	Input surge protective device
N55	ALL STOP (mushroom pushbutton), coast to stop
N57	Emergency Stop category 0, 120V or 24V, coast to stop
N59	Emergency Stop category 1, 120V, controlled ramp down
N60	Emergency Stop category1, 24V, controlled ramp down
N70	Control power supply 120V, 5A
Documentation and Languages	
D02	Customer drawings in dxf format
D04	Customer documentation in paper format, one set
D14	Advance copy of customer documentation (pdf)
D58	Documentation English/French
T58	Nameplate English/French

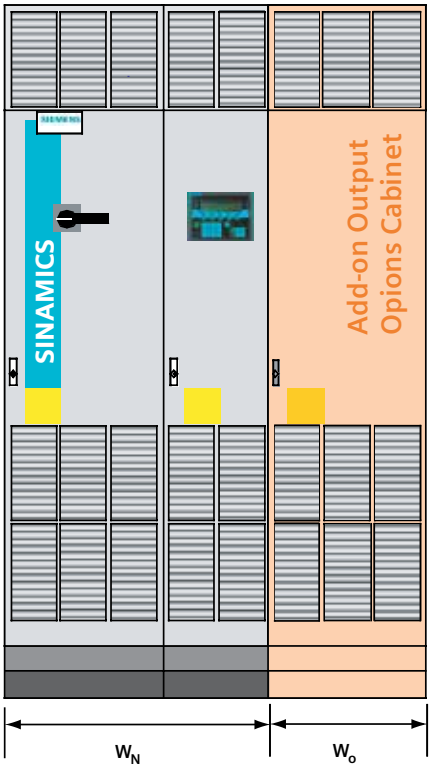
Please consult factory for additional engineered options, for example:
Pushbuttons, control switches and indicator lights
Motor space heater connection

Bypass – Automatic or Synchronized
Output sinusoidal filter or contactor(s)

Design Data



SIDE VIEW



FRONT VIEW

G150 type A on pallet, with transport beams (tophats removed)

Note:

- The drawing shows the SINAMICS G150 type A enclosed drive with louvers (option M23, M43 or M54).
- For transport reasons, the tophats are delivered separately and must be fitted on site.
- To assure proper air circulation through the drive, please allow a minimum space of 10" (250mm) between drive tophat and ceiling when mounted against a wall.
- All dimensions are nominal for sheet steel enclosure, tolerance 0.5" (12 mm), excluding protruding components. Please refer to order drawings for exact details.

SINAMICS G150 NEMA Type A Enclosed drive	Output (Light Overload) (at 460V, or 575, 60 Hz)	Noise level L_{pA} (1m) at 50/60 Hz	Cooling air flow demand	Heat loss	Weight approx. (standard enclosure w/o options)		Nominal Width Drive Enclosure W_N		Nominal Width Options Cabinet (dV/dt Filt. L10) W_O		Nominal Width Options Cabinet (Bypass L29) W_O		Nominal Width Options Cabinet (SS Bypass L30) W_O	
Model No.	HP	dB(A)	cfm	kW	lb	kg	inch	inch	inch	mm	inch	mm	inch	mm
Supply voltage 380 V to 480 V 3 ph. AC														
6SL3710-1GE32-1AU3	150	67 / 68	360	2.9	950	430	39.4	1000	23.6	600	23.6	600	23.6	600
6SL3710-1GE32-6AU3	200	69 / 73	487	3.8	950	430	39.4	1000	23.6	600	23.6	600	23.6	600
6SL3710-1GE33-1AU3	250	69 / 73	763	4.4	1250	570	39.4	1000	23.6	600	23.6	600	23.6	600
6SL3710-1GE33-8AU3	300	69 / 73	763	5.3	1250	570	39.4	1000	23.6	600	23.6	600	23.6	600
6SL3710-1GE35-0AU3	400	69 / 73	763	6.4	1250	570	39.4	1000	23.6	600	23.6	600	31.5	800
6SL3710-1GE36-1AU3	500	70 / 73	1653	8.2	2000	900	47.2	1200	15.8	400	23.6	600	39.4	1000
6SL3710-1GE37-5AU3	600	70 / 73	1653	9.6	2000	900	47.2	1200	15.8	400	23.6	600	39.4	1000
6SL3710-1GE38-4AU3	700	70 / 73	1653	10.1	2000	900	47.2	1200	15.8	400	39.4	1000	70.9	1800
6SL3710-1GE41-0AU3	800	72 / 75	3136	14.4	3100	1400	63.0	1600	15.8	400	39.4	1000	70.9	1800
Supply voltage 500 V to 600 V 3 ph. AC														
6SL3710-1GF31-8AU3	150	69 / 73	763	3.8	1200	550	39.4	1000	23.6	600	23.6	600	23.6	600
6SL3710-1GF32-2AU3	200	69 / 73	763	4.2	1200	550	39.4	1000	23.6	600	23.6	600	23.6	600
6SL3710-1GF32-6AU3	250	69 / 73	763	5.0	1200	550	39.4	1000	23.6	600	23.6	600	23.6	600
6SL3710-1GF33-3AU3	300	69 / 73	763	6.1	1200	550	39.4	1000	23.6	600	23.6	600	23.6	600
6SL3710-1GF34-1AU3	400	72 / 75	1653	8.1	1700	780	47.2	1200	15.8	400	23.6	600	31.5	800
6SL3710-1GF34-7AU3	450	72 / 75	1653	7.8	1700	780	47.2	1200	15.8	400	23.6	600	31.5	800
6SL3710-1GF35-8AU3	600	72 / 75	1653	8.7	1700	780	47.2	1200	15.8	400	23.6	600	39.4	1000
6SL3710-1GF37-4AU3	700	72 / 75	3136	12.7	3100	1360	63.0	1600	15.8	400	39.4	1000	39.4	1000
6SL3710-1GF38-1AU3	800	72 / 75	3136	14.1	3100	1400	63.0	1600	15.8	400	39.4	1000	70.9	1800

Technical Data

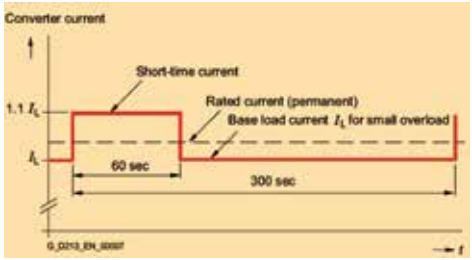
Electrical data			
Supply voltages and output ranges	380 V to 480 V 3 ph AC, ±10% (-15% < 1 min) 150 to 800 HP 500 V to 600 V 3 ph AC, ±10% (-15% < 1 min) 150 to 800 HP		
Supply systems	Grounded (TN/TT) supplies or ungrounded (IT) supplies		
Line frequency	47 Hz to 63 Hz		
Output frequency	0 Hz to 300 Hz		
Power factor fundamental / total	> 0.98 / 0.93 to 0.96		
Converter efficiency	> 98%		
Short circuit current rating	SCCR per UL508A at 480V, all HP: 65kA; at 600V to 400HP: 25kA, 450HP: 30 or 35kA, 600HP - 800HP: 35kA		
Control method	Vector control (sensorless and closed loop) or V/Hz control		
Fixed speeds	15 fixed speeds plus 1 minimum speed, programmable (in the default setting 3 fixed setpoints plus 1 minimum speed can be selected via digital inputs/ PROFIBUS)		
Skipped frequency ranges	4, programmable		
Braking operation	optional via braking unit		
Mechanical data			
Type of enclosure	NEMA1 (optionally NEMA 1 filtered or NEMA12 ventilated) Color RAL 7035 light grey		
Type of cooling	Forced air ventilation		
Noise level L_{pA} (1 m)	< 75 dB at 60 Hz line frequency		
Environmental protection	Nickel plated busbars, varnish coated electronic boards		
Compliance with standards			
UL listing	Optional listing per UL508A		
Ambient conditions	**Operation**	**Storage**	**Transport**
Ambient temperature	32°F to 104°F (0 °C to +40 °C) Up to +122°F/+50°C with derating	-13°F (-25 °C) to 131°F (+55 °C)	-13°F (-25 °C) to 158°F (+70 °C) Above -40°F (-40 °C) for 24 hours
Relative humidity (non-condensing)	5% to 95% corresponds to 3K3 to IEC 60721-3-3	5% to 95% corresponds to 1K4 to IEC 60721-3-1	5% to 95% at 40 °C corresponds to 2K3 to IEC 60721-3-2
Installation altitude	Up to 6,600 ft (2000 m) above sea level without reduction in performance, > 6,600 ft see derating data		

Engineering Information

Overload ratings

The SINAMICS G150 drive may be operated with both variable torque and constant torque loads at either light or high overload duties. The criterion for overload is that the drive is operated with its base load current before and after the overload occurs.

Light overload duty is based on 110% base load current for 60 sec or 150% for 10 sec, repeated every 300 sec.



Light overload

High overload duty is based on 150% base load current for 60 sec or 160% for 10 sec, repeated every 300 sec.

Motor and drive sizing

Service Factor must be considered for motors operating at Service Factors beyond 1.0. Please consult factory for assistance sizing the drive.

For motors with ratings larger than the drive, please consult factory as nuisance tripping may occur if drive is not properly sized.

In sensorless vector control, the rated motor current (FLA) must be at least ¼ of the rated drive output current. With lower motor currents, operation is possible in Volts/Hz control mode only.

Advanced operator panel (AOP30)

The easy-to-use advanced operator panel is common to all SINAMICS enclosed drives. The AOP30 is mounted in the enclosure door of the G150 drive, and is used for start-up/commissioning or operation and troubleshooting of the drive.

During the first start-up of the drive, the user will automatically be guided through the initial start-up procedure that allows a very simple and quick commissioning process. Parameters are arranged according to function groups which makes it easy to find and select them.

The AOP30 features a graphical LCD with backlighting for plain text and bar graph display of process variables:

- LEDs for display of operational status
- Numeric keypad and drive specific hard and soft function keys
- Access control to inhibit changing of parameters
- Help functions with description of causes and remedies for faults and alarms
- Alarm and fault status in plain text
- Configurable operating display allows up to 3 variables displayed in bar graph format, with associated numerical values

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