

SIEMENS



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# Shortform Catalogue

Variable Speed Drives October 2013

SINAMICS G110  
SINAMICS G120C  
SINAMICS G120P  
SINAMICS G120  
SINAMICS G110D  
SINAMICS G120D

SINAMICS S110  
SINAMICS G130 / G150  
SINAMICS S120  
MICROMASTER 420 / 430 / 440  
High Efficiency Motors  
Integrated Drive Systems

Answers for industry.

# Variable speed drives, low voltage motors and geared motor units. A world of applications - one solution

Siemens Industry supplies a comprehensive range of automation, electrical distribution and drives products worldwide and is the largest supplier of variable speed drives in Europe.



Our multi-award winning drives manufacturing facility in Congleton, Cheshire ranks amongst the world's largest variable speed drive factories, producing more than 2500 drives per day and a further 3500 options (Control Units and Operator Panels).

This latest edition of the shortform catalogue highlights the main features and benefits of our **SINAMICS** and **MICROMASTER** drives families, which compliment our latest drives, low voltage motors and geared motors catalogues. With a reputation for innovative technology and the highest quality, our complete family of **SINAMICS** and **MICROMASTER** drives can fulfil a vast range of application requirements. Add to that our high efficiency motors and gear boxes, then Siemens has the optimum cost effective solution for all drive applications.

No product range is complete without a comprehensive service, support and training package, which is where Siemens stands out amongst other suppliers. Whether you are looking for applications assistance, training solutions, or breakdown support, you can be assured of a professional and efficient service from Siemens. Our aim is to provide our customers with an outstanding level of support, which safeguards production and contributes to our customers future success.



Call our hotline to arrange a free consultation with one of our expert drive specialists –

From UK Tel: 08458 507600  
From IRL Tel: 1890 507600

E-mail:  
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# Drives Overview

## Variable Speed Drives



### SINAMICS G110

0.12 kW ... 3 kW, 200 V ... 240 V 1 AC

This compact entry level drive is the ideal solution for low cost, low power solutions such as small pumps and fans, barriers, doors and billboards.

Full details can be found on pages 7 and 8



### SINAMICS G120C

0.55 kW ... 18.5 kW, 380 V ... 480 V 3 AC

The SINAMICS G120C is a compact variable speed specifically designed for OEMs who require a cost effective, space saving design that is simple to operate and has a broad range of functions.

Ideal for conveyors, pumps, fans, compressors, mixers and extruders.

Full details can be found on pages 9 and 10



### SINAMICS G120P

IP55: 0.37 kW ... 90 kW, 380 V ... 480 V 3 AC  
IP20: 0.37 kW ... 75 kW, 380 V ... 480 V 3 AC

The SINAMICS G120P is an IP55 or IP20 rated innovative, energy efficient variable-speed drive specifically tailored to pump, fan, compressor and HVAC applications.

This modular drive solution comprises a power modular (PM), control unit (CU) and optional operator panel.

Full details can be found on pages 11 and 12



### SINAMICS G120 Modular

0.37 kW ... 250 kW, 380 V ... 480 V / 500 V ... 690 V 3 AC

The SINAMICS G120 is a modular drive solution comprising a Power Module (PM) and Control Unit (CU) and is designed to provide precise and cost effective speed/torque control of AC motors in a wide range of industrial applications.

Full details can be found on pages 13 to 22



(depending on Control Unit and Power Module)

## Distributed Drives



### SINAMICS G110D

0.75 kW ... 7.5 kW, 380 V ... 500 V 3 AC

This is a simpler version of the higher-performance SINAMICS G120D and offers the same mounting footprint, low profile design and rugged metal enclosure so can be located close to the motor. Communications can be carried out using ASI interface.

### SINAMICS G120D

0.75 kW ... 7.5 kW, 380 V ... 500 V 3 AC

Distributed version of the G120 for cabinet free applications. Compact design with Regenerative Energy capability, this drive has been specifically designed for sophisticated conveyor applications. Communication via Profibus or Profinet.

Full details can be found on pages 23 to 26



## Simple Servo / Positioning Drive



### SINAMICS S110

0.12 kW ... 0.75 kW, 200 V ... 240 V 1 AC  
0.37 kW ... 90 kW, 380 V ... 480 V 3 AC



Many applications in machine construction require accurate positioning from point X to point Y quickly and precisely by the simplest possible method. The SINAMICS S110 is an ideal solution for this type of application and is specifically designed to position an axis accurately and effectively.

Full details can be found on pages 27 and 28



### SINAMICS G130

110 kW ... 560 kW, 380 V ... 480 V 3 AC  
110 kW ... 560 kW, 500 V ... 600 V 3 AC  
75 kW ... 800 kW, 660 V ... 690 V 3 AC

### SINAMICS G150

110 kW ... 900 kW, 380 V ... 480 V 3 AC  
110 kW ... 1000 kW, 500 V ... 600 V 3 AC  
75 kW ... 2700 kW, 660 V ... 690 V 3 AC

The SINAMICS G130 Chassis units and the SINAMICS G150 Cabinet units are variable speed drives specifically designed to meet single motor applications with square-law and constant load characteristics without regenerative feedback into the mains supply.



Brief details can be found on page 29

## Engineered Drive



### SINAMICS S120

0.12 kW ... 0.75 kW, 200 V ... 240 V 1 AC  
0.37 kW ... 3000 kW, 380 V ... 480 V 3 AC  
75 kW ... 4500 kW, 500 V ... 690 V 3 AC



The SINAMICS S120 is a modular drive system with servo and vector control capabilities for sophisticated tasks. Versions are available for single and multi-axis applications.

#### Typical Applications

- Packaging, plastics, printing and paper machines
- Textiles
- Woodworking, glass and ceramics
- Machine tools
- Steel industry
- Hoisting and cranes
- ....and many more

Brief details can be found on page 29



### MICROMASTER 420

0.12 kW ... 3 kW, 200 V ... 240 V 1 AC  
0.37 kW ... 11 kW, 380 V ... 480 V 3 AC

The 'Universal' drive for a range of variable speed applications such as fans, pumps and conveyor systems.

### MICROMASTER 430

7.5 kW ... 250 kW, 380 V ... 480 V 3 AC

The 'Specialist' for fans and pumps.

### MICROMASTER 440

0.12 kW ... 3 kW, 200 V ... 240 V 1 AC  
0.37 kW ... 250 kW, 380 V ... 480 V 3 AC

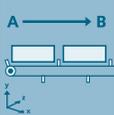
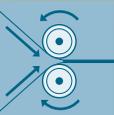
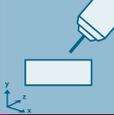
The 'All Purpose' drive where flexibility and performance make it suitable for a vast array of applications.

Full details can be found on pages 39 to 44

# SINAMICS - Performance Levels

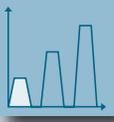
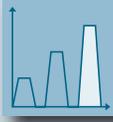
For every application, power rating and performance level

Simply select your application to see which SINAMICS inverter is the best choice – for every application, power rating and performance level.

Performance *	Continuous motion		
	Basic	Medium	High
Purpose			
Pumping Ventilating Compressing	 Centrifugal pumps Radial / axial fans Compressors <b>G110</b> <b>G120C</b> G130/G150	Centrifugal pumps Radial / axial fans Compressors <b>G120C</b> <b>G120P</b> <b>G120</b> G130/ G150	Eccentric spiral / worm / screw pumps <b>S120</b>
Moving	 Belt conveyors Roller conveyors Chain conveyors <b>G110</b> <b>G110D</b> <b>G120C</b> G130/G150	Belt conveyors Roller conveyors Chain conveyors Vertical / horizontal material handling Elevators / escalators Gantry cranes Ship's drives Cable railways <b>G110D</b> <b>G120C</b> <b>G120</b> G130/ G150 S120	Elevators Container cranes Mine hoists Open cast mine excavators Test stands <b>S120</b>
Processing	 Mills Mixers Kneaders Crushers Agitators Centrifuges <b>G120C</b> G130/G150	Mills Mixers Kneaders Crushers Agitators Centrifuges Extruders Rotary furnaces <b>G120C</b> <b>G120</b> G130/ G150	Extruders Winders / unwinders Leading / following drives Calendars Mechanical presses Printing machines Rotary furnaces <b>S120</b>
Machining	 Main drives i.e. <ul style="list-style-type: none"> <li>■ Turning</li> <li>■ Milling</li> <li>■ Drilling</li> </ul> <b>S110</b>	Main drives i.e. <ul style="list-style-type: none"> <li>■ Drilling</li> <li>■ Sawing</li> </ul> <b>S110</b> <b>S120</b>	Main drives i.e. <ul style="list-style-type: none"> <li>■ Turning</li> <li>■ Milling</li> <li>■ Drilling</li> <li>■ Gear cutting</li> <li>■ Grinding</li> </ul> <b>S120</b>

\* Requirements regarding torque, speed and position precision/axis co-ordination/functionality.

## Discontinuous motion

Basic		Medium		High	
					
Hydraulic pumps Dosing pumps	<b>S110</b>	Hydraulic pumps Dosing pumps	<b>S110</b> <b>S120</b>	Descaling pumps Hydraulic pumps	<b>S120</b>
Accelerating conveyors Rack feeders	<b>G120D</b> <b>S110</b>	Accelerating conveyors Rack feeders Cross cutters Roll changers	<b>S110</b> <b>S120</b>	Rack feeders Robotics Pick & place Indexing tables Cross cutters Roller feeds Engaging/disengaging	<b>S120</b>
Tubular bagging machines Single axis motion control i.e. <ul style="list-style-type: none"><li>■ Positioning profiles</li><li>■ Path profiles</li></ul>	<b>S110</b>	Tubular bagging machines Single axis motion control i.e. <ul style="list-style-type: none"><li>■ Positioning profiles</li><li>■ Path profiles</li></ul>	<b>S110</b> <b>S120</b>	Servo presses Rolling mill drives Coordinated multi-axis motion control i.e. <ul style="list-style-type: none"><li>■ Multi-axis positioning</li><li>■ Can discs</li><li>■ Interpolation</li></ul>	<b>S120</b>
Axis drives i.e. <ul style="list-style-type: none"><li>■ Turning</li><li>■ Milling</li><li>■ Drilling</li></ul>	<b>S110</b>	Axis drives i.e. <ul style="list-style-type: none"><li>■ Drilling</li><li>■ Sawing</li></ul>	<b>S110</b> <b>S120</b>	Axis drives i.e. <ul style="list-style-type: none"><li>■ Turning</li><li>■ Milling</li><li>■ Drilling</li><li>■ Laser machining</li><li>■ Gear cutting</li><li>■ Grinding</li><li>■ Nibbling and punching</li></ul>	<b>S120</b>

SINAMICS is the most comprehensive drive family available today. It is based on a simple, integrated engineering concept, inherently providing innovative, energy-efficient solutions for the future.

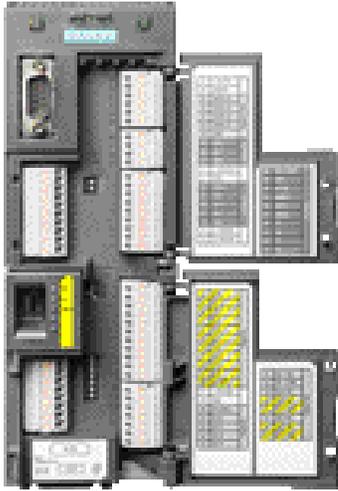
No matter which direction you wish to go, Siemens offers you the optimum drive — from one source for every application.

### Solutions for your specific application

With SINAMICS, you always achieve your objectives. No matter whether it involves flow control applications such as pumps, fans and compressors, or processing applications such as extruding and crushing; from lifting and moving applications such as conveyors and elevators to complex motion control applications such as milling, turning and machining — Siemens SINAMICS drives offer you a unique range of power and performance.

### Minimise your costs

The engineering costs for configuring and commissioning drive solutions must be kept as low as possible. Using SINAMICS, you minimize your costs — with integrated and standard tools for selecting, configuring and commissioning — permitting fast, straightforward engineering at a favorable cost.



## G120 Control Unit CU250S-2 VECTOR

The Control Unit CU250S-2 Vector is the successor of the popular CU240S for applications requiring accurate speed / torque control or positioning utilizing encoder feedback.

### Technical Information

The CU250S-2 Control Unit has the following inputs and outputs and are classified as 'Failsafe' devices:

- 11 digital inputs, isolated, PNP/NPN switching
- 6 digital inputs of the total can be used as F-DI
- 2 digital outputs as F-DO, relay NO/NC, 30V DC 0.5A
- 1 digital output as open collector 30V DC 0.5A
- 2 analogue inputs 0 – 10V, 0/4 – 20mA
- 2 analogue outputs 0 – 10V, 0/4 – 20mA
- 1 motor temperature sensor input for PTC, KTY, Thermo-Click
- +24V output connections , +24V/200mA and +10V/10mA

### Communication Interfaces:

- RS485/USS/Modbus, Profibus DP, Profinet/Ethernet IP and CANbus

### Encoder Interfaces:

- Terminals: Resolver or HTL
- Sub D Connector: TTL/HTL,SSI
- Drive CLiQ: TTL/HTL, SSI, Resolver, EnDat, DQ Encoder

A matrix is included in the technical documentation detailing the combinations of encoders that can be used together.

### Safety:

The CU250S-2 has Safe Torque Off (STO), Safe Stop 1 (SS1) and Safe Brake Control (SBC) as standard.

Safe Speed Monitor (SSM), Safe Direction Indication (SDI) and Safe Limited Speed (SLS) are available as a licensed option loaded on to a SD Card. See page 50 for details on these functions.

The CU250S-2 can be used on the following Power Modules Vector – PM240, PM240-2, PM250 and PM340 1 phase.

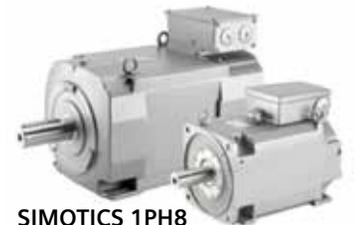
## CU250S-2 VECTOR Application area

Performance *	Continuous motion						Discontinuous motion					
	Basic	Medium	High	Basic	Medium	High						
<b>Pumping</b> Ventilating Compressing	Centrifugal pumps Radial / axial fans Compressors	G110 G120C G130S01150	Centrifugal pumps Radial / axial fans Compressors	G120C G120P G130	Dynamic spiral / worm screw pumps	G120P G130	Hydraulic pumps Dosing pumps	S110	Hydraulic pumps Dosing pumps	S110	Reciprocating pumps Hydraulic pumps	S120
<b>Moving</b>	Roll conveyors Chain conveyors	G110 G110B G120C	Roll conveyors Chain conveyors Vertical / horizontal material handling Elevators / escalators Sandy conveyors Cable railways	G110C G120C G130	Elevators Container cranes Mine hoists Open cast mine conveyors Test stands	G120C G130	Accelerating conveyors Roll feeders	G120C S110	Accelerating conveyors Roll feeders Cross cutters Roll chargers	S110	Roll feeders Rollbots Pick & place Infeeding tables Cross cutters Roller feeds Engage/disengage	S120
<b>Processing</b>	Mills Mixers Blenders Crushers Agitators Centrifuges	G120C G130S01150	Mills Mixers Blenders Crushers Agitators Centrifuges Extruders Rotary furnaces	G120C G130	Extruders Blenders / comminors Jauling / following drives Calculators Mechanical presses Printing machines Rotary furnaces	G120C G130	Tabular bopping machines Single axis motion control i.e. = Positioning profiles = Path profiles	S110	Tabular bopping machines Single axis motion control i.e. = Positioning profiles = Path profiles	S110	Servo presses Rolling mill drives Coordinated multi-axis motion control i.e. = Multi-axis positioning = Cam discs = Interpolation	S120
<b>Machining</b>	Main drives i.e. = Turning = Milling = Drilling	S110	Main drives i.e. = Drilling = Sawing	S110	Main drives i.e. = Turning = Milling = Drilling = Gear cutting = Grinding	S120	Axis drives i.e. = Turning = Milling = Drilling	S110	Axis drives i.e. = Drilling = Sawing	S110	Axis drives i.e. = Turning = Milling = Drilling = Laser machining = Gear cutting = Grinding = Hobbing and punching	S120

### Motors:

The CU250S-2 Vector is capable of controlling a variety of asynchronous motors e.g.

#### SIMOTICS 1LA7/1LE1

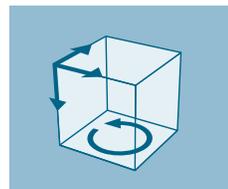


SIMOTICS 1PH8

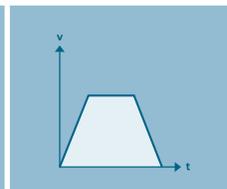
### Positioning with EPos:

The EPos (Easy Positioning) is available as a licensed option loaded onto a SD Card. The functions available are:

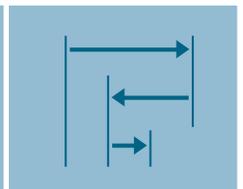
- Linear axis and rotary axis
- Absolute and relative positioning
- Speed, acceleration/deceleration and jerk limitation can be specified
- Travel to fixed stop
- Monitoring functions
- Intervention (e.g. setpoint changes) possible, even during movement
- Operating Modes
- Direct setpoint value specification (MDI)
- Positioning with traversing blocks (up to 16 blocks)
- Referencing
- Jogging



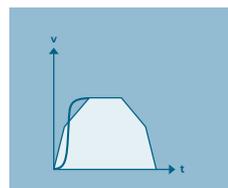
Linear & rotary axes



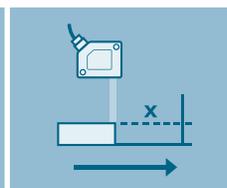
Positioning



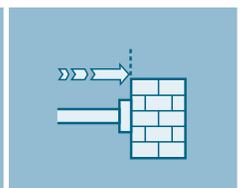
Automatic positioning



Jerk limitation



Positioning on the fly



Travel to fixed stop

Migration from CU240S to CU250-2 VECTOR				
CU240S	Part Number	CU250S-2	Part Number	Options required for CU250S-2
CU240S (RS485)	6SL3244-0BA20-1BA0	CU250S-2 (RS485), (STO, SBC and SS1)	6SL3246-0BA22-1BA0	-
CU240S DP	6SL3244-0BA20-1PA0	CU250S-2 DP (STO, SBC and SS1)	6SL3246-0BA22-1PA0	-
CU240S DP-F (STO, SBC, SS1, SLS)	6SL3244-0BA21-1PA0	CU250S-2 DP (STO, SBC and SS1)	6SL3246-0BA22-1PA0	SD card with Extended Safety license (SLS, SSM, SDI) 6SL3054-4AG00-2AA0-Z F01
CU240S PN	6SL3244-0BA20-1FA0	CU250S-2 PN (STO, SBC and SS1)	6SL3246-0BA22-1FA0	-
CU240S PN-F (STO, SBC, SS1, SLS)	6SL3244-0BA21-1FA0	CU250S-2 PN (STO, SBC and SS1)	6SL3246-0BA22-1FA0	SD card with Extended Safety license (SLS, SSM, SDI) 6SL3054-4AG00-2AA0-Z F01



The Ethernet Industrial Protocol (EtherNet / IP) is an open standard for industrial networks described in IEC 61158. EtherNet / IP is used to transfer cyclic I/O data and acyclic parameter data and was developed in association with the ODVA (Open DeviceNet Vendor Association) and is widely used as a standard communication protocol in the US.

EtherNet / IP uses the "Common Industrial Protocol" (CIP) as application layer. This application layer and open software and hardware interfaces allow seamless connection of automation components from the field level to the control level up to the management level.

- 10 and 100Mbit/s data communication with Ethernet Twisted Pair cables or optical transmission
- Switched Ethernet
- Construction with star, tree, ring, and other topologies
- Master slave principle
- Optional communication profile based on PROFIDRIVE or AC/DC drive profile according OVDA

**EtherNet / IP is now available on all drives with Profinet communication from Firmware 4.6.**

## Motor Reactors

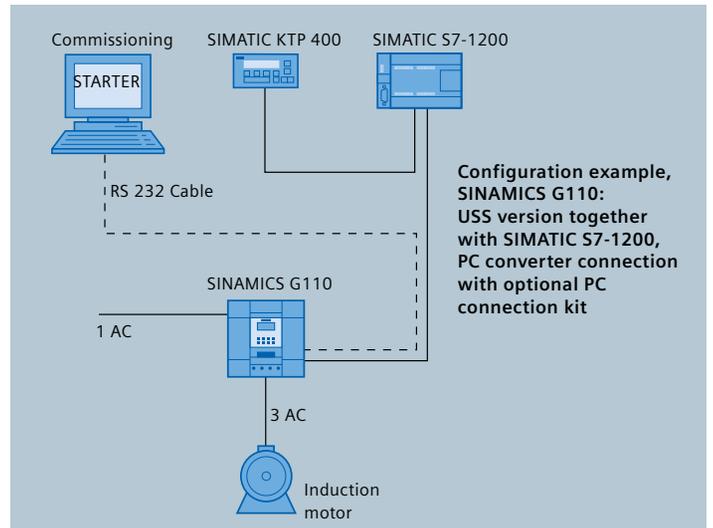
Motor Reactors or Output Reactors reduce the voltage loading on the motor windings. At the same time, the capacitive charge / discharge currents, which place an additional load on the power section when long cables are used are reduced.

**Motor Reactors are now available for G120C, G120 PM230 IP55 and IP20 versions and PM240-2 Power Modules.**



# SINAMICS G110

The versatile single-motor drive for low power ratings



## Design

The SINAMICS G110 is a variable speed drive with basic functions for a variety of industrial applications. This particularly compact drive operates with voltage frequency control on single phase supplies (200V to 240V) with power ratings of 0.12 kW to 3.0 kW. It's the ideal solution for low cost, low power applications.

## Benefits

- Easy to install, parameterise and commission
- Fast series commissioning by copying parameters
- Flexibility – choice of Analogue or USS, with or without filter
- Dip switch to select 50/60 Hz
- Software functions for auto restart, flying restart, ramp smoothing and adjustable ramp up/down times
- Skip frequencies to avoid resonance
- Protection features for drive and motor
- Fast, repeatable digital inputs for fast reaction applications
- Fast current limiting when sudden load changes occur

## Low cost does not mean compromise

- A maximum overload rating of 150% of rated output current for 60 seconds
- Standard pulse frequency of 8kHz without de-rating (extendable to 16kHz for low noise applications)
- Extensive protection features – Under Voltage, Over voltage, Earth Faults, Short Circuits, Stall protection. I<sup>2</sup>t motor thermal and motor and drive over temperature

## Applications

- Conveyor, pump and fan
- Factory/garage door and barriers
- Moving billboards
- Applications in the food & beverage, packaging, textile and medical industries

## Technical data

Electrical data	SINAMICS G110
Line voltages	200 V... 240 V 1 AC ± 10%
Power ranges	0.12 kW ... 3.0 kW
Line supply types	TN, TT, IT (without filter)
Line frequency	47 ... 63 Hz
Output frequency	0 ... 640 Hz V/f
Pulse frequency	8 kHz (up to 16 kHz with derating)
Open-loop control	V/f linear (with programmable voltage boost) V/f square, multipoint
Digital inputs (DI)	3
Digital outputs (DO)	1
Analog inputs (AI)	1 (0 ... 10V, or can be used as a 4th Digital input)
Analog outputs (AO)	0
Failsafe inputs (F-DI)	0
Communication interface	RS485/USS: Analogue
External interface to	PC via RS232, BOP

## Functions

Software functions	3 fixed frequencies (programmable), 1 skippable frequency (programmable) DC braking, compound braking
Protection functions	Overvoltage, undervoltage, overload, ground fault, short circuit, stall, Thermal motor protection I <sup>2</sup> T, motor overtemperature, inverter overtemperature
Safety functions	None

## Mechanical data

Degree of protection	IP20
Cooling type	Convection

## Standards

In conformance with the following standards	UL, cUL, CE, c-tick
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# SINAMICS G110

## Part Numbers

Supply Voltage - 200 V ... 240 V 1 AC			Power Modules	
Rating	Frame Size	Type	Industrial	Filtered #
0.12 kW / 0.9 A	A	Analogue	6SL3211-0AB11-2UA1	6SL3211-0AB11-2BA1
		USS	6SL3211-0AB11-2UB1	6SL3211-0AB11-2BB1
0.25 kW / 1.7 A	A	Analogue	6SL3211-0AB12-5UA1	6SL3211-0AB12-5BA1
		USS	6SL3211-0AB12-5UB1	6SL3211-0AB12-5BB1
0.37 kW / 2.3 A	A	Analogue	6SL3211-0AB13-7UA1	6SL3211-0AB13-7BA1
		USS	6SL3211-0AB13-7UB1	6SL3211-0AB13-7BB1
0.55 kW / 3.2 A	A	Analogue	6SL3211-0AB15-5UA1	6SL3211-0AB15-5BA1
		USS	6SL3211-0AB15-5UB1	6SL3211-0AB15-5BB1
0.75 kW / 3.9 A	A	Analogue	6SL3211-0AB17-5UA1	6SL3211-0AB17-5BA1
		USS	6SL3211-0AB17-5UB1	6SL3211-0AB17-5BB1
1.1 kW / 6.0 A	B	Analogue	6SL3211-0AB21-1UA1	6SL3211-0AB21-1AA1
		USS	6SL3211-0AB21-1UB1	6SL3211-0AB21-1AB1
1.5 kW / 7.8 A	B	Analogue	6SL3211-0AB21-5UA1	6SL3211-0AB21-5AA1
		USS	6SL3211-0AB21-5UB1	6SL3211-0AB21-5AB1
2.2 kW / 11 A	C	Analogue	6SL3211-0AB22-2UA1	6SL3211-0AB22-2AA1
		USS	6SL3211-0AB22-2UB1	6SL3211-0AB22-2AB1
3 kW / 13.6 A	C	Analogue	6SL3211-0AB23-0UA1	6SL3211-0AB23-0AA1
		USS	6SL3211-0AB23-0UB1	6SL3211-0AB23-0AB1

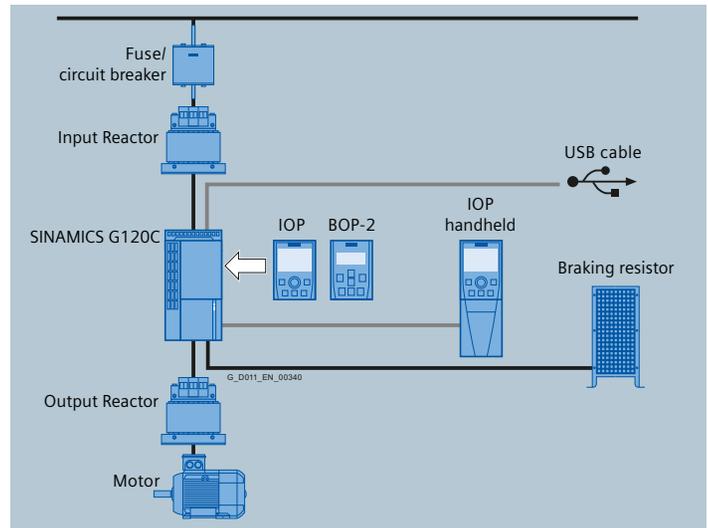
Version with flat heat sink also available.

# EMC filtering generally suitable for 1st environment; additional filter options available on request - please refer to page 51 for specific categorisations.

Options	
6SL3255-0AA00-4BA1	Basic Operator Panel (BOP)
6SL3255-0AA00-2AA1	PC Connection Kit (inc connector, RS232 cable (3m) and Starter DVD)
6SL3097-4CA00-0YG1	Manual collection on DVD
6SL3072-0AA00-0AGO	STARTER commissioning tool (on DVD)

Supply Voltage - 200 V ... 240 V 1 AC		
Rating	Frame Size	Input Reactor
0.12 kW	A	6SE6400-3CC00-4AB3
0.25 kW	A	6SE6400-3CC00-4AB3
0.37 kW	A	6SE6400-3CC01-0AB3
0.55 kW	A	6SE6400-3CC01-0AB3
0.75 kW	A	6SE6400-3CC01-0AB3
1.1 kW	B	6SE6400-3CC02-6BB3
1.5 kW	B	6SE6400-3CC02-6BB3
2.2 kW	C	6SE6400-3CC02-6BB3
3 kW	C	6SE6400-3CC03-5CB3

# SINAMICS G120C



## Design

The SINAMICS G120C is a variable speed drive specifically designed for OEMs who require a cost effective, space saving design that is simple to operate and has a broad range of functions.

The compactness of this drive is achieved through the use of high power density components so only three frame sizes cover power ratings of 0.55 kW to 18.5 kW.

## Benefits

- Compact design, high power density
- Available with and without filter and with Profibus DP, Profinet, CAN, USS & Modbus RTU Interfaces
- Simple commissioning with Starter or StartDrive
- Interchangeable memory card for backup and serial commissioning
- Side by side mounting without de-rating
- Pluggable terminals for easy installation
- Integrated braking chopper, motor holding brake control (simplified)
- Integrated PID controller
- Analogue Input - Selectable between -10V .. +10V, 0/4 .. 20mA)
- STO Safety Function
- Coated boards for robustness
- Energy saving calculator, energy consumption calculator, automatic flux reduction, automatic flow reduction
- Software functions for auto restart, flying restart, ramp smoothing and adjustable ramp up/down times
- Skip frequencies to avoid resonance
- Fast, repeatable digital inputs for fast reaction applications
- Extensive protection features
- USB connectivity
- Quick commissioning with BOP-2 and IOP operator panels

## Applications

- Conveyors, pumps, fans, compressors, mixers & extruders

## Technical data

Electrical data	SINAMICS G120C
Line voltages	380 V... 480 V 3 AC + 10%, -20%
Power ranges	0.55 kW ... 18.5 kW
Line supply types	TN, TT, IT (without filter)
Line frequency	47 ... 63 Hz
Output frequency	0 ... 650 Hz V/f, 0 ... 240 Hz Vector
Pulse frequency	4 kHz (up to 16 kHz with derating)
Open-loop control	V/f (linear, square law, FCC, ECO) Vector control without encoder
Digital inputs (DI)	6
Digital outputs (DO)	2
Analogue inputs (AI)	1 (selectable between -10 ... +10V, 0/4 ... 20mA)
Analogue outputs (AO)	1
Failsafe inputs (F-DI)	1 (uses 2 digital inputs - DI14 & DI15)
Communication interface	RS485/USS/Modbus RTU: PROFIBUS DP: PROFINET: CANopen
External interface to	PC via USB, BOP-2, IOP or Handheld IOP, SINAMICS MMC card or SIMATIC SD card

## Functions

Software functions	Setpoint input, 16 fixed frequencies (programmable), ramp smoothing, jog, slip compensation, BICO technology, command sets (2), flying restart, automatic restart, PID controller, energy consumption counter, energy saving computer, auto ramping, kinetic buffering, DC braking, compound braking, braking with brake chopper, brake relay control via CU (simplified)
Protection functions	Overvoltage, undervoltage, overload, ground fault, short circuit, stall, motor blocking, motor overtemperature, inverter overtemperature
Safety functions	STO

## Mechanical data

Degree of protection	IP20
Cooling type	Convection

## Standards

In conformance with the following standards	cULus, CE, c-tick EN954-1 Cat3, EN ISO 13849-1 PLd, IEC61508 SIL2
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# SINAMICS G120C

## Part Numbers

Supply Voltage - 380 V... 480 V 3 AC			Power Modules		
Rating		Frame Size	Communication Interface	Industrial	Filtered #
LO (VT)	HO (CT)				
0.55 kW / 1.7 A	0.37 kW / 1.3 A	A	USS/MOD Bus RTU	6SL3210-1KE11-8UB1	6SL3210-1KE11-8AB1
			Profibus	6SL3210-1KE11-8UP1	6SL3210-1KE11-8AP1
			Profinet	6SL3210-1KE11-8UF1	6SL3210-1KE11-8AF1
0.75 kW / 2.2 A	0.55 kW / 1.7 A	A	USS/MOD Bus RTU	6SL3210-1KE12-3UB1	6SL3210-1KE12-3AB1
			Profibus	6SL3210-1KE12-3UP1	6SL3210-1KE12-3AP1
			Profinet	6SL3210-1KE12-3UF1	6SL3210-1KE12-3AF1
1.1 kW / 3.1 A	0.75 kW / 2.2 A	A	USS/MOD Bus RTU	6SL3210-1KE13-2UB1	6SL3210-1KE13-2AB1
			Profibus	6SL3210-1KE13-2UP1	6SL3210-1KE13-2AP1
			Profinet	6SL3210-1KE13-2UF1	6SL3210-1KE13-2AF1
1.5 kW / 4.1 A	1.1 kW / 3.1 A	A	USS/MOD Bus RTU	6SL3210-1KE14-3UB1	6SL3210-1KE14-3AB1
			Profibus	6SL3210-1KE14-3UP1	6SL3210-1KE14-3AP1
			Profinet	6SL3210-1KE14-3UF1	6SL3210-1KE14-3AF1
2.2 kW / 5.6 A	1.5 kW / 4.1 A	A	USS/MOD Bus RTU	6SL3210-1KE15-8UB1	6SL3210-1KE15-8AB1
			Profibus	6SL3210-1KE15-8UP1	6SL3210-1KE15-8AP1
			Profinet	6SL3210-1KE15-8UF1	6SL3210-1KE15-8AF1
3.0 kW / 7.3 A	2.2 kW / 5.6 A	A	USS/MOD Bus RTU	6SL3210-1KE17-5UB1	6SL3210-1KE17-5AB1
			Profibus	6SL3210-1KE17-5UP1	6SL3210-1KE17-5AP1
			Profinet	6SL3210-1KE17-5UF1	6SL3210-1KE17-5AF1
4.0 kW / 8.8 A	3.0 kW / 7.3 A	A	USS/MOD Bus RTU	6SL3210-1KE18-8UB1	6SL3210-1KE18-8AB1
			Profibus	6SL3210-1KE18-8UP1	6SL3210-1KE18-8AP1
			Profinet	6SL3210-1KE18-8UF1	6SL3210-1KE18-8AF1
5.5 kW / 12.5 A	4.0 kW / 8.8 A	B	USS/MOD Bus RTU	6SL3210-1KE21-3UB1	6SL3210-1KE21-3AB1
			Profibus	6SL3210-1KE21-3UP1	6SL3210-1KE21-3AP1
			Profinet	6SL3210-1KE21-3UF1	6SL3210-1KE21-3AF1
7.5 kW / 16.5 A	5.5 kW / 12.5 A	B	USS/MOD Bus RTU	6SL3210-1KE21-7UB1	6SL3210-1KE21-7AB1
			Profibus	6SL3210-1KE21-7UP1	6SL3210-1KE21-7AP1
			Profinet	6SL3210-1KE21-7UF1	6SL3210-1KE21-7AF1
11 kW / 25 A	7.5 kW / 16.5 A	C	USS/MOD Bus RTU	6SL3210-1KE22-6UB1	6SL3210-1KE22-6AB1
			Profibus	6SL3210-1KE22-6UP1	6SL3210-1KE22-6AP1
			Profinet	6SL3210-1KE22-6UF1	6SL3210-1KE22-6AF1
15 kW / 31 A	11 kW / 25 A	C	USS/MOD Bus RTU	6SL3210-1KE23-2UB1	6SL3210-1KE23-2AB1
			Profibus	6SL3210-1KE23-2UP1	6SL3210-1KE23-2AP1
			Profinet	6SL3210-1KE23-2UF1	6SL3210-1KE23-2AF1
18.5 kW / 37 A	15 kW / 31 A	C	USS/MOD Bus RTU	6SL3210-1KE23-8UB1	6SL3210-1KE23-8AB1
			Profibus	6SL3210-1KE23-8UP1	6SL3210-1KE23-8AP1
			Profinet	6SL3210-1KE23-8UF1	6SL3210-1KE23-8AF1

LO = Low Overload rating (Variable Torque) - 1.5 x LO current rating for 3s plus 1.1 x LO output current rating for 57s in a 300s cycle.

HO = High Overload rating (Constant Torque) - 2 x HO current rating for 3s plus 1.5 x HO current rating for 57s in a 300s cycle.

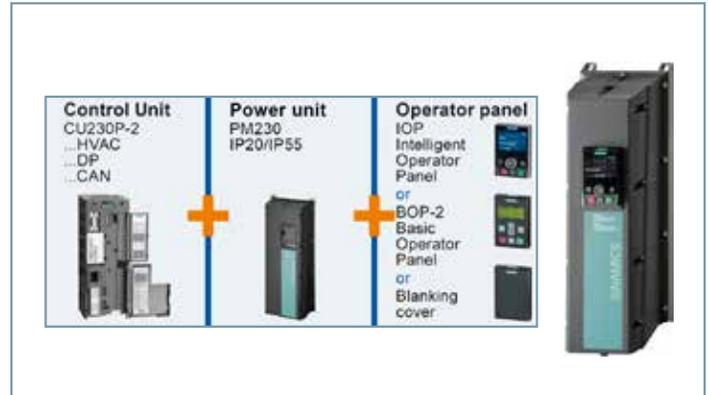
# EMC filtering suitable for 1st environment - see page 51 for specific categorisations.

Options	
6SL3255-0AA00-4CA1	Basic Operator Panel 2 (BOP-2)
6SL3255-0AA00-4JA1	Intelligent Operator Panel (IOP)
6SL3256-0AP00-0JAO	IOP/BOP-2 Door Mounting Kit
6SL3255-0AA00-4HA0	IOP Handheld (inc. Holder, IOP, cable, charging unit and rechargeable batteries)
6SL3255-0AA00-2CA0	PC Inverter Connection Kit 2 for G120C and G120 control units CU230P-2, CU240BE-2, CU240E-2 and CU250S-2
6SL3254-0AM00-0AA0	SINAMICS Micro Memory Card (MMC) 64MB
6SL3054-4AG00-2AA0	SINAMICS SD card 512MB

Supply Voltage - Three phase 380 V... 480 V			Power Modules		
Rating	Frame Size	Line Reactor	Output Reactor	Brake Resistor	
LO (VT)					
0.55 kW - 1.1 kW	A	6SL3203-OCE13-2AA0	6SL3202-OAE16-1CA0	6SL3201-OBE14-3AA0	
1.5 kW	A	6SL3203-OCE21-0AA0	6SL3202-OAE16-1CA0	6SL3201-OBE14-3AA0	
2.2 kW	A	6SL3203-OCE21-0AA0	6SL3202-OAE16-1CA0	6SL3201-OBE21-0AA0	
3.0 kW - 4.0 kW	A	6SL3203-OCE21-0AA0	6SL3202-OAE18-8CA0	6SL3201-OBE21-0AA0	
5.5 kW - 7.5 kW	B	6SL3203-OCE21-8AA0	6SL3202-OAE21-8CA0	6SL3201-OBE21-8AA0	
11 kW - 18.5 kW	C	6SL3203-OCE23-8AA0	6SL3202-OAE23-8CA0	6SL3201-OBE23-8AA0	

# SINAMICS G120P

The versatile single-motor drive for pumps, fans and compressors



## Design

The SINAMICS G120P is an innovative, energy efficient variable speed drive specifically designed for pump, fan and compressor applications in the process, water and building automation industries.

The SINAMICS G120P is a modular solution consisting of a Power Module (PM), Control Unit (CU) and optional Operator Panel (IOP or BOP-2) and suitable for 3 ph 380-480V AC mains supplies and with power ranges of 0.37 kW to 90 kW.

## Benefits

- Flexible – choice of Power and Control Module
- Wide Power range
- Versions with different IP ratings
- Advanced hardware and software solutions to reduce energy consumption
- Minimum harmonics - line reactor not needed
- ECO mode – adaption to load conditions
- Hibernation mode
- Multi Zone Control
- Automatic restart after power failure or fault
- Flying restart – control of a rotating load
- Integrated PID Controllers
- Essential Service Mode
- Isolated Digital Inputs and Outputs, Analogue Input
- Fast commissioning with Starter or StartDrive
- Wizards functions for commissioning, maintenance and diagnostics with IOP
- Parameter backup or cloning with MMC/SD card
- Real time clock

## Applications

- Pumps for pressure boosting and level control
- Fans for cooling towers, air supply or extraction in tunnels, multi-story car parks of stairwells
- Compressors
- HVAC solutions

## Technical data

Electrical data	SINAMICS G120P PM230 with CU230P-2
Line voltages	380 V ... 480 V 3 AC, ±10 %
Power ranges	IP55: 0.37 kW ... 90 kW IP20: 0.37 kW ... 75 kW
Line supply types IP55	TN
Line supply types IP20	TN (filtered), TN/IT/TT (unfiltered)
Line frequency	47 ... 63 Hz
Output frequency	0 ... 650 Hz V/f, 0 ... 200 Hz Vector
Pulse frequency	4 kHz (up to 16 kHz with derating)
Open loop control	V/f (linear, square law, FCC, ECO) Vector & Torque control without encoder
Digital inputs (DI)	6
Digital outputs (DO)	3
Analog inputs (AI)	4 (2 selectable -10..+10V, 0/4 ..20mA)
Analog outputs (AO)	2
Communication interface	RS485/USS/Modbus RTU/BACnet: PROFIBUS DP: Profinet: CANopen
External interface to	PC via USB, BOP-2, IOP or Handheld IOP, SINAMICS MMC card or SIMATIC SD card

## Functions

Software functions	Setpoint input, 16 fixed frequencies (programmable), ramp smoothing, jog, slip compensation, BICO technology, free function blocks, switchable data and command sets (4), flying restart, automatic restart, PID controllers (4), hibernation, belt and dry pump monitor, auto ramping, kinetic buffering, DC braking
Protection functions	Overvoltage, undervoltage, overload, ground fault, short circuit, stall, motor blocking, motor overtemperature, inverter overtemperature, parameter locking
Safety functions	None

## Mechanical data

Degree of protection	IP55/UL Type 12 - with blanking cover or BOP-2 IP54/UL Type 12 - with IOP or IP20 version for cabinet mounting
Cooling type	Convection

## Standards

In conformance with the following standards	UL, CE, c-tick
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# SINAMICS G120P

## Part Numbers

Control Units	Designation	Interfaces	DI	DO	AI	AO	Safety
6SL3243-0BB30-1HA3	CU230P-2 HVAC	RS485 / USS / Modbus / BACnet	6	3	4^	2	No
6SL3243-0BB30-1PA3	CU230P-2 DP	Profibus DP	6	3	4^	2	No
6SL3243-0BB30-1FA0	CU230P-2 PN	Profinet	6	3	4^	2	No
6SL3243-0BB30-1CA3	CU230P-2 CAN	CANopen	6	3	4^	2	No

DI - Digital Inputs, DO - Digital Outputs, AI - Analogue Inputs, AO - Analogue Outputs.

^ 2 of the 4 Analogue inputs are selectable between 0...10V, -10... +10V, 0/...20mA, 0/4...20mA or can be used as digital inputs if required.

Power Module PM230		Power Modules					
Supply Voltage - 380 V ... 480 V 3 AC		Rating	Frame Size	PM230 IP55 Class A	PM230 IP55 Class B	PM230 IP20 Unfiltered	PM230 IP20 Class A
LO (VT)	HO (CT)						
0.37 kW / 1.3 A	0.25 kW / 0.9 A	A	6SL3223-ODE13-7AA0	6SL3223-ODE13-7BA0	6SL3210-1NE11-3UL0	6SL3210-1NE11-3AL0	
0.55 kW / 1.7 A	0.37 kW / 1.3 A	A	6SL3223-ODE15-5AA0	6SL3223-ODE15-5BA0	6SL3210-1NE11-7UL0	6SL3210-1NE11-7AL0	
0.75 kW / 2.2 A	0.55 kW / 1.7 A	A	6SL3223-ODE17-5AA0	6SL3223-ODE17-5BA0	6SL3210-1NE12-2UL0	6SL3210-1NE12-2AL0	
1.1 kW / 3.1 A	0.75 kW / 2.2 A	A	6SL3223-ODE21-1AA0	6SL3223-ODE21-1BA0	6SL3210-1NE13-1UL0	6SL3210-1NE13-1AL0	
1.5 kW / 4.1 A	1.1 kW / 3.1 A	A	6SL3223-ODE21-5AA0	6SL3223-ODE21-5BA0	6SL3210-1NE14-1UL0	6SL3210-1NE14-1AL0	
2.2 kW / 5.9 A	1.5 kW / 4.1 A	A	6SL3223-ODE22-2AA0	6SL3223-ODE22-2BA0	6SL3210-1NE15-8UL0	6SL3210-1NE15-8AL0	
3.0 kW / 7.7 A	2.2 kW / 5.9 A	A	6SL3223-ODE23-0AA0	6SL3223-ODE23-0BA0	6SL3210-1NE17-7UL0	6SL3210-1NE17-7AL0	
4 kW / 10.2 A	3 kW / 7.7 A	B	6SL3223-ODE24-0AA0	6SL3223-ODE24-0BA0	6SL3210-1NE21-0UL0	6SL3210-1NE21-0AL0	
5.5 kW / 13.2 A	4 kW / 10.2 A	B	6SL3223-ODE25-5AA0	6SL3223-ODE25-5BA0	6SL3210-1NE21-3UL0	6SL3210-1NE21-3AL0	
7.5 kW / 18 A	5.5 kW / 13.2 A	B	6SL3223-ODE27-5AA0	6SL3223-ODE27-5BA0	6SL3210-1NE21-8UL0	6SL3210-1NE21-8AL0	
11 kW / 26 A	7.5 kW / 18 A	C	6SL3223-ODE31-1AA0	6SL3223-ODE31-1BA0	6SL3210-1NE22-6UL0	6SL3210-1NE22-6AL0	
15 kW / 32 A	11 kW / 26 A	C	6SL3223-ODE31-5AA0	6SL3223-ODE31-5BA0	6SL3210-1NE23-2UL0	6SL3210-1NE23-2AL0	
18.5 kW / 38 A	15 kW / 32 A	C	6SL3223-ODE31-8AA0	-	6SL3210-1NE23-8UL0	6SL3210-1NE23-8AL0	
18.5 kW / 38 A	15 kW / 32 A	D	-	6SL3223-ODE31-8BA0	-	-	
22 kW / 45 A	18.5 kW / 38 A	D	6SL3223-ODE32-2AA0	6SL3223-ODE32-2BA0	6SL3210-1NE24-5UL0	6SL3210-1NE24-5AL0	
30 kW / 60 A	22 kW / 45 A	D	6SL3223-ODE33-0AA0	6SL3223-ODE33-0BA0	6SL3210-1NE26-0UL0	6SL3210-1NE26-0AL0	
37 kW / 75 A	30 kW / 60 A	E	6SL3223-ODE33-7AA0	6SL3223-ODE33-7BA0	6SL3210-1NE27-5UL0	6SL3210-1NE27-5AL0	
45 kW / 90 A	37 kW / 75 A	E	6SL3223-ODE34-5AA0	6SL3223-ODE34-5BA0	6SL3210-1NE28-8UL0	6SL3210-1NE28-8AL0	
55 kW / 110 A	45 kW / 90 A	F	6SL3223-ODE35-5AA0	6SL3223-ODE35-5BA0	6SL3210-1NE31-1UL0	6SL3210-1NE31-1AL0	
75 kW / 145 A	55 kW / 110 A	F	6SL3223-ODE37-5AA0	6SL3223-ODE37-5BA0	6SL3210-1NE31-5UL0	6SL3210-1NE31-5AL0	
90 kW / 178 A	75 kW / 145 A	F	6SL3223-ODE38-8AA0	6SL3223-ODE38-8BA0	-	-	
Push Through Variant							
LO (VT)	HO (CT)				PM230 IP20 Unfiltered	PM230 IP20 Class A	
3.0 kW / 7.7 A	2.2 kW / 5.9 A	A			6SL3210-1NE17-7UL0	6SL3210-1NE17-7AL0	
7.5 kW / 18 A	5.5 kW / 13.3 A	B			6SL3210-1NE21-8UL0	6SL3210-1NE21-8AL0	
18.5 kW / 38 A	15 kW / 32 A	C			6SL3210-1NE23-8UL0	6SL3210-1NE23-8AL0	

LO (VT) = Low Overload (Variable Torque) - FSA to FSC: 1.5 x LO current rating for 3s plus 1.1 x LO current rating for 57s within a cycle time of 300s.

- FSD to FSF: 1.1 x LO current rating for 60s within a cycle time of 300s.

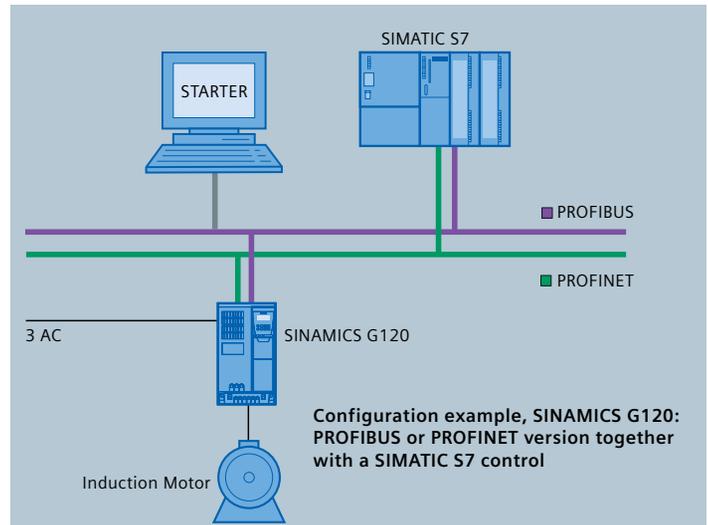
HO (CT) = High Overload (Constant Torque) - FSA to FSC: 2 x HO current rating for 3s plus 1.5 x HO current rating for 57s within a cycle time of 300s.

- FSD to FSF: 1.5 x HO current rating for 60s within a cycle time of 300s.

Options	
6SL3256-1BA00-0AA0	Blanking cover for IP55 modules - required if no OP fitted
6SL3255-0AA00-4CA1	Basic Operator Panel 2 (BOP2)
6SL3255-0AA00-4JA1	Intelligent Operator Panel (IOP)
6SL3256-0AP00-0JA0	IOP / BOP2 Door Mounting Kit (see page 30)
6SL3255-0AA00-4HA0	IOP Handheld (see page 30)
6SL3255-0AA00-2CA0	PC Inverter Connection Kit 2 for G120C and G120 control units CU230P-2, CU240BE-2, CU240E-2 and CU250S-2
6SL3254-0AM00-0AA0	SINAMICS Micro Memory Card (MMC) 64MB
6SL3054-4AG00-2AA0	SINAMICS SD card 512 MB

Control Unit Shield Connection Kits	
6SL3264-1EA00-0FA0	Shield Connection Kit 1 for CU230P-2 HVAC/DPI/CAN
6SL3264-1EA00-0HB0	Shield Connection Kit 3 for CU230P-2 PN
Power Module Shield Connection Kits	
6SL3262-1AD00-0DA0	PM230 IP20 - Frame size FSD and FSE
6SL3266-1AF00-0DA0	PM230 IP20 - Frame size FSF
6SL3266-1EA00-0DA0	PM230 IP20 Push Through - Frame size FSA
6SL3266-1EB00-0DA0	PM230 IP20 Push Through - Frame size FSB
6SL3266-1EC00-0DA0	PM230 IP20 Push Through - Frame size FSC
Push Through Mounting Frames	
6SL3260-6AA00-0DA0	Push Through Mounting Frame - Frame size FSA
6SL3260-6AB00-0DA0	Push Through Mounting Frame - Frame size FSB
6SL3260-6AC00-0DA0	Push Through Mounting Frame - Frame size FSC

# SINAMICS G120 Modular Overview



## Design

The SINAMICS G120 is a modular drive solution comprising of a Control Unit (CU), Power Module (PM) and optional Operator panel (OP). The G120 drive is designed to provide precise and cost effective speed/torque control and now position control of AC motors in a wide range of industrial application.

## Benefits

- Modular - flexible expansion capability
- Flexibility - with a wide range of control units, Power modules and additional components
- Compact space saving design
- Fast commissioning with Starter or StartDrive
- Operational Memory Card for backup and transfer of parameters for serial commissioning
- Integrated control functionality with BICO technology
- Innovative cooling concept and coated electronic boards
- Reduced harmonics (PM230/PM250)
- Fast commissioning with Starter or StartDrive

## Integrated Safety

When used with the appropriate Control Unit and Power Module will provide integrated safety functions certified to EN ISO 13849-1 PLd, IEC61508 SIL2 and EN954-1 Cat.3.

## Energy Saving

with 'Efficient Infeed Technology' (PM250) and innovative control functions e.g. ECO Mode, Hibernation, Profienergy.



## Control Unit - overview on page 14

CU230P-2	specialist for pumps, fans, compressors and HVAC with additional features for these applications - see page 14
CU240B-2	for basic applications without encoder and without safety requirements
CU240E-2	with extended communication interfaces and Inputs/Outputs, is ideal for applications without encoder but where basic or extended safety is required
CU250S-2	for demanding applications where an encoder is required to give speed, torque or positioning accuracy with both a synchronous motors and synchronous servos (in preparation)

## Power Modules

PM230 IP55: 0.37 kW ... 90 kW, IP20: 0.37 kW ... 75 kW 380 V - 480 V 3 AC ±10%	<b>Designed specifically for pumps, fans and compressors</b> , this low harmonic drive for non-dynamic applications is available in an IP55, IP20 and IP20 push-through variants
PM240 0.37 kW ... 250 kW, 380 V - 480 V 3 AC ±10%	The PM240 and PM240-2 have an integrated braking chopper so loads can be dynamically braked through an optional external resistor.
PM240-2 0.55 kW ... 3 kW (up to 15kW to follow in 2014) 380 V - 480 V 3 AC ±10%	<b>Typical applications:</b> A Universal Drive for a variety of industrial application e.g. fans, pumps, compressors, extruders, mixers, crushers and high performance conveyors.
PM250 7.5 kW ... 90 kW, 380 V - 480 V 3 AC ±10%	The PM250 has 'Efficient Infeed Technology' (p49), which regenerates braking energy back into the mains supply. This technology also reduces the line harmonics so input reactors are not necessary.  <b>Typical applications:</b> A Universal Drive for a variety of industrial application e.g. fans, pumps, compressors, extruders, mixers, crushers, high performance conveyors and any regenerative applications where braking resistors would normally be used.

## Operator Panel and additional components

Basic Operator Panel (BOP), Basic Operator Panel 2 (BOP-2), Intelligent Operator Panel (IOP) and Handheld IOP. Door Mounting Kits for BOP-2 and IOP.

Shield connection kits for Control Units and Power Modules, Memory cards and brake relays are also available.

See the 'SINAMICS ACCESSORIES' page for Input Reactors, Output Reactors and Braking Resistors.

Control Units: Overview

	Basic functions		Specialist for pumps, fans & compressors				For standard applications - pumps, fans, compressors, conveyors, mixers & extruders						Applications requiring positioning with encoder or simple servo control (servo in preparation)			
	CU240B-2	CU240B-2 DP	CU230P-2 HVAC	CU230P-2 CAN	CU230P-2 DP	CU230P-2 PN	CU240E-2	CU240E-2 DP	CU240E-2 PN	CU240E-2 F	CU240E-2 DPF	CU240E-2 PN F	CU250S-2	CU250S-2 CAN	CU250S-2 DP	CU250S-2 PN
Can be used on Power Modules																
PM230 IP55	-	-	✓	✓	✓	✓	-	-	-	-	-	-	-	-	-	-
PM230 IP20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-
PM240	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Vector			
PM240-2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Vector / Servo (in preparation)			
PM250	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Vector			
PM340 1 Phase	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	Vector / Servo (in preparation)			
PM340 3 phase	-	-	-	-	-	-	-	-	-	-	-	-	Vector			
Inputs/Outputs/Encoder																
Digital Inputs (DI)	4	4	6	6	6	6	6	6	6	6	6	6	11	11	11	11
Digital Inputs - Failsafe (F-DI)	-	-	-	-	-	-	1~	1~	1~	3~	3~	3~	3~	3~	3~	3~
Digital Outputs (DO)	1	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Digital Outputs - Failsafe (F-DO)	-	-	-	-	-	-	-	-	-	-	-	-	1"	1"	1"	1"
Digital Inputs/Outputs (DI/DO)	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4	4
Analogue Inputs (AI)	1*	1*	4^	4^	4^	4^	2*	2*	2*	2*	2*	2*	2	2	2	2
Analogue Outputs (AO)	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Encoder	-	-	-	-	-	-	-	-	-	-	-	-	✓ see foot note below			
Bus Interface																
RS485 / USS / Modbus RTU	✓	-	✓	-	-	-	✓	-	-	✓	-	-	✓	-	-	-
BACnet Ms/TP, P1 Protocol (from FW V4.6)	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-
CANOpen	-	-	-	✓	-	-	-	-	-	-	-	-	-	✓	-	-
Profibus (DP)	-	✓	-	-	✓	-	-	✓	-	-	✓	-	-	-	✓	-
Profinet (PN) or TCP/IP (from FW V4.6)	-	-	-	-	-	✓	-	-	✓	-	-	✓	-	-	-	✓
Interfaces to:																
Operator Panels	Basic Operator Panel 2 (BOP-2), Intelligent Operator Panel (IOP) - plugged in, door mount or handheld															
Memory Card	1 x SINAMICS Micro Memory Card (MMC) or 1 x SIMATIC Memory Card (SD)												1x SD for Firmware/Servo/Safety			
PC Interface	USB												USB			
Safety functions. Note: No Safety if used with PM230 IP20 or IP55																
Refer to page 50 for descriptions of Safety Functions	-	-	-	-	-	-	STO			STO, SS1, SLS, SDI, SSM			Basic: STO, SS1, SBC Extend: SLS, SSM, SDI			
Open loop / Closed loop control types																
V/f linear/square/selectable	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
V/f with flux Current Control (FCC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
V/f ECO linear/square	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vector w/o Encoder	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Torque Control w/o Encoder	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vector with Encoder	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	✓	✓
Torque with Encoder	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	✓	✓
Servo with Encoder	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	✓	✓
Functions																
Application macro, Setpoint input, 16 fixed frequencies (programmable), jog, digital motorised potentiometer, ramp smoothing, extended ramp function generator, slip compensation, signal interconnection with BICO technology, trace function, energy saving display, switchable drive and command data sets (4), free function blocks for logic and arithmetic operations, technology controller (internal PID), flying restart, automatic restart, thermal motor protection (I²t, PTC/KTY/Thermo-Click), thermal inverter protection, motor identification, motor holding brake (not with CU230P-2), auto ramping and kinetic buffering.																
3 additional PID controllers, 2 zone controller, energy saving function (Hibernation) with internal and external PID controller, essential services mode, belt and dry pump monitoring.	-	-	✓	✓	✓	✓	-	-	-	-	-	-	-	-	-	-
Brake Relay Control via CU (not with PM230)	✓	✓	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Safety brake relay	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	✓	✓
Braking functions	PM230 - DC Braking only, PM240, PM240-2 & PM340 - DC. Compound and Dynamic with braking chopper, PM250/PM260 - Regenerative															

\* Selectable between 0...10V, -10...+10V, 0/2...20mA, 0/4...20mA or can be used as digital inputs if required.  
 ^ 2 of the 4 Analogue inputs are selectable between 0...10V, -10...+10V, 0/...20mA, 0/4...20mA or can be used as digital inputs if required.  
 ~ Each "Failsafe input utilises two digital inputs from the module." Each "Failsafe Output utilises two digital outputs from the module.  
 Encoder: TTL/HTL incremental, SIN/COS incremental, SSI absolute, EnDat absolute and Resolvers are supported. See technical manual for possible combinations.

# SINAMICS G120 Modular - PM230

The versatile single-motor drive for pumps, fans and compressors



## Design

The G120 is a modular drive consisting of Control Unit (CU), Power Module (PM) and optional Operator Panel (OP) and is designed to provide precise and cost effective speed/torque control of AC Motors in a wide range of industrial applications. The PM230 is available in an IP55 or IP20 format and is designed for pump, fan and compressor applications with a square law characteristic. Braking choppers are not fitted so solutions using PM230 are not suited for dynamic applications.

### PM 230 IP55 (0.37 kW to 90 kW)

- available with Class A or Class B EMC Filtering

The IP rating is maintained with a blanking cover or BOP-2 but reduces to IP54 if an IOP is fitted.

### PM 230 IP20 (0.37 kW to 75 kW)

**PM230 Push Through IP 20 (1.1 , 2.2 & 3.0 kW)** - available unfiltered or Class A EMC Filtering and is designed for cabinet mounting. The highest power rating of FSA to FSC is also available as 'Push-through' where the heat sink pushes through the back of the cabinet minimising the heat inside the cabinet.

## Benefits

- Modular with flexible expansion capability
- Compact space saving design
- Simple fast commissioning
- Wide range of Control Units with different communication interfaces available
- Line harmonics are significantly reduced: - the Total Harmonic Distortion (THD) is below the limit required by EN/IEC 61000-3-12. - additional line reactors are not needed and should not be connected
- High Active Power Component - draws less current from the supply for the same drive power so smaller cables can be used
- Optional MMC or SC card for backup and series commissioning

## Applications

Pumps, fans and compressors.

Technical data	
<b>Electrical data</b>	<b>SINAMICS G120 PM 230</b>
Line voltages	380 V ... 480 V 3 AC, ±10 %
Power ranges	IP55: 0.37kW to 90kW, IP20: 0.37kW to 75kW
Line supply types IP55	TN
Line supply types IP20	TN (filtered), TN, TT, IT (unfiltered)
Line frequency	47 ... 63 Hz
Output frequency	0 ... 650 Hz V/f, 0 ... 200 Hz Vector
Pulse frequency	4 kHz ( up to 16 kHz with derating)
<b>Functions</b>	
Protection functions	Overvoltage, undervoltage, overload, ground fault, short circuit, stall, motor blocking, motor overtemperature, inverter overtemperature, parameter locking
Software functions	See Control Units overview on page 14
<b>Mechanical data</b>	
Degree of protection	IP20 version and IP55 version (IP54 with IOP)
Cooling type	Convection
<b>Standards</b>	
In conformance with the following standards	UL, CE, c-tick

Control Units							
Control Unit	Designation	Interfaces	DI	DO	AI	AO	Can be used on PM230 in IP:
6SL3243-0BB30-1HA3	CU230P-2 HVAC	RS485/USS/Modbus/BACnet	6	3	4 <sup>^</sup>	2	IP55 & IP20
6SL3243-0BB30-1PA3	CU230P-2 DP	Profibus DP	6	3	4 <sup>^</sup>	2	IP55 & IP20
6SL3243-0BB30-1FA0	CU230P-2 PN	Profinet	6	3	4 <sup>^</sup>	2	IP55 & IP20
6SL3243-0BB30-1CA3	CU230P-2 CAN	CANopen	6	3	4 <sup>^</sup>	2	IP55 & IP20
6SL3244-0BB00-1BA1	CU240B-2	RS485/USS	4	1	1*	1	IP20
6SL3244-0BB00-1PA1	CU240B-2 DP	Profibus DP	4	1	1*	1	IP20
6SL3244-0BB12-1BA1	CU240E-2	RS485/USS	6	3	2*	2	IP20
6SL3244-0BB12-1PA1	CU240E-2 DP	Profibus DP	6	3	2*	2	IP20
6SL3244-0BB12-1FA0	CU240E-2 PN	Profinet	6	3	2*	2	IP20

\* Selectable between 0...10V, -10...+10V, 0/2...20mA, 0/4...20mA or can be used as digital inputs if required.

<sup>^</sup> 2 of the 4 Analogue inputs are selectable between 0...10V, -10...+10V, 0/...20mA, 0/4...20mA or can be used as digital inputs if required.

**NOTE: No Integrated Safety functions can be used with the PM230 Power Modules even if the Control Unit is capable.**

# SINAMICS G120 PM230

## Part Numbers

Power Module PM230		Power Modules					
Supply Voltage - 380 V ... 480 V 3 AC							
Rating		Frame Size	PM230 IP55 Class A	PM230 IP55 Class B	PM230 IP20 Unfiltered	PM230 IP20 Class A	
LO (VT)	HO (CT)						
0.37 kW / 1.3 A	0.25 kW / 0.9 A	A	6SL3223-ODE13-7AA0	6SL3223-ODE13-7BA0	6SL3210-1NE113-UL0	6SL3210-1NE11-3AL0	
0.55 kW / 1.7 A	0.37 kW / 1.3 A	A	6SL3223-ODE15-5AA0	6SL3223-ODE15-5BA0	6SL3210-1NE11-7UL0	6SL3210-1NE11-7AL0	
0.75 kW / 2.2 A	0.55 kW / 1.7 A	A	6SL3223-ODE17-5AA0	6SL3223-ODE17-5BA0	6SL3210-1NE12-2UL0	6SL3210-1NE12-2AL0	
1.1 kW / 3.1 A	0.75 kW / 2.2 A	A	6SL3223-ODE21-1AA0	6SL3223-ODE21-1BA0	6SL3210-1NE13-1UL0	6SL3210-1NE13-1AL0	
1.5 kW / 4.1 A	1.1 kW / 3.1 A	A	6SL3223-ODE21-5AA0	6SL3223-ODE21-5BA0	6SL3210-1NE14-1UL0	6SL3210-1NE14-1AL0	
2.2 kW / 5.9 A	1.5 kW / 4.1 A	A	6SL3223-ODE22-2AA0	6SL3223-ODE22-2BA0	6SL3210-1NE15-8UL0	6SL3210-1NE15-8AL0	
3.0 kW / 7.7 A	2.2 kW / 5.9 A	A	6SL3223-ODE23-0AA0	6SL3223-ODE23-0BA0	6SL3210-1NE17-7UL0	6SL3210-1NE17-7AL0	
4 kW / 10.2 A	3 kW / 7.7 A	B	6SL3223-ODE24-0AA0	6SL3223-ODE24-0BA0	6SL3210-1NE21-0UL0	6SL3210-1NE21-0AL0	
5.5 kW / 13.2 A	4 kW / 10.2 A	B	6SL3223-ODE25-5AA0	6SL3223-ODE25-5BA0	6SL3210-1NE21-3UL0	6SL3210-1NE21-3AL0	
7.5 kW / 18 A	5.5 kW / 13.2 A	B	6SL3223-ODE27-5AA0	6SL3223-ODE27-5BA0	6SL3210-1NE21-8UL0	6SL3210-1NE21-8AL0	
11 kW / 26 A	7.5 kW / 18 A	C	6SL3223-ODE31-1AA0	6SL3223-ODE31-1BA0	6SL3210-1NE22-6UL0	6SL3210-1NE22-6AL0	
15 kW / 32 A	11 kW / 26 A	C	6SL3223-ODE31-5AA0	6SL3223-ODE31-5BA0	6SL3210-1NE23-2UL0	6SL3210-1NE23-2AL0	
18.5 kW / 38 A	15 kW / 32 A	C	6SL3223-ODE31-8AA0	-	6SL3210-1NE23-8UL0	6SL3210-1NE23-8AL0	
18.5 kW / 38 A	15 kW / 32 A	D	-	6SL3223-ODE31-8BA0	-	-	
22 kW / 45 A	18.5 kW / 38 A	D	6SL3223-ODE32-2AA0	6SL3223-ODE32-2BA0	6SL3210-1NE24-5UL0	6SL3210-1NE24-5AL0	
30 kW / 60 A	22 kW / 45 A	D	6SL3223-ODE33-0AA0	6SL3223-ODE33-0BA0	6SL3210-1NE26-0UL0	6SL3210-1NE26-0AL0	
37 kW / 75 A	30 kW / 60 A	E	6SL3223-ODE33-7AA0	6SL3223-ODE33-7BA0	6SL3210-1NE27-5UL0	6SL3210-1NE27-5AL0	
45 kW / 90 A	37 kW / 75 A	E	6SL3223-ODE34-5AA0	6SL3223-ODE34-5BA0	6SL3210-1NE28-8UL0	6SL3210-1NE28-8AL0	
55 kW / 110 A	45 kW / 90 A	F	6SL3223-ODE35-5AA0	6SL3223-ODE35-5BA0	6SL3210-1NE31-1UL0	6SL3210-1NE31-1AL0	
75 kW / 145 A	55 kW / 110 A	F	6SL3223-ODE37-5AA0	6SL3223-ODE37-5BA0	6SL3210-1NE31-5UL0	6SL3210-1NE31-5AL0	
90 kW / 178 A	75 kW / 145 A	F	6SL3223-ODE38-8AA0	6SL3223-ODE38-8BA0	-	-	
		Push Through Variant					
					PM230 IP20 Unfiltered	PM230 IP20 Class A	
3.0 kW / 7.7 A	2.2 kW / 5.9 A	A			6SL3210-1NE17-7UL0	6SL3210-1NE17-7AL0	
7.5 kW / 18 A	5.5 kW / 13.3 A	B			6SL3210-1NE21-8UL0	6SL3210-1NE21-8AL0	
18.5 kW / 38 A	15 kW / 32 A	C			6SL3210-1NE23-8UL0	6SL3210-1NE23-8AL0	

LO (VT) = Low Overload (Variable Torque) - FSA to FSC: 1.5 x LO current rating for 3s plus 1.1 x LO current for 57s within a cycle time of 300s.  
 - FSD to FSF: 1.1 x LO current for 60s within a cycle time of 300s.

HO (CT) = High Overload (Constant Torque) - FSA to FSC: 2 x HO current for 3s plus 1.5 x HO current for 57s within a cycle time of 300s.  
 - FSD to FSF: 1.5 x HO current for 60s within a cycle time of 300s.

Options	
6SL3256-1BA00-0AA0	Blanking cover for IP55 modules - required if no OP fitted
6SL3255-0AA00-4CA1	Basic Operator Panel 2 (BOP-2)
6SL3255-0AA00-4JA1	Intelligent Operator Panel (IOP)
6SL3256-0AP00-0JA0	IOP / BOP2 Door Mounting Kit (for IP20 version mounted in a cabinet)
6SL3255-0AA00-4HA0	IOP Handheld (inc. Holder, IOP, cable, charging unit and rechargeable batteries)
6SL3255-0AA00-2CA0	PC Inverter Connection Kit 2 for G120C and G120 control units CU230P-2, CU240BE-2, CU240E-2 and CU250S-2
6SL3254-0AM00-0AA0	SINAMICS Micro Memory Card (MMC) 64MB
6SL3054-4AG00-2AA0	SINAMICS SD card 512 MB
Control Unit Shield Connection Kits	
6SL3264-1EA00-0FA0	Shield Connection kit 1 for CU230P-2 Control Units
6SL3264-1EA00-0HA0	Shield Connection kit 2 for CU240B/E-2 Control Units
6SL3264-1EA00-0HB0	Shield Connection kit 3 for CU230P-2 PN and CU240B/E-2 PN Control Units

Power Module Shield connection kits. Note: Shielding kit for PM230 IP20 FSA to FSC are supplied with the Power Modules	
6SL3262-1AD00-0DA0	PM230 IP20 - Frame size FSD and FSE
6SL3262-1AF00-0DA0	PM230 IP20 - Frame size FSF
6SL3266-1EA00-0DA0	PM230 IP20 Push Through - Frame size FSA
6SL3266-1EB00-0DA0	PM230 IP20 Push Through - Frame size FSB
6SL3266-1EC00-0DA0	PM230 IP20 Push Through - Frame size FSC
Push Through Mounting Frames	
6SL3260-6AA00-0DA0	Push Through Mounting Frame - Frame size FSA
6SL3260-6AB00-0DA0	Push Through Mounting Frame - Frame size FSB
6SL3260-6AC00-0DA0	Push Through Mounting Frame - Frame size FSC

# SINAMICS G120 Modular - PM240-2

The versatile single-motor drive



## Design

The G120 is a modular drive consisting of Control Unit (CU), Power Module (PM) and optional Operator Panel (OP) and is designed to provide precise and cost effective speed/torque control of AC Motors in a wide range of industrial applications.

**PM240-2 Power Modules (0.55 kW to 3 kW)**

**PM240-2 Push Through Filtered (2.2 kW)**

**PM240-2 Push Through Unfiltered (3.0 kW)**

have the same functionality as the PM240 but based on a new hardware platform allowing higher power density products to be used so reducing the size of the modules and allow side by side mounting. The highest power rating of each frame size is also available as 'Push Through' where the heatsink pushes through the back of the cabinet reducing the heat inside the cabinet.

## Benefits of G120 with PM240-2 over PM240

**Can be used with CU250S-2 in Vector or Servo Mode (planned)**

- Compact space saving design using High Density components
- Side by side mounting saves space
- Variants with 'Push Through' reduces heat in the cabinet

## Applications

A Universal Drive for a variety of industrial application e.g. fans, pumps, compressors, extruders, mixers, crushers and high performance conveyors.

Technical data	
<b>Electrical data</b>	<b>SINAMICS G120 PM 240-2</b>
Line voltage	380 V ... 480 V 3 AC, ±10 %
Power ranges	0.55 kW ... 3.0 kW. FSB and FSC to follow
Line supply types	TN (with filter), TN, TT, IT (without filter)
Line frequency	47 ... 63 Hz
Output frequency	0 ... 650 Hz V/f, 0 ... 200 Hz Vector
Pulse frequency	4 kHz up to 16 kW - with derating
<b>Functions</b>	
Protection functions	Overvoltage, undervoltage, overload, ground fault, short circuit, stall, motor blocking, motor over-temperature, inverter overtemperature, parameter locking
Software functions	See Control Unit Overview on page 14
Safety functions	See table below
<b>Standards</b>	
In conformance with the following standards	UL, cUL, CE, c-tick EN954-1 Cat3, EN ISO 13849-1 PLd, IEC61508 SIL2

Control Units											
Control Unit	Designation	Interfaces	DI	DO	DI/DO	AI	AO	F-DI	F-DO	Encoder	Safety
6SL3243-0BB30-1HA3	CU230P-2 HVAC	RS485/USS/Modbus/BACnet	6	3	-	4 <sup>^</sup>	2	-	-	-	-
6SL3243-0BB30-1PA3	CU230P-2 DP	Profibus DP	6	3	-	4 <sup>^</sup>	2	-	-	-	-
6SL3243-0BB30-1FA0	CU230P-2 PN	Profinet	6	3	-	4 <sup>^</sup>	2	-	-	-	-
6SL3243-0BB30-1CA3	CU230P-2 CAN	CANopen	6	3	-	4 <sup>^</sup>	1	-	-	-	-
6SL3244-0BB00-1BA1	CU240B-2	RS485/USS	4	1	-	1 <sup>*</sup>	1	-	-	-	-
6SL3244-0BB00-1PA1	CU240B-2 DP	Profibus DP	4	1	-	1 <sup>*</sup>	2	-	-	-	-
6SL3244-0BB12-1BA1	CU240E-2	RS485/USS	6	3	-	2 <sup>*</sup>	2	1~	-	-	STO
6SL3244-0BB12-1PA1	CU240E-2 DP	Profibus DP	6	3	-	2 <sup>*</sup>	2	1~	-	-	STO
6SL3244-0BB12-1FA0	CU240E-2 PN	Profinet	6	3	-	2 <sup>*</sup>	2	1~	-	-	STO
6SL3244-0BB13-1BA1	CU240E-2 F	RS485/USS	6	3	-	2 <sup>*</sup>	2	3~	-	-	STO, SS1, SLS, SDI, SSM
6SL3244-0BB13-1PA1	CU240E-2 DP F	Profibus DP	6	3	-	2 <sup>*</sup>	2	3~	-	-	
6SL3244-0BB13-1FA0	CU240E-2 PN-F	Profinet	6	3	-	2 <sup>*</sup>	2	3~	-	-	
6SL3246-0BA22-1BA0	CU250S-2	RS485/USS	11	3	4	2	2	3~	1 <sup>*</sup>	Various □	Basic: STO, SS1, SBC Extended: SLS, SSM, SDI Extended functions via license (see below)
6SL3246-0BA22-1PA0	CU250S-2 DP	Profibus DP	11	3	4	2	2	3~	1 <sup>*</sup>	Various □	
6SL3246-0BA22-1FA0	CU250S-2 PN	Profinet	11	3	4	2	2	3~	1 <sup>*</sup>	Various □	
6SL3246-0BA22-1CA0	CU250S-2 CAN	CANopen	11	3	4	2	2	3~	1 <sup>*</sup>	Various □	

\* Selectable between 0...10V, -10...+10V, 0/2...20mA, 0/4...20mA or can be used as digital inputs if required.

<sup>^</sup> 2 of the 4 Analogue inputs are selectable between 0...10V, -10...+10V, 0/...20mA, 0/4...20mA or can be used as digital inputs if required.

~ Each "Failsafe input utilises two digital inputs from the module." Each "Failsafe Output utilises two digital outputs from the module.

□ Encoder: TTL/HTL incremental, SIN/COS incremental, SSI absolute, EnDat absolute and Resolvers are supported. See technical manual for possible combinations.

# SINAMICS G120 PM240-2

## Part Numbers

Power Module PM240-2		Power Modules				Push Through variant	
Supply Voltage - 380 V ... 480 V 3 AC							
Rating		Frame Size	PM240-2 Unfiltered	PM240-2 Filtered #	PM240-2 Unfiltered	PM240-2 Filtered #	
LO (VT)	HO (CT)						
0.55 kW / 1.7 A	0.37 kW / 1.3 A	A	6SL3210-1PE11-8UL0	6SL3210-1PE11-8AL0	-	-	
0.75 kW / 2.2 A	0.55 kW / 1.7 A	A	6SL3210-1PE12-3UL0	6SL3210-1PE12-3AL0	-	-	
1.1 kW / 3.1 A	0.75 kW / 2.2 A	A	6SL3210-1PE13-2UL0	6SL3210-1PE13-2AL0	-	-	
1.5 kW / 4.1 A	1.1 kW / 3.1 A	A	6SL3210-1PE14-3UL0	6SL3210-1PE14-3AL0	-	-	
2.2 kW / 5.9 A	1.5 kW / 4.1 A	A	6SL3210-1PE16-1UL0	6SL3210-1PE16-1AL0	-	6SL32110-1PE16-1AL0	
3 kW / 7.7 A	2.2 kW / 5.9 A	A	6SL3210-1PE18-0UL0	-	6SL3211-1PE18-0UL0	-	

# EMC filtering generally suitable for 1st environment; additional filter options available on request - please refer to page 51 for specific categorisations.  
 LO (VT) = Low Overload (Variable Torque): 1.5 x LO current for 3s plus 1.1 x LO current for 57s within a cycle time of 300s.  
 HO (CT) = High Overload (Constant Torque): 2 x HO current for 3s plus 1.5 x HO current for 57s within a cycle time of 300s.  
 PM240-2 FSB, FSC and Push-Through variants will be available in February 2014.  
 PM240-2 200 ...240 V 1 AC version will be available April 2014.

Options	
6SL3255-0AA00-4CA1	Basic Operator Panel 2 (BOP2)
6SL3255-0AA00-4JA1	Intelligent Operator Panel (IOP)
6SL3256-0AP00-0JA0	IOP / BOP2 Door Mounting Kit (for IP20 version mounted in a cabinet)
6SL3255-0AA00-4HA0	IOP Handheld (inc. Holder, IOP, cable, charging unit and rechargeable batteries)
6SL3255-0AA00-2CA0	PC Inverter Connection Kit 2 for G120C and G120 control units CU230P-2, CU240BE-2, CU240E-2 and CU250S-2
6SL3254-0AM00-0AA0	SINAMICS Micro Memory Card (MMC) 64MB
6SL3054-4AG00-2AA0	SINAMICS SD card 512 MB
6SL3074-0AA10-0AA0	Extended Safety license (SLS, SSM, SDI) for CU250S-2 in Vector or Servo Mode
6SL3074-7AA04-0AA0	Extended Functions license (EPos) for CU250S-2 in Vector Mode
6SL3054-4AG00-2AA0-Z F01	SD card + Extended Safety license (SLS, SSM, SDI) for CU250S-2 in Vector or Servo Mode
6SL3054-4AG00-2AA0-Z E01	SD card + Extended Functions license (EPos) for CU250S-2 in Vector Mode
6SL3054-4AG00-2AA0-Z F01 E01	SD card + Extended Safety + Extended Functions license (EPos) for CU250S-2 in Vector Mode
6SL3252-0BB00-0AA0	Brake relay (including cable harness for connection to the Power Module)
6SL3252-0BB01-0AA0	Safe Brake Relay (including cable harness for connection to the Power Module)
Control Unit Shield Connection Kits	
6SL3264-1EA00-0FA0	Shield Connection kit 1 for CU230P-2 Control Units
6SL3264-1EA00-0HA0	Shield Connection kit 2 for CU240B/E-2 Control Units
6SL3264-1EA00-0HB0	Shield Connection kit 3 for CU230P-2 PN and CU240B/E-2 PN Control Units
6SL3264-1EA00-0LA0	Shield Connection kit 4 for CU250S-2 Control Units (all variants)
Push Through Mounting Frames	
6SL3260-6AA00-0DA0	Push Through Mounting Frame - Frame size FSA
6SL3260-6AB00-0DA0	Push Through Mounting Frame - Frame size FSB
6SL3260-6AC00-0DA0	Push Through Mounting Frame - Frame size FSC

# SINAMICS G120 Modular - PM240

The versatile single-motor drive



## Benefits

- Modular with flexible expansion capability
- Compact space saving design
- Wide range of Control Units with different communication interfaces available
- Simple fast commissioning
- Integrated safety with the appropriate CU
- Built in braking chopper (except for FSGX)
- Precise control with Encoder feedback and optional positioning with EPos (easy positioning) with CU250S-2
- Optional positioning with EPos (easy positioning)
- Optional MMC or SC card for backup and series commissioning

## Design

The G120 is a modular drive consisting of Control Unit (CU), Power Module (PM) and optional Operator Panel (OP) and is designed to provide precise and cost effective speed/torque control of AC Motors in a wide range of industrial applications.

## PM 240 Power Modules (0.37 kW to 250 kW)

- has an integrated braking chopper to enable loads to be dynamically braked. The energy produced during braking is dissipated through optional externally connected resistors. For frame size GX this is via an optional braking module to connect the braking resistor.

## Applications

A Universal Drive for a variety of industrial application e.g. fans, pumps, compressors, extruders, mixers, crushers and high performance conveyors.

Technical data	
<b>Electrical data</b>	<b>SINAMICS G120 PM 240</b>
Line voltage	380 V ... 480 V 3 AC, ±10 %
Power ranges	0.37 kW ... 250 kW
Line supply types	TN (with filter), TN, TT, IT (without filter)
Line frequency	47 ... 63 Hz
Output frequency	0 ... 650 Hz V/f, 0 ... 200 Hz Vector
Pulse frequency	4 kHz (up to 75 kW - up to 16 kHz with derating) 2 kHz (from 90 kW - up to 16 kHz with derating)
<b>Functions</b>	
Protection functions	Overvoltage, undervoltage, overload, ground fault, short circuit, stall, motor blocking, motor over-temperature, inverter overtemperature, parameter locking
Software functions	See Control Unit Overview on page 14
Safety functions	See table below
<b>Standards</b>	
In conformance with the following standards	UL, cUL, CE, c-tick EN954-1 Cat3, EN ISO 13849-1 PLd, IEC61508 SIL2

Control Units												
Control Unit	Designation	Interfaces	DI	DO	DI/DO	AI	AO	F-DI	F-DO	Encoder	Safety	
6SL3243-0BB30-1HA3	CU230P-2 HVAC	RS485/USS/Modbus/BACnet	6	3	-	4 <sup>^</sup>	2	-	-	-	-	
6SL3243-0BB30-1PA3	CU230P-2 DP	Profibus DP	6	3	-	4 <sup>^</sup>	2	-	-	-	-	
6SL3243-0BB30-1FA0	CU230P-2 PN	Profinet	6	3	-	4 <sup>^</sup>	2	-	-	-	-	
6SL3243-0BB30-1CA3	CU230P-2 CAN	CANopen	6	3	-	4 <sup>^</sup>	1	-	-	-	-	
6SL3244-0BB00-1BA1	CU240B-2	RS485/USS	4	1	-	1 <sup>*</sup>	1	-	-	-	-	
6SL3244-0BB00-1PA1	CU240B-2 DP	Profibus DP	4	1	-	1 <sup>*</sup>	2	-	-	-	-	
6SL3244-0BB12-1BA1	CU240E-2	RS485/USS	6	3	-	2 <sup>*</sup>	2	1~	-	-	STO	
6SL3244-0BB12-1PA1	CU240E-2 DP	Profibus DP	6	3	-	2 <sup>*</sup>	2	1~	-	-	STO	
6SL3244-0BB12-1FA0	CU240E-2 PN	Profinet	6	3	-	2 <sup>*</sup>	2	1~	-	-	STO	
6SL3244-0BB13-1BA1	CU240E-2 F	RS485/USS	6	3	-	2 <sup>*</sup>	2	3~	-	-	STO, SS1, SLS, SDI, SSM	
6SL3244-0BB13-1PA1	CU240E-2 DP F	Profibus DP	6	3	-	2 <sup>*</sup>	2	3~	-	-		
6SL3244-0BB13-1FA0	CU240E-2 PN-F	Profinet	6	3	-	2 <sup>*</sup>	2	3~	-	-		
6SL3246-0BA22-1BA0	CU250S-2	RS485/USS	11	3	4	2	2	3~	1 <sup>*</sup>	Various □	Basic: STO, SS1, SBC Extended: SLS, SSM, SDI	
6SL3246-0BA22-1PA0	CU250S-2 DP	Profibus DP	11	3	4	2	2	3~	1 <sup>*</sup>	Various □		
6SL3246-0BA22-1FA0	CU250S-2 PN	Profinet	11	3	4	2	2	3~	1 <sup>*</sup>	Various □	Extended functions via license (see below)	
6SL3246-0BA22-1CA0	CU250S-2 CAN	CANopen	11	3	4	2	2	3~	1 <sup>*</sup>	Various □		

\* Selectable between 0...10V, -10...+10V, 0/2...20mA, 0/4...20mA or can be used as digital inputs if required.

<sup>^</sup> 2 of the 4 Analogue inputs are selectable between 0...10V, -10...+10V, 0/...20mA, 0/4...20mA or can be used as digital inputs if required.

~ Each "Failsafe input utilises two digital inputs from the module." Each "Failsafe Output utilises two digital outputs from the module.

□ Encoder: TTL/HTL incremental, SIN/COS incremental, SSI absolute, EnDat absolute and Resolvers are supported. See technical manual for possible combinations.

# SINAMICS G120 PM240

## Part Numbers

Power Module PM240		Power Modules		
Supply Voltage - 380 V ... 480 V 3 AC				
Rating	Frame Size	PM240 Unfiltered	PM240 Filtered #	Additional Filter to use with unfiltered PM240
LO (VT)	HO (CT)			
0.37 kW / 1.3 A		A	6SL3224-0BE13-7UA0	6SE6400-2FA00-6AD0
0.55 kW / 1.7 A		A	6SL3224-0BE15-5UA0	6SE6400-2FA00-6AD0
0.75 kW / 2.2 A		A	6SL3224-0BE17-5UA0	6SE6400-2FA00-6AD0
1.1 kW / 3.1 A		A	6SL3224-0BE21-1UA0	6SE6400-2FA00-6AD0
1.5 kW / 4.1 A		A	6SL3224-0BE21-5UA0	6SE6400-2FA00-6AD0
2.2 kW / 5.9 A		B	6SL3224-0BE22-2UA0	-
3 kW / 7.7 A		B	6SL3224-0BE23-0UA0	-
4 kW / 10.2 A		B	6SL3224-0BE24-0UA0	-
LO (VT)	HO (CT)			
7.5 kW / 18 A	5.5 kW / 13.2 A	C	6SL3224-0BE25-5UA0	-
11 kW / 25 A	7.5 kW / 19 A	C	6SL3224-0BE27-5UA0	-
15 kW / 32 A	11 kW / 26 A	C	6SL3224-0BE31-1UA0	-
18.5 kW / 38 A	15 kW / 32 A	D	6SL3224-0BE31-5UA0	-
22 kW / 45 A	18.5 kW / 38 A	D	6SL3224-0BE31-8UA0	-
30 kW / 60 A	22 kW / 45 A	D	6SL3224-0BE32-2UA0	-
37 kW / 75 A	30 kW / 60 A	E	6SL3224-0BE33-0UA0	-
45 kW / 90 A	37 kW / 75 A	E	6SL3224-0BE33-7UA0	-
55 kW / 110 A	45 kW / 90 A	F	6SL3224-0BE34-5UA0	-
75 kW / 145 A	55 kW / 110 A	F	6SL3224-0BE35-5UA0	-
90 kW / 178 A	75 kW / 145 A	F	6SL3224-0BE37-5UA0	-
110 kW / 205 A	90 kW / 178 A	F	6SL3224-0BE38-8UA0	6SL3203-0BE32-5AA0
132 kW / 250 A	110 kW / 205 A	F	6SL3224-0BE41-1UA0	6SL3203-0BE32-5AA0
160 kW / 302 A	132 kW / 250 A	FSGX	6SL3224-0XE41-3UA0	6SL3000-0BE34-4AA0
200 kW / 370 A	160 kW / 302 A	FSGX	6SL3224-0XE41-6UA0	6SL3000-0BE34-4AA0
250 kW / 477 A	200kW / 370 A	FSGX	6SL3224-0XE42-0UA0	6SL3000-0BE36-0AA0

# EMC filtering generally suitable for 1st environment; additional filter options available on request - please refer to page 51 for specific categorisations.  
 LO (VT) = Low Overload (Variable Torque) - Up to 75kW (LO): 1.5 x LO current rating for 3s plus 1.1 x LO current rating for 57s within a cycle time of 300s.  
 - From 90kW (LO): 1.5 x LO current rating for 1s plus 1.1 x LO current rating for 57s within a cycle time of 300s.

HO (CT) = High Overload (Constant Torque) - Up to 75kW (HO): 2 x HO current rating for 3s plus 1.5 x HO current rating for 57s within a cycle time of 300s.  
 - From 90kW (HO): 1.6 x HO current rating for 3s plus 1.36 x HO current rating for 57s within a cycle time of 300s.

Options	
6SL3255-0AA00-4CA1	Basic Operator Panel 2 (BOP2)
6SL3255-0AA00-4JA1	Intelligent Operator Panel (IOP)
6SL3256-0AP00-0JA0	IOP / BOP2 Door Mounting Kit (for IP20 version mounted in a cabinet)
6SL3255-0AA00-4HA0	IOP Handheld (inc. Holder, IOP, cable, charging unit and rechargeable batteries)
6SL3255-0AA00-2CA0	PC Inverter Connection Kit 2 for G120C and G120 control units CU230P-2, CU240BE-2, CU240E-2 and CU250S-2
6SL3254-0AM00-0AA0	SINAMICS Micro Memory Card (MMC) 64MB
6SL3054-4AG00-2AA0	SINAMICS SD card 512 MB
6SL3074-0AA10-0AA0	Extended Safety license (SLS, SSM, SDI) for CU250S-2 in Vector or Servo Mode
6SL3074-7AA04-0AA0	Extended Functions license (EPos) for CU250S-2 in Vector Mode
6SL3054-4AG00-2AA0-Z F01	SD card + Extended Safety license (SLS, SSM, SDI) for CU250S-2 in Vector or Servo Mode
6SL3054-4AG00-2AA0-Z E01	SD card + Extended Functions license (EPos) for CU250S-2 in Vector Mode
6SL3054-4AG00-2AA0-Z F01 E01	SD card + Extended Safety + Extended Functions license (EPos) for CU250S-2 in Vector Mode
6SL3252-0BB00-0AA0	Brake relay (including cable harness for connection to the Power Module)
6SL3252-0BB01-0AA0	Safe Brake Relay (including cable harness for connection to the Power Module)

Control Unit Shield Connection Kits	
6SL3264-1EA00-0FA0	Shield Connection kit 1 for CU230P-2 Control Units
6SL3264-1EA00-0HA0	Shield Connection kit 2 for CU240B/E-2 Control Units
6SL3264-1EA00-0HB0	Shield Connection kit 3 for CU230P-2 PN and CU240B/E-2 PN Control Units
6SL3264-1EA00-0LA0	Shield Connection kit 4 for CU250S-2 Control Units (all variants)
Power Module Shield Connection Kits	
6SL3262-1AA00-0BA0	Frame size FSA
6SL3262-1AB00-0DA0	Frame size FSB
6SL3262-1AC00-0DA0	Frame size FSC
6SL3262-1AD00-0DA0	Frame size FSD and FSE
6SL3262-1AF00-0DA0	Frame size FSF

# SINAMICS G120 Modular - PM250

The versatile single-motor drive



## Applications

A Universal Drive for a variety of industrial application e.g. fans, pumps, compressors, extruders, mixers, crushers and high performance conveyors.

## Design

The G120 is a modular drive consisting of Control Unit (CU), Power Module (PM) and optional Operator Panel (OP) and is designed to provide precise and cost effective speed/torque control of AC Motors in a wide range of industrial applications.

## PM 250 (7.5 kW to 90 kW)

- has 'Efficient Infeed Technology' (p49), which regenerates braking energy back into the mains supply. This saves space and wiring in the cabinet, time in dimensioning the braking resistor and the heat losses generated during braking. The innovative circuitry also reduces line harmonics so an input reactor is not required.

## Benefits over PM240

- Efficient Infeed Technology
- Reduced harmonics

Control Units											
Control Unit	Designation	Interfaces	DI	DO	DI/DO	AI	AO	F-DI	F-DO	Encoder	Safety
6SL3243-0BB30-1HA3	CU230P-2 HVAC	RS485/USS/Modbus/BACnet	6	3	-	4 <sup>^</sup>	2	-	-	-	-
6SL3243-0BB30-1PA3	CU230P-2 DP	Profibus DP	6	3	-	4 <sup>^</sup>	2	-	-	-	-
6SL3243-0BB30-1FA0	CU230P-2 PN	Profinet	6	3	-	4 <sup>^</sup>	2	-	-	-	-
6SL3243-0BB30-1CA3	CU230P-2 CAN	CANopen	6	3	-	4 <sup>^</sup>	1	-	-	-	-
6SL3244-0BB00-1BA1	CU240B-2	RS485/USS	4	1	-	1 <sup>*</sup>	1	-	-	-	-
6SL3244-0BB00-1PA1	CU240B-2 DP	Profibus DP	4	1	-	1 <sup>*</sup>	2	-	-	-	-
6SL3244-0BB12-1BA1	CU240E-2	RS485/USS	6	3	-	2 <sup>*</sup>	2	1 <sup>~</sup>	-	-	STO
6SL3244-0BB12-1PA1	CU240E-2 DP	Profibus DP	6	3	-	2 <sup>*</sup>	2	1 <sup>~</sup>	-	-	STO
6SL3244-0BB12-1FA0	CU240E-2 PN	Profinet	6	3	-	2 <sup>*</sup>	2	1 <sup>~</sup>	-	-	STO
6SL3244-0BB13-1BA1	CU240E-2 F	RS485/USS	6	3	-	2 <sup>*</sup>	2	3 <sup>~</sup>	-	-	STO, SS1, SLS, SDI, SSM
6SL3244-0BB13-1PA1	CU240E-2 DP F	Profibus DP	6	3	-	2 <sup>*</sup>	2	3 <sup>~</sup>	-	-	
6SL3244-0BB13-1FA0	CU240E-2 PN-F	Profinet	6	3	-	2 <sup>*</sup>	2	3 <sup>~</sup>	-	-	
6SL3246-0BA22-1BA0	CU250S-2	RS485/USS	11	3	4	2	2	3 <sup>~</sup>	1 <sup>*</sup>	Various □	Basic: STO, SS1, SBC Extended: SLS, SSM, SDI
6SL3246-0BA22-1PA0	CU250S-2 DP	Profibus DP	11	3	4	2	2	3 <sup>~</sup>	1 <sup>*</sup>	Various □	
6SL3246-0BA22-1FA0	CU250S-2 PN	Profinet	11	3	4	2	2	3 <sup>~</sup>	1 <sup>*</sup>	Various □	Extended functions via license (see below)
6SL3246-0BA22-1CA0	CU250S-2 CAN	CANopen	11	3	4	2	2	3 <sup>~</sup>	1 <sup>*</sup>	Various □	

\* Selectable between 0...10V, -10...+10V, 0/2...20mA, 0/4...20mA or can be used as digital inputs if required.

<sup>^</sup> 2 of the 4 Analogue inputs are selectable between 0...10V, -10...+10V, 0/...20mA, 0/4...20mA or can be used as digital inputs if required.

<sup>~</sup> Each "Failsafe input utilises two digital inputs from the module." Each "Failsafe Output utilises two digital outputs from the module.

□ Encoder: TTL/HTL incremental, SIN/COS incremental, SSI absolute, EnDat absolute and Resolvers are supported. See technical manual for possible combinations.

Technical data	
<b>Electrical data</b>	<b>SINAMICS G120 PM250</b>
Line voltage	380 V ... 480 V 3 AC, ±10 %
Power ranges	7.5 kW ... 90 kW
Line supply types	TN (with filter), TN, TT, IT (without filter)
Line frequency	47 ... 63 Hz
Output frequency	0 ... 650 Hz V/f, 0 ... 200 Hz Vector
Pulse frequency	4 kHz (up to 16 kHz with derating)
<b>Common Functions</b>	
Protection functions	Overvoltage, undervoltage, overload, ground fault, short circuit, stall, motor blocking, motor overtemperature, inverter overtemperature, parameter locking
Software functions	See Control Unit Overview on page 14
Safety functions	See table below
<b>Mechanical Data</b>	
Cooling Type	Convection
Degree of protection	IP20
<b>Standards</b>	
In conformance with the following standards	UL, CE, c-tick EN954-1 Cat3, EN ISO 13849-1 PLd, IEC61508 SIL2

# SINAMICS G120 PM250

## Part Numbers

Supply Voltage - 380 V... 480 V 3 AC		Power Modules		
Rating	Frame Size	Industrial	Filtered #	
LO (VT)	HO (CT)			
7.5 kW / 18 A	5.5 kW / 13.2 A	C	6SL3225-0BE25-5AA1	
11 kW / 25 A	7.5 kW / 19 A	C	6SL3225-0BE27-5AA1	
15 kW / 32 A	11 kW / 26A	C	6SL3225-0BE31-1AA1	
18.5 kW / 38 A	15 kW / 32 A	D	6SL3225-0BE31-5UA0	
22 kW / 45 A	18.5 kW / 38A	D	6SL3225-0BE31-8UA0	
30 kW / 60 A	22 kW / 45 A	D	6SL3225-0BE32-2UA0	
37 kW / 75 A	30 kW / 60 A	E	6SL3225-0BE33-0UA0	
45 kW / 90 A	37 kW / 75 A	E	6SL3225-0BE33-7UA0	
55 kW / 110 A	45 kW / 90 A	F	6SL3225-0BE34-5UA0	
75 kW / 145 A	55 kW / 110 A	F	6SL3225-0BE35-5UA0	
90 kW / 178 A	75 kW / 145 A	F	6SL3225-0BE37-5UA0	

LO (VT) = Low Overload (Variable Torque) - 1.5 x LO current rating for 3s plus 1.1 x LO current rating for 57s within a cycle time of 300s.

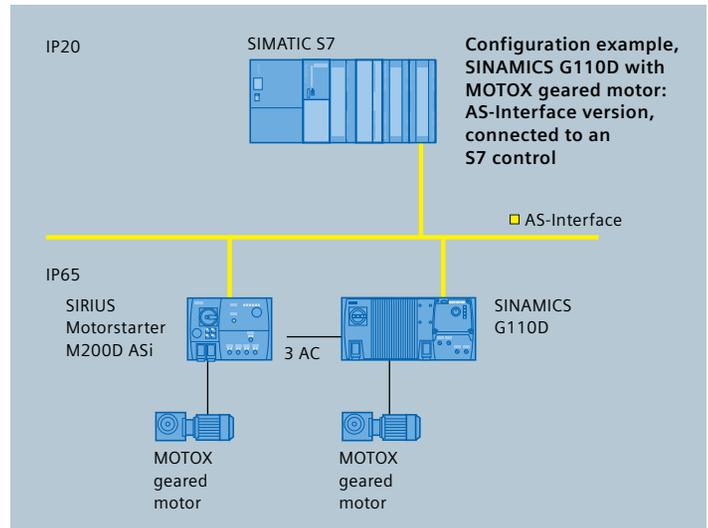
HO (CT) = High Overload (Constant Torque) - 2 x HO current rating for 3s plus 1.5 x HO current rating for 57s within a cycle time of 300s.

# EMC filtering generally suitable for 1st environment; additional filter options available on request - please refer to page 51 for specific categorisations.

Options	
6SL3255-0AA00-4CA1	Basic Operator Panel 2 (BOP2)
6SL3255-0AA00-4JA1	Intelligent Operator Panel (IOP)
6SL3256-0AP00-0JA0	IOP / BOP2 Door Mounting Kit (for IP20 version mounted in a cabinet)
6SL3255-0AA00-4HA0	IOP Handheld (inc. Holder, IOP, cable, charging unit and rechargeable batteries)
6SL3255-0AA00-2CA0	PC Inverter Connection Kit 2 for G120C and G120 control units CU230P-2, CU240BE-2, CU240E-2 and CU250S-2
6SL3254-0AM00-0AA0	SINAMICS Micro Memory Card (MMC) 64MB
6SL3054-4AG00-2AA0	SINAMICS SD card 512 MB
6SL3074-0AA10-0AA0	Extended Safety license (SLS, SSM, SDI) for CU250S-2 in Vector or Servo Mode
6SL3074-7AA04-0AA0	Extended Functions license (EPos) for CU250S-2 in Vector Mode
6SL3054-4AG00-2AA0-Z F01	SD card + Extended Safety license (SLS, SSM, SDI) for CU250S-2 in Vector or Servo Mode
6SL3054-4AG00-2AA0-Z E01	SD card + Extended Functions license (EPos) for CU250S-2 in Vector Mode
6SL3054-4AG00-2AA0-Z F01 E01	SD card + Extended Safety + Extended Functions license (EPos) for CU250S-2 in Vector Mode
6SL3252-0BB00-0AA0	Brake relay (including cable harness for connection to the Power Module)
6SL3252-0BB01-0AA0	Safe Brake Relay (including cable harness for connection to the Power Module)
Control Unit Shield Connection Kits	
6SL3264-1EA00-0FA0	Shield Connection kit 1 for CU230P-2 Control Units
6SL3264-1EA00-0HA0	Shield Connection kit 2 for CU240B/E-2 Control Units
6SL3264-1EA00-0HB0	Shield Connection kit 3 for CU230P-2 PN and CU240B/E-2 PN Control Units
6SL3264-1EA00-0LA0	Shield Connection kit 4 for CU250S-2 Control Units (all variants)
Power Module Shield Connection Kits	
6SL3262-1AC00-0DA0	Frame size FSC
6SL3262-1AD00-0DA0	Frame size FSD and FSE
6SL3262-1AF00-0DA0	Frame size FSF

# SINAMICS G110D

The distributed single-motor drive for basic solutions



## Design

SINAMICS G110D distributed inverter is a simpler version of the higher-performance SINAMICS G120D. It still offers the same advantages of modularity, low-profile design and IP65 rated rugged metal enclosure so the drive can be located close to the motor.

## Benefits

- Power Range - 0.75 kW to 7.5 kW
- Identical footprint for all power ranges (depth changes) and same as G120D drive
- Integrated chopper for braking with an optional resistor
- Integrated class A EMC filter (acc.to EN55011)
- High overload capacity
- Wide range of protection for drive and motor
- Rugged IP65 enclosure
- Versions with and without isolation (maintenance switch)
- Optional key selection switch for switching between manual-automatic and activating the 'Quick-Stop' function
- Drive is mounted close to the motor saving on expensive cabinets, long cable runs and EMC issues
- TIA integration through the AS Interface
- Interchangeable MMC Card for fast commissioning and backup

## Applications

- Conveyor and logistics solutions
- Basic performance applications at airports or in food & beverage, packaging, automotive industries and material handling

## Technical data

Electrical data	SINAMICS G110D
Line voltages	380 V ... 500 V 3 AC, ±10 %
Power ranges	0.75 kW ... 7.5 kW
Line supply types	TN, TT
Line frequency	47 ... 63 Hz
Output frequency	0 ... 640 Hz V/f
Pulse frequency	4 kHz (up to 16 kHz with derating)
Open loop control	V/f (linear, square law, FCC)
Digital inputs (DI)	4
Digital outputs (DO)	0
Analog inputs (AI)	1 (0 ... 10V)
Analog outputs (AO)	0
Failsafe inputs (F-DI)	0
Communication interface	AS Interface (Version 3)
External interface to	PC via RS232 or USB via optical interface, SINAMICS MMC card or SIMATIC SD card

## Functions

Software functions	Setpoint input, 6 fixed frequencies (programmable), ramp smoothing, jog, slip compensation, BICO technology, free function blocks for logic operations, selectable data & command sets (3), flying restart, automatic restart, motor identification, PID controller, DC braking, brake control
Protection functions	Overvoltage, undervoltage, overload, ground fault, short circuit, stall, motor blocking, motor overtemperature, inverter overtemperature, parameter locking
Safety functions	

## Mechanical data

Degree of protection	IP65
Cooling type	Convection

## Standards

In conformance with the following standards	UL 508C (UL list No. E121068), CE, c-tick
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# SINAMICS G110D

## Part Numbers

Supply Voltage - 380 V... 500 V 3 AC		Power Modules	
Rating	Frame Size	Filtered # without Maintenance Switch (isolator)	Filtered # with Maintenance Switch (isolator)
0.75 kW / 2.3 A	FSA	6SL3511-OPE17-5AM0	6SL3511-1PE17-5AM0
1.5 kW / 4.3 A	FSA	6SL3511-OPE21-5AM0	6SL3511-1PE21-5AM0
3.0 kW / 7.7 A	FSA	6SL3511-OPE23-0AM0	6SL3511-1PE23-0AM0
4.0 kW / 10.2 A	FSB	6SL3511-OPE24-0AM0	6SL3511-1PE24-0AM0
5.5 kW / 13.2 A	FSC	6SL3511-OPE25-5AM0	6SL3511-1PE25-5AM0
7.5 kW / 19.0 A	FSC	6SL3511-OPE27-5AM0	6SL3511-1PE27-5AM0

Control Units	Designation	Interfaces	DI	DO	AI	AO	F-DI	Safety
Inc. with PM		Analogue & ASI	4	-	1	-	-	-

DI - Digital Inputs, DO- Digital Outputs, AI - Analogue Inputs, AO - Analogue Outputs.

# EMC filtering generally suitable for 1st environment. Please refer to page 51 for specific categorisations.

Overload: Average maximum rated output current during a 300s cycle: 1.5 x rated current for 60s over a 300s cycle time, 2 x rated current for 3c over a 300s cycle time.

Options	
6SL3255-0AA00-4HA0	IOP Handheld (inc. Holder, IOP, cable, charging unit and rechargeable batteries)
3RK1922-2BP00	RS232 Interface cable for communication with a PC or Handheld IOP - 2.5m
6SL3555-0PA00-2AA0	USB Cable for communication with a PC - 2.5m
6SL3254-0AM00-0AA0	MMC Micro Memory Card (requires Memory Card Holder)
6SL3054-4AG00-2AA0	SINAMICS SD card 512 MB (requires Memory Card Holder)
6SL3555-0PM00-0AA0	MMC and SD Memory Card Holder
6SL3555-0PL00-2AA0	Manual / Local control key switch

Connectors/Cables	
3RK1901-1NR21	AS Interface Cable M12 Branch 1m
3RK1901-1NR22	AS Interface Cable M12 Branch 2m
3RK1902-4CA00-4AA0	M12 Socket (Angled)
3RK1902-4BH15-5AA0	M12 Plug-in cable for Inputs/Outputs 1.5m
3RK1902-4BH50-5AA0	M12 Plug-in cable for Inputs/Outputs 5m
3RK1902-4HC01-5AA0	M12 Plug-in cable for Inputs/Outputs 10m
3RK1902-4BA00-5AA0	M12 Connector (Straight)
3RK1902-4DA00-5AA0	M12 Connector (Angled)
3RK1911-0DB13	Connecting cable prefabricated at one end for Power Supply 1.5m
3RK1911-0DB33	Connecting cable prefabricated at one end for Power Supply 5m
3RK1911-2BE50	Connector Set for Power Supply 2.5 mm <sup>2</sup>
3RK1911-2BE10	Connector Set for Power Supply 4 mm <sup>2</sup>
3RK1911-2BE30	Connector Set for Power Supply 6 mm <sup>2</sup>

A selection of pre-assembled notor cables are available from Harting or KnorrTec.



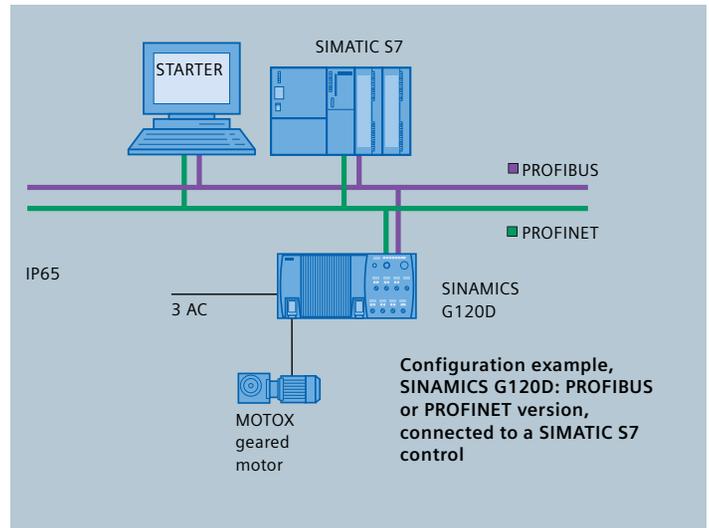
**G110D**  
with Isolator (maintenance switch)



**G110D**  
with Isolator (maintenance switch)  
and optional key switch

# SINAMICS G120D

The distributed single-motor drive for high-performance solutions



## Design

The SINAMICS G120D inverter is the “distributed” brother of the SINAMICS G120 series. It’s inherited many of the PM250 power module features including ‘Efficient Infeed Technology’ and safety functions. With its modularity, communication and IP65 rating it’s the ideal choice for conveyor and logistics applications requiring 3-ph 380V to 480V AC, 0.75 kW to 7.5 kW distributed solution.

## Benefits

- Power range - 0.75 kW to 7.5 kW
- Modular design – spare parts stock to a minimum
- Identical footprint for all power ranges (depth changes) and same as G110D drive
- Efficient Infeed Technology – regenerative braking energy is fed back into the mains supply (P49)
- Integrated class A EMC filter (acc.to EN55011)
- High overload capacity
- Wide range of protection for drive and motor
- Low harmonics
- Rugged IP65 enclosure
- Drive is mounted close to the motor saving on expensive cables, long cable runs and EMC issues
- TIA integration through Profibus and Profinet Communications
- Integrated Safety functions without an encoder STO, SS1 and SLS certified to EN954-1 Cat.3, EN ISO 13849-1 PLd and IEC61508 SIL2
- Interchangeable MMC Card for fast commissioning and backup

## Applications

- Demanding conveyor and logistics solutions
- High performance applications at airports or in food & beverage, automotive industry and material handling

## Technical data

Electrical data	SINAMICS G120D
Line voltages	380 V ... 5000 V 3 AC, ±10 %
Power ranges	0.75 kW ... 7.5 kW
Line supply types	TN, TT
Line frequency	47 ... 63 Hz
Output frequency	0 ... 650 Hz V/f, 0 ... 200 Hz Vector
Pulse frequency	4 kHz (up to 16 kHz with derating)
Open loop/closed loop	V/f (linear, square law, FCC) Vector/Torque control with and without encoder
Digital inputs (DI)	CU dependent - see page 26
Digital outputs (DO)	CU dependent - see page 26
Analogue inputs (AI)	CU dependent - see page 26
Failsafe inputs (F-DI)	CU dependent - see page 26
Failsafe outputs (F-DO)	CU dependent - see page 26
Communication interface	PROFIBUS DP, PROFINET
External interface to	PC via RS232 or USB via optical interface, SINAMICS MMC card or SIMATIC SD card

## Functions

Software functions	Setpoint input, 16 fixed frequencies (programmable), ramp smoothing, jog, slip compensation, BICO technology, command sets (3), flying restart, automatic restart, PID controller, regenerative braking, brake relay control via CU
Protection functions	Overvoltage, undervoltage, overload, ground fault, short circuit, stall, motor blocking, motor overtemperature, inverter overtemperature
Safety functions	STO, SS1, SLS, SDI, SSM - CU dependent

## Mechanical data

Degree of protection	IP65
Cooling type	Convection

## Standards

In conformance with the following standards	UL 508C (UL list No. E121068), CE, c-tick EN954-1 Cat3, EN ISO 13849-1 PLd, IEC61508 SIL2
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# SINAMICS G120D

## Part Numbers

Supply Voltage - 380 V ... 480 V 3 AC		Power Modules
Rating	Frame Size	Filtered #
0.75 kW / 2.2 A	A	6SL3525-OPE17-5AA1
1.5 kW / 4.1 A	A	6SL3525-OPE21-5AA1
3 kW / 7.7 A	B	6SL3525-OPE23-0AA1
4 kW / 10.2 A	C	6SL3525-OPE24-0AA1
5.5 kW / 13.2 A	C	6SL3525-OPE25-5AA1
7.5 kW / 19.0 A	C	6SL3525-OPE27-5AA1

# EMC filtering generally suitable for 1st environment. Please refer to page 51 for specific categorisations.

Overload: Average maximum rated output current during a 300s cycle: 1.5 x rated current for 60s over a 300s cycle time, 2 x rated current for 3s over a 300s cycle time.

Control Units	Designation	Interfaces	DI	DO	F-DI	F-DO	AI	Encoder HTL / SSI	Safety
<b>Standard</b>									
6SL3544-0FB20-1PA0	CU240D-2 DP	Profibus DP	6	2	1	-	2	1 / -	STO
6SL3544-0FB20-1FA0	CU240D-2 PN	Profinet	6	2	1	-	2	1 / -	STO
<b>Fail-safe</b>									
6SL3544-0FB21-1PA0	CU240D-2 DP-F	Profibus DP	6	2	3~	1*	2	1 / -	STO, SS1, SLS, SSM, SDI
6SL3544-0FB21-1FA0	CU240D-2 PN-F	Profinet	6	2	3~	1*	2	1 / -	STO, SS1, SLS, SSM, SDI
6SL3544-0FA21-1FB0	CU240D-2 PN-F PP	PushPull	6	2	3~	1*	2	1 / -	STO, SS1, SLS, SSM, SDI
<b>With Basic Positioner (EPos) and fail-safe</b>									
6SL3546-0FB21-1PA0	CU2450D-2 DP-F	Profibus DP	6	2	3~	1*		1 / 1	STO, SS1, SLS, SSM, SDI
6SL3546-0FB21-1FA0	CU250D-2 PN-F	Profinet	6	2	3~	1*		1 / 1	STO, SS1, SLS, SSM, SDI
6SL3546-0FB21-1FB0	CU245D-2 PN-F PP	PushPull	6	2	3~	1*		1 / 1	STO, SS1, SLS, SSM, SDI

~ Each "Failsafe input utilises two digital inputs from the module." Each "Failsafe output utilises two digital outputs from the module.

STO - Safe Torque Off, SS1 - Safe Stop 1, SLS - Safe Limited Speed, SSM - Safe Speed Monitor, SDI - Safe Direction Indication.

Options	
6SL3255-0AA00-4HA0	IOP Handheld (inc. Rechargeable Batteries, Charging Unit, 3m RS232 Cable and 1m USB Cable)
3RK1922-2BP00	RS232 Interface cable for communication with a PC or Handheld IOP - 2.5M
6SL3254-0AM00-0AA0	SINAMICS Micro Memory Card (MMC) 64MB
6SL3054-4AG00-2AA0	SINAMICS SD card 512 MB

Profinet Connection Cables and connectors M12		7/8" Control Unit Power Cables	
6XV1870-8AE30	Preassembled Profinet Cable 0.3m	6XV1822-5BE30	Preassembled Cable 0.3m
6XV1870-8AE50	Preassembled Profinet Cable 0.5m	6XV1822-5BE50	Preassembled Cable 0.5m
6XV1870-8AH10	Preassembled Profinet Cable 1.0m	6XV1822-5BH10	Preassembled Cable 1.0m
6XV1870-8AH15	Preassembled Profinet Cable 1.5m	6XV1822-5BH15	Preassembled Cable 1.5m
6XV1870-8AH20	Preassembled Profinet Cable 2m	6XV1822-5BH20	Preassembled Cable 2m
6XV1870-8AH30	Preassembled Profinet Cable 3m	6XV1822-5BH30	Preassembled Cable 3m
6XV1870-8AH50	Preassembled Profinet Cable 5m	6XV1822-5BH50	Preassembled Cable 5m
6XV1870-8AN10	Preassembled Profinet Cable 10m	6XV1822-5BN10	Preassembled Cable 10m
6XV1870-8AN15	Preassembled Profinet Cable 15m	6XV1822-5BN15	Preassembled Cable 15m
6GK1901-0DB20-6AA0	M12 Plug PRO Metal Enclosure - 1 unit	6GK1905-0FA00	7/8" Plastic Enclosure with Pin insert (5 uniuts)
6GK1901-0DB20-6AA8	M12 Plug PRO Metal Enclosure - 8 units	6GK1905-0FB00	7/8" Plastic Enclosure with Socket insert (5 uniuts)
3RK1902-2DA00	M12 Plug PRO Metal Enclosure -1 unit (angled)	6GK1907-0AB10-6AA0	Power Plug PRO for PP units
6GK1901-1BB10-6AA0	RJ45 PLUG PRO connector		

Profibus Connecting Cables and connectors M12		Connection cable for Digital Inputs and Outputs	
6XV1830-3DE30	Preassembled Profibus Cable 0.3m	3RK1902-4HB15-5AA0	Preassembled Cable 1.5m
6XV1830-3DE50	Preassembled Profibus Cable 0.5m	3RK1902-4HB50-5AA0	Preassembled Cable 5m
6XV1830-3DH10	Preassembled Profibus Cable 1.0m	3RK1902-4HC01-5AA0	Preassembled Cable 10m
XV1830-3DH15	Preassembled Profibus Cable 1.5m	3RK1902-4BA00-5AA0	M12 Connector Straight
6XV1830-3DH20	Preassembled Profibus Cable 2m	3RK1902-4DA00-5AA0	M12 Connector Angled
6XV1830-3DH30	Preassembled Profibus Cable 3m		
		Power Connecting Cable for Power Modules	
6XV1830-3DH50	Preassembled Profibus Cable 5m	3RK1911-0DB13	Preassembled Cable 1.5m
6XV1830-3DN10	Preassembled Profibus Cable 10m	3RK1911-0DB33	Preassembled Cable 5m
6XV1830-3DN15	Preassembled Profibus Cable 15m	3RK1911-2BE50	Connector set 2.5mm2
6GK1905-0EA00	Profibus M12 Metal Enclosure with Pin insert (5 uniuts)	3RK1911-2BE10	Connector set 4mm2
6GK1905-0EA00	Profibus M12 Metal Enclosure with socket insert (5 uniuts)	3RK1911-2BE30	Connector set 6mm2

# SINAMICS S110

The specialist for basic positioning tasks



## Design

The SINAMICS S110 positioning drive with its built-in basic positioning system is the ideal solution when you need to position a machine axis simply, quickly and accurately.

This modular drive solution consists of a Power Module (PM340) and Control Module (CU305) offering maximum flexibility whilst simplifying spare stock holding. Single phase and three phase versions are available with power ratings of 0.12 kW to 0.75 kW and 0.37 kW to 90 kW respectively.

The SINAMICS S110 offers you a choice of control via an analogue input (+/-10V), USS, PROFIBUS DP and PROFINET. All with a wide range of integrated safety functions as standard. Both synchronous servo and asynchronous induction motors can be controlled ensuring precise control and accurate positioning. Please refer to Chapter 11 of the DA31 Catalogue for suitable motors.

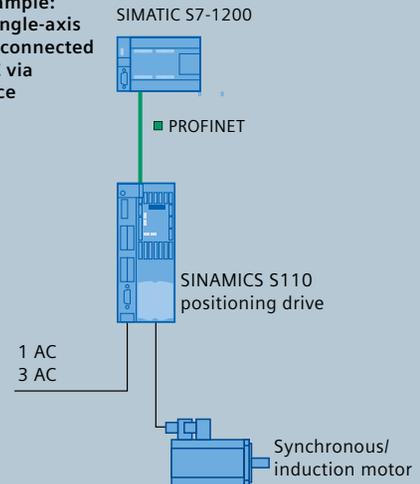
## Benefits

- Wide range of power ranges
- A selection of control methods
- Closed-loop servo control
- Integrated safety functions
- EPos positioning functions for the most commonly used positioning tasks
- 16 positioning blocks
- BICO technology
- Simple drive engineering with SIZER
- User-friendly commissioning with STARTER including auto configuration using the electronic type plate and controller optimisation using auto-tuning

## Applications

- Handling equipment
- Feeder and removal devices
- Stacking equipment
- Automatic assembly machines
- Laboratory automation
- Tool changers
- Tracking equipment, e.g. for solar panels
- Medical technology, e.g. for examination tables

**Configuration example:**  
SINAMICS S110 single-axis positioning drive connected to an S7 1200 PLC via PROFINET interface



## Technical data

Electrical data	SINAMICS S110 PM340/CU305	
Line voltages; Power ranges	200 V ... 240 V 1 AC ± 10%; 0.12 kW ... 0.75 kW 380 V ... 480 V 3 AC ± 10%; 0.37 kW ... 90 kW	
Line supply types	TN (with filter), TN, TT, IT (without filter)	
Line frequency	47 ... 63 Hz	
Output frequency (servo)	0 ... 650 Hz	
Open-loop/closed-loop control	<b>Induction Motor</b> - torque/position control with encoder, speed control with & w/o encoder (V/f) <b>Servo Motor</b> - torque/position/speed control with encoder	
	<b>Without Safety</b>	<b>With Safety</b>
Digital inputs (DI)	11	5
Digital outputs (DO)	1	0
Digital inputs/outputs DIO	4	4
Failsafe digital inputs (F-DI)	0	3
Failsafe digital outputs (F-DO)	0	1
Analogue inputs	1 (-10 ... +10V (12 bit))	
Communication interfaces	PROFIBUS DP/RS485/USS, PROFINET or CANBus	
External interface to	PC via RS232 or USB via optical interface, SINAMICS MMC card or SIMATIC SD card	
<b>Functions</b>		
Technological functions	EPos positioning functions: Point-to-point positioning, absolute/relative; linear/rotary axis; flying positioning; traversing blocks (up to 16); BICO technology	
Safety functions	Basic: STO, SBC~, SS1. Extended: SS1,SS2 with SBR (Safe brake ramp), SOS,SLS,SDI,SSM	
Limits	Torque, current, power, speed	
Monitoring/Protection functions	Traversing range limits; following error; standstill; Overvoltage, undervoltage, overload, ground fault, short circuit, stall, motor blocking, motor overtemperature, inverter overtemperature	
Motors that can be connected	Synchronous Motors (e.g: 1FK7, 1FT7) Induction Motors (e.g: 1LA, 1PH8)	
<b>Mechanical data</b>		
Degree of protection	IP20	
Cooling type	Convection	
<b>Standards</b>		
In conformance with the following standards	UL 508C (UL list No. E121068), CE, cULus EN954-1 Cat3, EN ISO 13849-1 PLd, IEC61508 SIL2	

~ Safe Brake Control on the Power Module via Safe Brake Relay.

# SINAMICS S110

## Part Numbers

Supply Voltage - 200 V ... 240 V 1 AC		Power Modules		
Rating	Frame Size	PM340 Industrial	PM340 Filtered #	Additional Filter to use with unfiltered PM340*
0.12 kW / 0.9 A	A	6SL3210-1SB11-0UA0	6SL3210-1SB11-0AA0	-
0.37 kW / 2.3 A	A	6SL3210-1SB12-3UA0	6SL3210-1SB12-3AA0	-
0.75 kW / 3.9 A	A	6SL3210-1SB14-0UA0	6SL3210-1SB14-0AA0	-
Supply Voltage - 380 V ... 480 V 3 AC		Power Modules		
Rating	Frame Size	PM340 Industrial	PM340 Filtered #	Additional Filter to use with unfiltered PM340*
0.37 kW / 1.3 A	A	6SL3210-1SE11-3UA0	→ = ←	6SE6400-2FA00-6AD0
0.55 kW / 1.7 A	A	6SL3210-1SE11-7UA0	→ = ←	6SE6400-2FA00-6AD0
0.75 kW / 2.2 A	A	6SL3210-1SE12-2UA0	→ = ←	6SE6400-2FA00-6AD0
1.1 kW / 3.1 A	A	6SL3210-1SE13-1UA0	→ = ←	6SE6400-2FA00-6AD0
1.5 kW / 4.1 A	A	6SL3210-1SE14-1UA0	→ = ←	6SE6400-2FA00-6AD0
2.2 kW / 5.9 A	B	6SL3210-1SE16-0UA0	6SL3210-1SE16-0AA0	-
3 kW / 7.7 A	B	6SL3210-1SE17-7UA0	6SL3210-1SE17-7AA0	-
4 kW / 10.2 A	B	6SL3210-1SE21-0UA0	6SL3210-1SE21-0AA0	-
7.5 kW / 18 A	C	6SL3210-1SE21-8UA0	6SL3210-1SE21-8AA0	-
11 kW / 25 A	C	6SL3210-1SE22-5UA0	6SL3210-1SE22-5AA0	-
15 kW / 32 A	C	6SL3210-1SE23-2UA0	6SL3210-1SE23-2AA0	-
18.5 kW / 38 A	D	6SL3210-1SE23-8UA0	6SL3210-1SE23-8AA0	-
22 kW / 45 A	D	6SL3210-1SE24-5UA0	6SL3210-1SE24-5AA0	-
30 kW / 60 A	D	6SL3210-1SE26-0UA0	6SL3210-1SE26-0AA0	-
37 kW / 75 A	E	6SL3210-1SE27-5UA0	6SL3210-1SE27-5AA0	-
45 kW / 90 A	E	6SL3210-1SE31-0UA0	6SL3210-1SE31-0AA0	-
55 kW / 100 A	F	6SL3210-1SE31-1UA0	6SL3210-1SE31-1AA0	-
75 kW / 145 A	F	6SL3210-1SE31-5UA0	6SL3210-1SE31-5AA0	-
90 kW / 178 A	F	6SL3210-1SE31-8UA0	6SL3210-1SE31-8AA0	-

# EMC filtering generally suitable for 1st environment; additional filter options available on request - please refer to page 51 for specific categorisations.

\* Additional unit to be used with the industrial drive.

Control Units	Designation	Interfaces	Inputs and Outputs
6SL3040-0JA01-0AA0	CU305 PN	 Profinet	see page 27
6SL3040-0JA00-0AA0	CU305 DP	 Profibus DP / RS485 / USS	see page 27
6SL3040-0JA02-0AA0	CU305 CAN	 CAN	see page 27

Options	
6SL3054-4AG00-0AA0	MMC Memory Card - Empty
6SL3054-4EE00-0AA0	MMC Memory Card with Firmware V 4.4
6SL3054-4EE00-0AA0-Z (Z=F01)	MMC Memory Card with Firmware V 4.4 and license for extended safety functions
6SL3074-0AA10-0AA0	License for extended safety functions (for separate order)
6SL3055-0AA00-4BA0	Basic Operator Panel 20 (BOP-20)
6SL3255-0AA00-4JA1	IOP - Intelligent Operator Panel - No direct connection on to CU, only for Door mounting
6SL3256-0AP00-0JA0	IOP Door Mounting Kit
6SL3255-0AA00-4HA0	IOP Handheld (including charging unit, rechargeable batteries and connecting cables)
6SL3252-0BB01-0AA0	Safe Brake Relay (including cable harness for connection to the power module)

Shield Connection Kits	
6SL3262-1AA00-0BA0	Frame Size FSA
6SL3262-1AB00-0DA0	Frame Size FSB
6SL3262-1AC00-0DA0	Frame Size FSC
6SL3262-1AD00-0DA0	Frame Size FSD and FSE
6SL3262-1AF00-0DA0	Frame Size FSF

# SINAMICS G130 / G150



## Design

The SINAMICS G130 Chassis units and SINAMICS G150 Cabinet units are variable speed drives specifically designed to meet single motor applications with square-law and constant load characteristics without regenerative feedback into the mains supply.

Technical data	G130	G150
380 V ... 480 V 3 AC, ± 10 %	110 kW ... 560 kW	110 kW ... 900 kW
500 V ... 600 V 3 AC, ± 10 %	110 kW ... 560 kW	110 kW ... 1000 kW
660 V ... 690 V 3 AC, ± 10 %	110 kW ... 560 kW	75 kW ... 2700 kW

## Typical Applications

- Pumps, fans and compressors
- Mixers, extruders and crushers

Further information: Catalogue D11

G130 online: [www.siemens.com/sinamics-G130](http://www.siemens.com/sinamics-G130)

G150 online: [www.siemens.com/sinamics-G150](http://www.siemens.com/sinamics-G150)

Contact our Customer Care Centre

From UK Tel: 08458 507600

From IRL Tel: 1890 507600

Email: [sales.gbi.industry@siemens.com](mailto:sales.gbi.industry@siemens.com)

# SINAMICS S120

Engineered Drives



## Design

The SINAMICS S120 is a modular drive system with servo and vector control capabilities for sophisticated tasks. Versions are available as single and multi-axis applications.

Technical data	S120
200 V ... 240 V 1 AC, ± 10 %	0.12 kW ... 0.75 kW
380 V ... 480 V 3 AC, ± 10 %	0.37 kW ... 3000 kW
500 V ... 690 V 3 AC, ± 10 %	750 kW ... 4500 kW

## Typical Applications

- Packaging, plastics, printing and paper machines
- Textiles
- Woodworking, glass and ceramics
- Machine tools
- Steel industry
- Hoisting and cranes
- ... and many more

Further information: Catalogue PM21

S120 online: [www.siemens.com/sinamics-S120](http://www.siemens.com/sinamics-S120)

Contact our Customer Care Centre

From UK Tel: 08458 507600

From IRL Tel: 1890 507600

Email: [sales.gbi.industry@siemens.com](mailto:sales.gbi.industry@siemens.com)

Contact our Motion distributor, HMK Technical Services on 01260 279411, email to [enquiries@hmkdirect.com](mailto:enquiries@hmkdirect.com) or visit their website at [www.hmkdirect.com](http://www.hmkdirect.com)

# SINAMICS Options

## BOP

The BOP – Basic Operator Panel can be used to commission drives, monitor drives in operation and input individual parameters. Values are displayed in a 5 digit display and plug directly into the Control Unit.

For G110



## BOP-2

The Basic Operator Panel 2 can be used to commission and monitor the drive as well as input parameters. With its 2 line menu driven display and ability to display parameter number and value, basic commissioning can be carried out easily and in most cases without a parameter list.



## IOP

The Intelligent Operator Panel is a very user friendly powerful Operator Panel. Thanks to its large clear text display, menu prompting and Application Wizards you are easily guided through the commissioning process. Mounted on the Control Unit or on the control cabinet door using a door mounting kit.



## IOP Handheld

This mobile version of the IOP has all the features of the plug in version. The unit comes supplied with rechargeable batteries, a charging unit, RS232 and USB connecting cables.



## Shield Connection Kit

Makes it easy to bond the shields of supply cables and ensures optimum EMC performance.

Includes

- A shield bonding plate for the power module
- A shield bonding plate for the control module
- Connection elements
- Mounting surface for Brake Relay and Safe Brake Relay



## MMC / SD Card

The MMC / SD card allows.

- Parameter settings can be written from the card to the drive or saved from the drive to the card
- Up to 100 parameter sets can be stored
- Supports series commissioning without the use of additional commissioning tools (e.g. BOP & STARTER)



## Brake Relay

The brake relay has a switch contact (NO contact) to control the motor brake coil.

Order no.: 6SL3252-0BB00-0AA0



## Safe Brake Relay

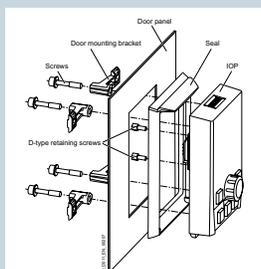
The Safe Brake Relay controls a 24 V motor brake. The inverter monitors the brake control using the Safe Brake Relay as part of the Integrated Safety Function Safe Brake Control (SBC).

Order number: 6SL3252-0BB01-0AA0



## Mounting Kits

Using the optional door mounting kit, the IOP can be easily fitted in a control cabinet.



## PC Inverter Connection Kit

For controlling or commissioning a drive directly from a PC via STARTER commissioning software.

PC Inverter Connection Kit (for G110)  
6SL3255-0AA00-2AA1 - includes 9 pin sub-D connector, RS232 cable and STARTER on DVD.

PC Inverter Connection Kit-2 (for CU-2 Control Units)  
6SL3255-0AA00-2CA0 - includes USB cable and STARTER on DVD.

# SINAMICS Accessories

## Line / Output Reactors & Braking Resistors

### Line Reactors

The purpose of a line reactor is to reduce line side harmonic currents and harmonic effects. This applies particularly in the case of weak power supplies (network short circuit power UK>1%).

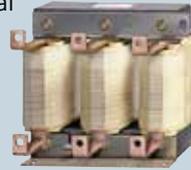
**Not required for:**  
**PM250 (G120)**  
**PM250D (G120D)**  
**PM230 (G120P)**



### Output Reactors

Output Reactors reduce the voltage loading on the motor windings. They also reduce the capacitive charge/discharge currents which place an additional load on the power module when long cables are used.

Please see the technical information for the drive in the D31/D31N catalogue.



### Braking Resistors

Braking Resistors can be used to absorb the energy fed back by the motor during braking. The G120 PM240 and G120C have integrated braking choppers across the Complete power range except for PM240 FSDX which is by external braking chopper.



### SINAMICS Accessories for G120C

Supply Voltage - Three phase 380...480 V

Rating LO (VT)	Frame Size	Line Reactor	Output Reactor	Brake Resistor
0.55 kW ... 1.1 kW	A	6SL3203-OCE13-2AA0	6SL3202-OAE16-1CA0	6SL3201-OBE14-3AA0
1.5 kW	A	6SL3203-OCE21-0AA0	6SL3202-OAE16-1CA0	6SL3201-OBE14-3AA0
2.2 kW	A	6SL3203-OCE21-0AA0	6SL3202-OAE16-1CA0	6SL3201-OBE21-0AA0
3.0 kW ... 4.0 kW	A	6SL3203-OCE21-0AA0	6SL3202-OAE18-8CA0	6SL3201-OBE21-0AA0
5.5 kW ... 7.5 kW	B	6SL3203-OCE21-8AA0	6SL3202-OAE21-8CA0	6SL3201-OBE21-8AA0
11 kW ... 18.5 kW	C	6SL3203-OCE23-8AA0	6SL3202-OAE23-8CA0	6SL3201-OBE23-8AA0

### SINAMICS Accessories for G120P PM230 IP20 & IP55 Standard

Supply Voltage - Three phase 380...480 V

Rating LO (VT)	Frame Size	Line Reactor	Output Reactor	Brake Resistor
0.37 kW - 2.2 kW	A		6SL3202-OAE16-1CA0	
3 kW	A		6SL3202-OAE18-8CA0	
4 kW - 7.5 kW	B		6SL3202-OAE21-8CA0	
11 kW - 18.5 kW	C/D		6SL3202-OAE23-8CA0	
22 kW	D		6SE6400-3TC03-8DD0	
30 kW	D		6SE6400-3TC05-4DD0	
37 kW	E		6SE6400-3TC08-0ED0	
45 kW	E		6SE6400-3TC07-5ED0	
55 kW	F		6SE6400-3TC14-5FD0	
75 kW	F		6SE6400-3TC15-4FD0	
90 kW	F		6SE6400-3TC14-5FD0	

### SINAMICS Accessories for G120P PM230 IP20 Push Through

Supply Voltage - Three phase 380...480 V

Rating LO (VT)	Frame Size	Line Reactor	Output Reactor	Brake Resistor
3 kW	A		6SL3202-OAE18-8CA0	
7.5 kW	B		6SL3202-OAE21-8CA0	
18.5 kW	C/D		6SL3202-OAE23-8CA0	

# SINAMICS Accessories

## Line / Output Reactors & Braking Resistors

### SINAMICS Accessories for G120 PM240-2

Supply Voltage - Three phase 380...480 V

Rating LO (VT)	Frame Size	Line Reactor	Output Reactor	Brake Resistor
0.55 kW ... 1.1 kW	A	6SL3203-0CE13-2AA0	6SL3202-0AE16-1CA0	6SL3201-0BE14-3AA0
1.5 kW	A	6SL3203-0CE21-0AA0	6SL3202-0AE16-1CA0	6SL3201-0BE14-3AA0
2.2 kW	A	6SL3203-0CE21-0AA0	6SL3202-0AE16-1CA0	6SL3201-0BE21-0AA0
3 kW	A	6SL3203-0CE21-0AA0	6SL3202-0AE18-8AC0	6SL3201-0BE21-0AA0

### SINAMICS Accessories for G120-2 Push Through

Supply Voltage - Three phase 380...480 V

Rating LO (VT)	Frame Size	Line Reactor	Output Reactor	Brake Resistor
2.2 kW	A	6SL3203-0CE21-0AA0	6SL3202-0AE16-1CA0	6SL3201-0BE21-0AA0
3 kW	A	6SL3203-0CE21-0AA0	6SL3202-0AE18-8AC0	6SL3201-0BE21-0AA0

### SINAMICS Accessories for G120 PM240 & S110 PM340

Supply Voltage - Single phase 200...240 V

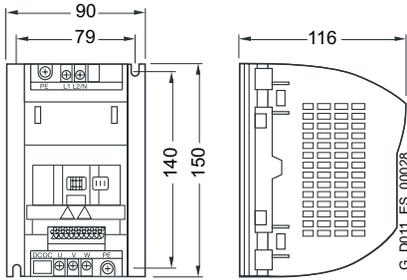
Rating LO (VT)	Frame Size	Line Reactor PM340 only	Output Reactor	Brake Resistor PM340 only
0.12 ..0.37kW	A	6SE6400-3CC00-4AB3		6SE6400-4BC05-0AA0
0.75 kW	A	6SE6400-3CC01-0AB3		6SE6400-4BC05-0AA0

Supply Voltage - Three phase 380...480 V

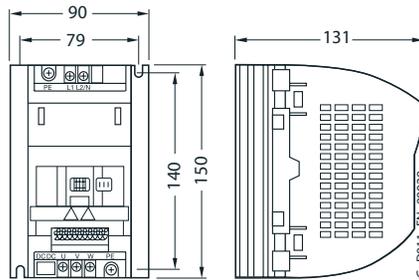
Rating LO (VT)	Frame Size	Line Reactor PM240 & PM340	Output Reactor PM240, PM250 & PM340	Brake Resistor PM240 & PM340
0.37 kW - 0.55 kW	A	6SE6400-3CC00-2AD3	6SE6400-3TC00-4AD2	6SE6400-4BD11-0AA0
0.75 kW - 1.1 kW	A	6SE6400-3CC00-4AD3	6SE6400-3TC00-4AD2	6SE6400-4BD11-0AA0
1.5 kW	A	6SE6400-3CC00-6AD3	6SE6400-3TC00-4AD2	6SE6400-4BD11-0AA0
2.2 kW - 3.0 kW	B	6SL3203-0CD21-0AA0	6SL3202-0AE21-0CA0	6SL3201-0BE12-0AA0
4 kW	B	6SL3203-0CD21-4AA0	6SL3202-0AE21-0CA0	6SL3201-0BE12-0AA0
7.5 kW - 11 kW	C	6SL3203-0CD22-2AA0	6SL3202-0AJ23-2CA0	6SE6400-4BD16-5CA0
15 kW	C	6SL3203-0CD23-5AA0	6SL3202-0AJ23-2CA0	6SE6400-4BD16-5CA0
18.5 kW	D	6SL3203-0CJ24-5AA0	6SE6400-3TC05-4DD0	6SE6400-4BD21-2DA0
22 kW	D	6SL3203-0CJ24-5AA0	6SE6400-3TC03-8DD0	6SE6400-4BD21-2DA0
30 kW	D	6SL3203-0CD25-3AA0	6SE6400-3TC05-4DD0	6SE6400-4BD21-2DA0
37 kW	E	6SL3203-0CJ28-6AA0	6SE6400-3TC08-0ED0	6SE6400-4BD22-2EA1
45 kW	E	6SL3203-0CJ28-6AA0	6SE6400-3TC07-5ED0	6SE6400-4BD22-2EA1
55 kW	F	6SE6400-3CC11-2FD0	6SE6400-3TC14-5FD0	6SE6400-4BD24-0FA0
75 kW	F	6SE6400-3CC11-2FD0	6SE6400-3TC15-4FD0	6SE6400-4BD24-0FA0
90 kW	F	6SE6400-3CC11-7FD0	6SE6400-3TC14-5FD0	6SE6400-4BD24-0FA0
110kW	F	6SL3000-0CE32-3AA0	6SL3000-2BE32-1AA0	6SE6400-4BD26-0FA0
132kW	F	6SL3000-0CE32-8AA0	6SL3000-2BE32-6AA0	6SE6400-4BD26-0FA0
160 kW	GX	6SL3000-0CE33-3AA0	6SL3000-2BE33-2AA0	6SL3000-1BE31-3AA0
200 kW	GX	6SL3000-0CE35-1AA0	6SL3000-2BE33-8AA0	6SL3000-1BE32-5AA0
250 kW	GX	6SL3000-0CE35-1AA0	6SL3000-2BE35-0AA0	6SL3000-1BE32-5AA0

# SINAMICS G110 Dimensions

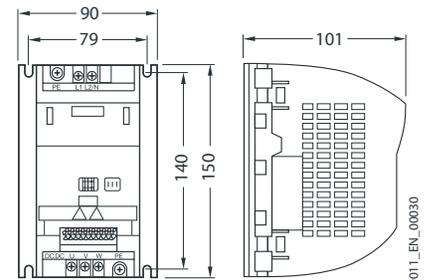
## Dimension Diagrams - G110



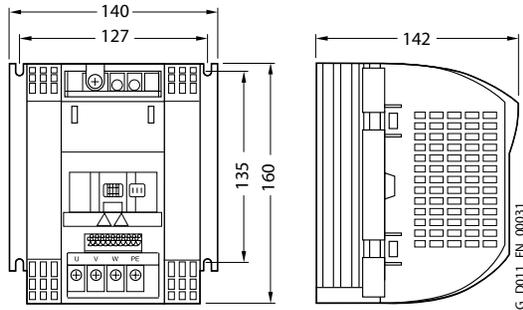
**Frame size A**  
0.12 kW to 0.37 kW



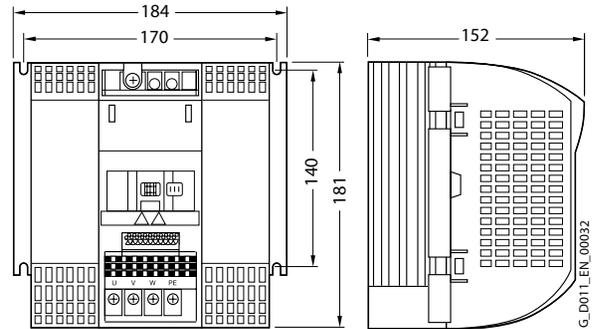
**Frame size A**  
0.55 kW to 0.75 kW



**Frame size A (with flat heat sink)**  
0.12 kW to 0.75 kW



**Frame size B**  
1.1 kW to 1.5 kW



**Frame size C**  
2.25 kW to 3.0 kW

### Notes

For cabinet sizing purposes, please allow 3% of the drive rating as heat loss.

Allow ventilation clearances around the drives as follows:

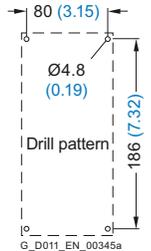
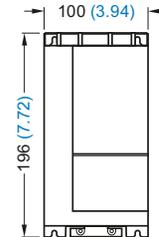
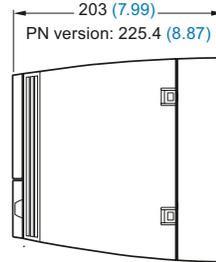
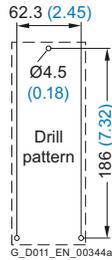
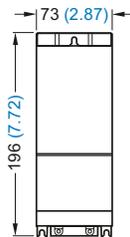
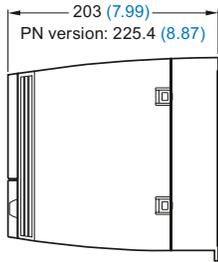
Frame size	Above mm	Below mm	Side mm	Fixing
A	100	100	0	2 x M4
B	100	100	0	2 x M4
C	100	100	0	4 x M5

Note: When the OP is plugged in the mounting depth increases by 8mm.

15mm clearance is required from the side of the enclosure.

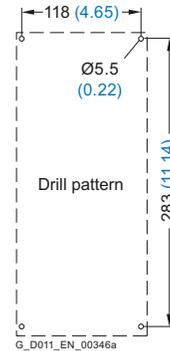
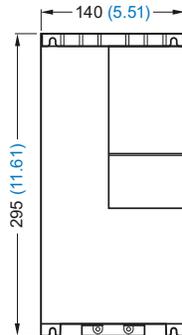
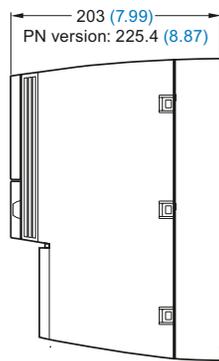
# SINAMICS G120C Dimensions

## Dimension Diagrams - G120C



Frame size A  
0.55 kW - 4 kW

Frame size B  
5.5 kW - 7.5 kW



Frame size C  
11 kW - 18.5 kW

## Notes G120C Installation

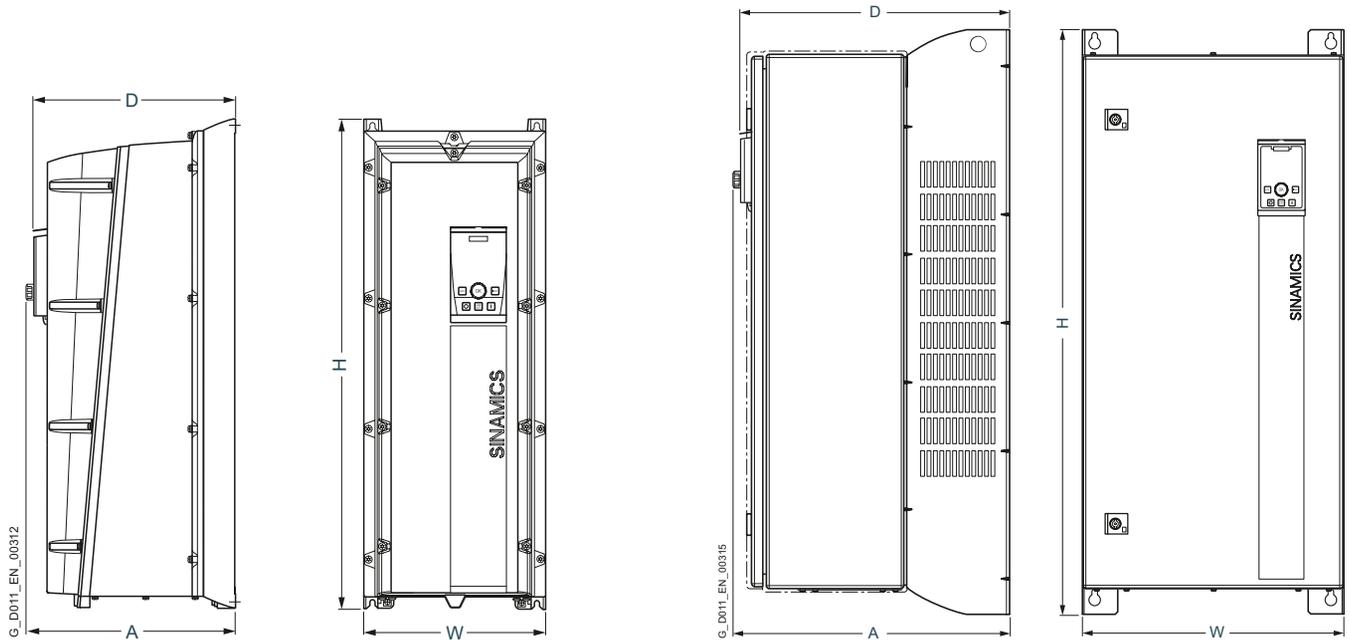
For cabinet sizing purposes, please allow 3% of the drive rating as heat loss.

Frame size	Dimensions			Allow ventilation clearances around the drives as follows:			Fixing
	W	H	D	Above / Below mm	Side < 40°C	Side > 40°C	
A	73mm	196mm	203mm 225.4mm (PN)	80 / 100	0	0	2 x M4
B	100mm	196mm	203mm 225.4mm (PN)	80 / 100	0	0	4 x M4
C	140mm	295mm	203mm 225.4mm (PN)	80 / 100	0	0	4 x M5

Note: Depth increases by 11mm with BOP-2 or 21mm with IOP.

# SINAMICS G120P PM230 IP55

## Dimension Diagrams - G120P IP55



Frame sizes A, B and C

Frames size D, E and F

### Notes G120P IP55 Installation

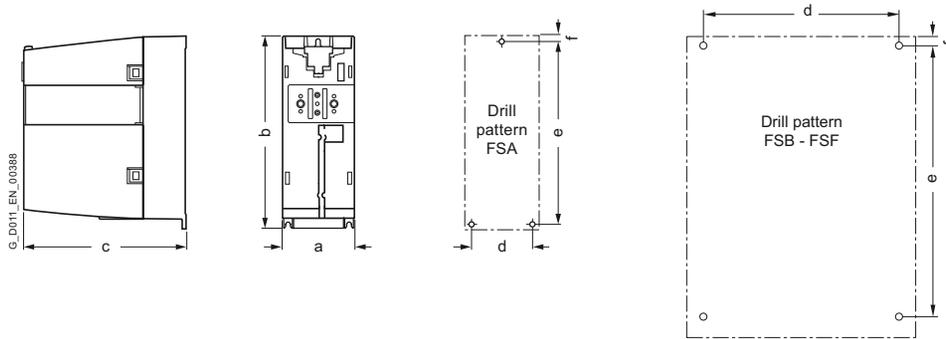
For cabinet sizing purposes, please allow 3% of the drive rating as heat loss.

Frame size	Dimensions				Allow ventilation clearances around the drives as follows:			Drill & Fixing Pattern	
	D	W	H	A	Above / Below mm	Side < 40°C	Side > 40°C	Fixing	Drill - W x L
A	249mm	154mm	460mm	264mm	100	0	0	4 x M4	132 x 445 x 4.5 Ø
B	249mm	180mm	540mm	264mm	100	0	0	4 x M4	158 x 224 x 4.5 Ø
C	249mm	230mm	620mm	264mm	125	0	0	4 x M5	208 x 604 x 5.5 Ø
D	329mm	320mm	640mm	344mm	300	0	50	4 x M8	285 x 600 x 8.5 Ø
E	329mm	320mm	751mm	344mm	300	0	50	4 x M8	285 x 710 x 8.5 Ø
F	416mm	410mm	910mm	431mm	350	0	50	4 x M8	370 x 870 x 8.5 Ø

Note: Depth increases by 5mm with BOP-2 / Blanking plate or 15mm with IOP (dimension A).

# SINAMICS G120 Dimensions

PM230 IP20 / PM240-2 IP20



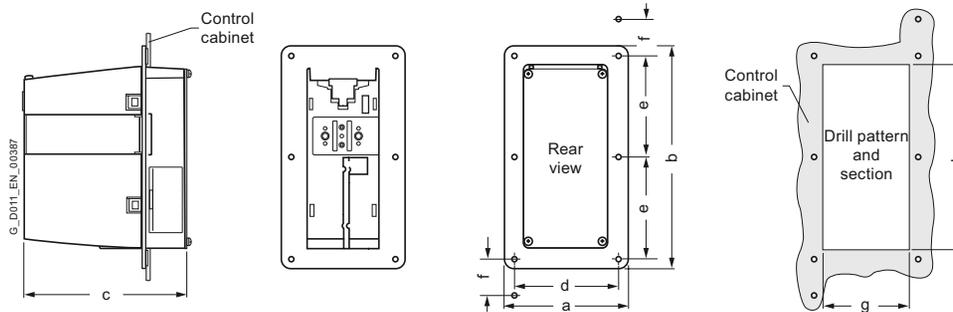
## PM230 IP20 / PM240-2 IP20 Standard Variant

Frame size	Dimensions			Drilling dimensions			Cooling clearances		Mounting
	a (width)	b (height)	c (depth)	d	e	f	Top/Bottom	Side *	
FSA	73mm	196mm	165mm	62.3mm	186mm	6mm	80/100mm	0mm	3 x M4
FSB	100mm	292mm	165mm	80mm	281mm	6mm	80/100mm	0mm	4 x M4
FSC	140mm	335mm	165mm	120mm	343mm	6mm	80/100mm	0mm	4 x M5
FSD w/o filter	275mm	419mm	204mm	235mm	325mm	11mm	300/300mm	50mm	4 x M6
FSD with filter	275mm	512mm	204mm	235mm	419mm	11mm	300/300mm	50mm	4 x M6
FSE w/o filter	275mm	499mm	204mm	235mm	405mm	11mm	300/300mm	50mm	4 x M6
FSE with filter	275mm	635mm	204mm	235mm	514mm	11mm	300/300mm	50mm	4 x M6
FSF w/o filter	350mm	634mm	316mm	300mm	598mm	11mm	350/350mm	50mm	4 x M8
FSF with filter	350mm	934mm	316mm	300mm	899mm	11mm	350/350mm	50mm	4 x M8

## PM240-2 IP20 Standard variant

FSA	73mm	196mm	165mm	62.3mm	186mm	6mm	80/100mm	0mm	3 x M4
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When the CU230P-2 Control Unit is plugged on, the depth increases by 58mm.  
 When the CU240B-2 or CU240E-2 Control Unit is plugged on, the depth increases by 40mm or with CU250S-2 by 62mm.  
 When the IOP is plugged on, the depth increases by a further 25mm.  
 When the BOP-2 is plugged on, the depth increases by a further 15mm.  
 The power modules can be mounted side by side but a clearance of 1mm is recommended for tolerance reasons.



## PM230 IP20 / PM240-2 IP20 Push Through Variant

Frame size	Dimensions			Drilling dimensions			Section of cabinet		Cooling clearances		Mounting
	a (width)	b (height)	c (depth)	d	e	f	g (width)	h (height)	Top/Bottom	Side *	
FSA	125.9mm	238mm	171mm	106mm	103mm	27mm	88mm	198mm	80/100mm	0mm	M5
FSB	153.9mm	345mm	171mm	154mm	147.5mm	34.5mm	1160mm	304mm	80/100mm	0mm	M5
FSC	200mm	410.5mm	171mm	174mm	123mm	30.5mm	156mm	365mm	80/100mm	0mm	M5

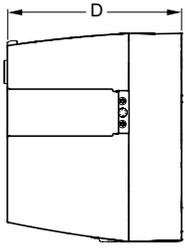
## PM240-2 IP20 Push Through variant

FSA	125.9mm	238mm	165mm	106mm	103mm	27mm	88mm	198mm	80/100mm	0mm	M5
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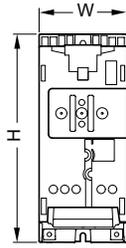
Overall depth, of which 117.7mm is inside and 53.1mm is outside the control cabinet.  
 When the CU230P-2 Control Unit is plugged on, the depth increases by 58mm.  
 When the CU240B-2 or CU240E-2 Control Unit is plugged on, the depth increases by 40mm or with CU250S-2 by 62mm.  
 When the IOP is plugged on, the depth increases by a further 25mm.  
 When the BOP-2 is plugged on, the depth increases by a further 15mm.  
 The power modules can be mounted side by side but a clearance of 1mm is recommended for tolerance reasons.

# SINAMICS G120 / S110 Dimensions

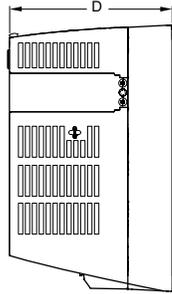
PM240 / PM250 / PM260 / PM340



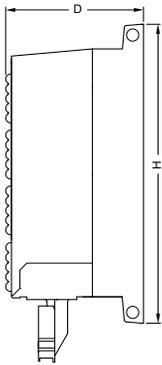
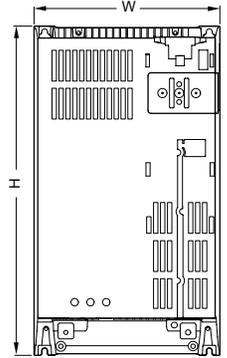
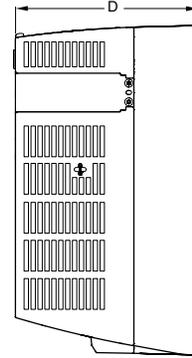
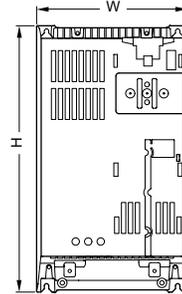
Frame size A



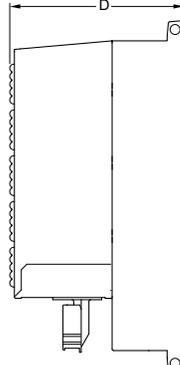
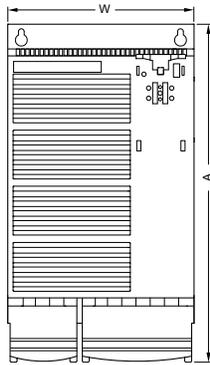
Frame size B



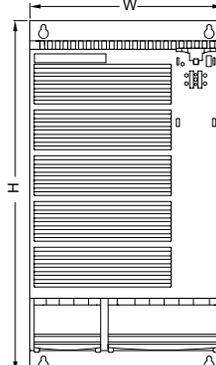
Frame size C



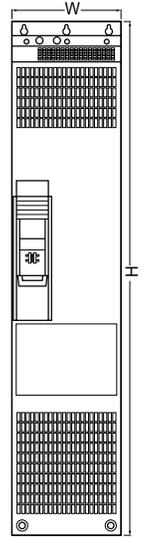
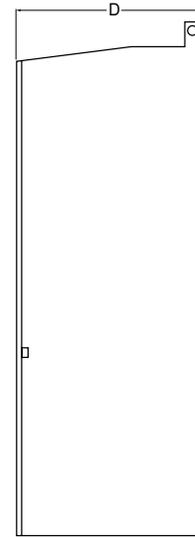
Frame size D & D with Filter  
Frame size E & E with filter



Frame size F & F with filter



Frame size GX



## Notes on Power Module Installation:

PM240/PM250/PM260 - for cabinet sizing purposes, please allow 3% of the drive rating as heat loss.

PM340 - for cabinet sizing purposes, please allow 4% of the drive rating as heat loss.

Frame size	Dimensions				Allow ventilation clearances around the drives as follows:				Drill & Fixing Pattern	
	A	W	H	D	Above / Below mm	Side < 40°C	Side > 40°C	Front	Fixing	Drill - W x L
A	-	73mm	173mm	145mm	100	0	30	0	2 x M4	0 x 160 x 4.5 Ø
B	-	153mm	270mm	165mm	100	0	40	30 ~	4 x M4	133 x 258 x 4.5 Ø
C / C + filter	-	189mm	334mm	185mm	125	0	50	30 ~	4 x M5	167 x 323 x 5.5 Ø
D	419mm	275mm	361mm	204mm	300	0	0	30 ~	4 x M8	235 x 325 x 8.5 Ø
D + filter	512mm	275mm	455mm	204mm	300	0	0	30 ~	4 x M8	235 x 419 x 8.5 Ø
E	499mm	275mm	441mm	204mm	300	0	0	30 ~	4 x M8	235 x 405 x 8.5 Ø
E + filter	635mm	275mm	577mm	204mm	300	0	0	30 ~	4 x M8	235 x 541 x 8.5 Ø
F	-	350mm	634mm	316mm	350	0	0	30 ~	4 x M8	300 x 598 x 8.5 Ø
F + filter	-	350mm	934mm	316mm	350	0	0	30 ~	4 x M8	300 x 899 x 8.5 Ø
GX	-	326mm	1533mm	547mm	250 / 150	0	0	50	6 x M8	125 x 125 x 1506 x 8.5 Ø

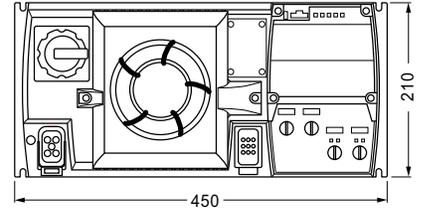
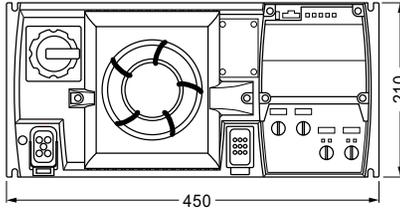
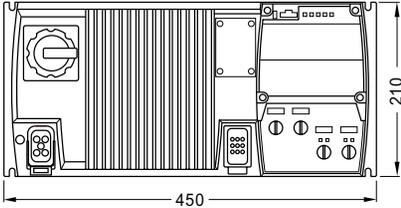
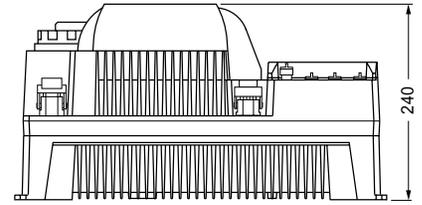
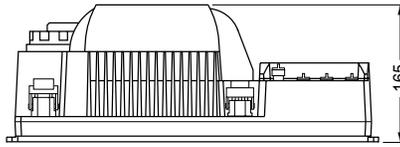
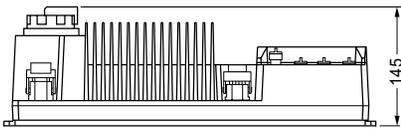
Note: PM240 & PM250 depth increases by 65mm with CU230P-2 or 46mm with CU240B-2/E-2 or 62mm with CU250S-2 and a further 12mm with BOP-2 / Blanking Plate or 22mm with an IOP.

PM340 FSA depth increases by 46mm with CU240E-2 and a further 12mm with BOP-2 / Blanking Plate or 22mm with an IOP.

PM340 depth increases by 90mm with CU305 PB/CU305 CAN or 70mm with CU305 PN.

~ PM340 only.

# SINAMICS G110D Dimensions



Frame size A

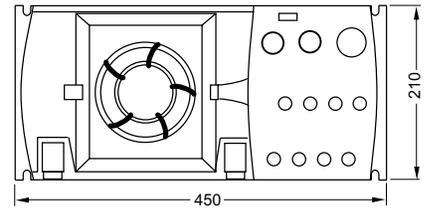
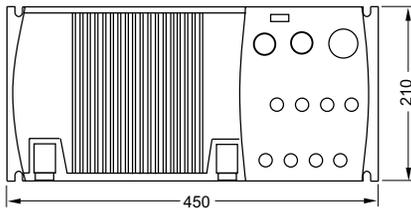
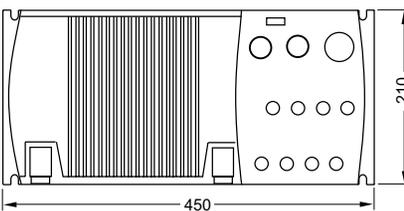
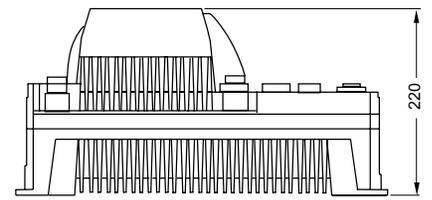
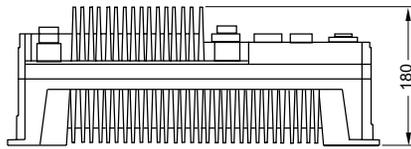
Frame size B

Frame size C

Sizes shown with Isolator (Maintenance Switch) fitted. Frame size A height reduces by 20mm without Isolator (Maintenance Switch).  
Allow ventilation clearances around the drives as follows:

Frame size	Above mm		Below mm		Drill & Fixing Pattern
					Drill - W x L
A	150		150		425 x 195
B	150		150		425 x 195
C	150		150		425 x 195

# SINAMICS G120D Dimensions



Frame size A

Frame size B

Frame size C

## Notes G120D

Allow ventilation clearances around the drives as follows:

Frame size	Above mm		Below mm		Drill & Fixing Pattern
					Drill - W x L
A	150		150		425 x 195
B	150		150		425 x 195
C	150		150		425 x 195

# MICROMASTER 420



## Technical data

### MICROMASTER 420

Output - up to 11 kW

Compact housing dimensions

Simple to install and commission

Robust construction

Designed to make EMC compliance easy

Wide range of user interfaces and communications options

Operating temperature -10°C to +50°C

Integrated PI Controller

Remote I/O function via serial communication or fieldbus link

Integrated compound braking function - often eliminates the need for external braking modules

## Design

The universal inverter is suitable for motor speed control in a vast range of industrial variable speed drive applications such as pumps, fans and conveyor systems. It is especially characterised by its performance, flexibility, and ease of use.

## Performance Features and Benefits

- Flux-current control (FCC) to optimise the dynamic response and motor control
- Slip compensation ensuring constant motor speeds under changing load conditions
- "Flying re-start" function allows the inverter to be re-connected to motors which are still spinning after brief power interruptions
- Freely-programmable digital inputs and outputs
- The analogue I / O can be flexibly programmed (offset, range, addition to the digital set point etc)
- Multi-point V / f characteristics for simple adaption to different motor types
- Sophisticated dc injection braking and "compound braking" to assure minimum motor stopping times
- Fast current limit (FCL) guarantees that if the specified ramp times are too short for the load the drive adapts and does not trip
- Integrated kilowatt-hour (kWh) measurement for energy consumption
- Binary and analogue connection technology (BICO) allows the inputs / outputs to be soft-wired to internal function blocks
- Complete inverter and motor protection comprising under-voltage / overvoltage, inverter over-temperature, earth fault protection, short circuit protection, motor thermal protection, locked motor and stall prevention
- MICROMASTER 420 carries the CE mark for conformance to the low voltage and EMC directives. It is  $\text{UL}$  and  $\text{cUL}$  listed

## The Details

- Three fully programmable opto-isolated digital inputs (4th binary input available via the analogue input)
- Analogue input, 0 - 10 V (can accommodate 0 / 4 - 20 mA using a resistor link)
- Programmable and scalable analogue output, 0 (4) mA to 20 mA
- Fully programmable relay output, DC 30 V / 5 A resistive, AC 230 V / 2 A inductive
- Opto-isolated digital inputs for improved EMC immunity
- Fast reaction time to analogue, digital and fieldbus commands
- Integrated RS485 port for serial communications

# MICROMASTER 420

## Part Numbers

Supply Voltage - 200 V ... 240 V 1 AC		Power Modules	
Rating	Frame Size	Industrial	Filtered #
0.12 kW / 0.9 A	A	6SE6420-2UC11-2AA1	6SE6420-2AB11-2AA1
0.25 kW / 1.7 A	A	6SE6420-2UC12-5AA1	6SE6420-2AB12-5AA1
0.37 kW / 2.3 A	A	6SE6420-2UC13-7AA1	6SE6420-2AB13-7AA1
0.55 kW / 3.0 A	A	6SE6420-2UC15-5AA1	6SE6420-2AB15-5AA1
0.75 kW / 3.9 A	A	6SE6420-2UC17-5AA1	6SE6420-2AB17-5AA1
1.1 kW / 5.5 A	B	6SE6420-2UC21-1BA1	6SE6420-2AB21-1BA1
1.5 kW / 7.4 A	B	6SE6420-2UC21-5BA1	6SE6420-2AB21-5BA1
2.2 kW / 10.4 A	B	6SE6420-2UC22-2BA1	6SE6420-2AB22-2BA1
3 kW / 13.6 A	C	6SE6420-2UC23-0CA1	6SE6420-2AB23-0CA1

200 V ... 240 V 3 AC units available on request.

# EMC filtering generally suitable for 1st environment; additional filter options available on request - please refer to page 46 for specific categorisations.

Supply Voltage - 380 V... 480 V 3 AC		Power Modules	
Rating	Frame Size	Industrial	Filtered #
0.37 kW / 1.2 A	A	6SE6420-2UD13-7AA1	6SE6420-2FA00-6AD0*
0.55 kW / 1.6 A	A	6SE6420-2UD15-5AA1	6SE6420-2FA00-6AD0*
0.75 kW / 2.1 A	A	6SE6420-2UD17-5AA1	6SE6420-2FA00-6AD0*
1.1 kW / 4.0 A	A	6SE6420-2UD21-1AA1	6SE6420-2FA00-6AD0*
1.5 kW / 4.0 A	A	6SE6420-2UD21-5AA1	6SE6420-2FA00-6AD0*
2.2 kW / 5.9 A	B	6SE6420-2UD22-2BA1	6SE6420-2AD22-2BA1
3 kW / 7.7 A	B	6SE6420-2UD23-0BA1	6SE6420-2AD23-0BA1
4 kW / 10.2 A	B	6SE6420-2UD24-0BA1	6SE6420-2AD24-0BA1
5.5 kW / 13.6 A	C	6SE6420-2UD25-5CA1	6SE6420-2AD25-5CA1
7.5 kW / 19.0 A	C	6SE6420-2UD27-5CA1	6SE6420-2AD27-5CA1
11 kW / 26.0 A	C	6SE6420-2UD31-1CA1	6SE6420-2AD31-1CA1

\* Additional footprint module to be used with the industrial drive.

# EMC filtering generally suitable for 1st environment; additional filter options available on request - please refer to page 51 for specific categorisations.

Options	
6SE6400-0BP00-0AA1	BOP - Basic Operator Panel
6SE6400-0AP00-0AA1	AOP - Advanced Operator Panel
6SE6400-1PC00-0AA0	PC - Micromaster Connection Kit
6SE6400-0MD00-0AA0	Multidrop Panel Mounting Kit (for AOP)
6SE6400-0PM00-0AA0	Standard Panel Mounting Kit (for BOP or AOP)
6SE6400-1PB00-0AA0	Profibus Module
6SE6400-1DN00-0AA0	Device Net Module
6SE6400-1CB00-0AA0	Can Bus Module
6SE6400-0GP00-0AA0	Frame Size A Gland Plate
6SE6400-0GP00-0BA0	Frame Size B Gland Plate
6SE6400-0GP00-0CA0	Frame Size C Gland Plate
6SL3072-0AA00-0AG0	Starter Commissioning Tool on DVD

# MICROMASTER 430

The specialist for pumps and fans



## MICROMASTER 430

Up to 250 kW for centrifugal pumps & fans
Compact IP20 housing
Simple to install and commission
Robust construction
Energy saving mode and hibernation facility
Motor / pump staging
Manual / auto mode
Load torque detection (detects dry running pumps)
Designed to make EMC compliance easy
Facility for external bypass control
Direct PTC or KTY motor temperature protection
Remote I/O function via serial communication or fieldbus link
Different ratings may apply for constant torque pumps and fans

## Design

The MICROMASTER 430 is specifically designed for integration into systems requiring variable speed control on industrial pump and fan applications including HVAC.

## Performance Features and Benefits

- Flux-current control (FCC) to optimise the dynamic response and motor control
- Programmable V/f characteristic
- Energy saving mode (eg stopping of a pump at low speeds)
- Motor staging (connection and disconnection of additional motors, use of inverter as the control drive in a pump cascade system - for example duty/assist) - see example opposite
- Manual / automatic mode with Basic Operator Panel 2 (BOP-2)
- Slip compensation ensuring constant motor speeds under changing load conditions
- "Flying re-start" function allows the inverter to be re-connected to motors which are still spinning after brief power interruptions
- Multi-point V / f characteristics for simple adaption to different motor types
- Fast current limit (FCL) guarantees that if the specified ramp times are too short for the load the drive adapts and does not trip
- Integrated kilowatt-hour (kWh) measurement for energy consumption monitoring
- Binary and analogue connection technology (BICO) allows the inputs / outputs to be soft-wired to internal function blocks for logic and arithmetic functions
- Complete inverter and motor protection comprising under-voltage / overvoltage, inverter over temperature, earth fault protection, short circuit protection, motor thermal protection, locked motor and stall prevention
- MICROMASTER 430 carries the CE mark for conformance to the low voltage and EMC directives. It is  $\text{U}_\text{c}$  and  $\text{c U}_\text{c}$  listed

## The Details

- 6 fully programmable opto-isolated digital inputs (7th / 8th inputs via analogue inputs)
- 2 scalable, freely programmable analogue inputs, 0-10 V, 0 / 4 - 20 mA
- 2 programmable and scalable analogue outputs, 0 (4) mA to 20 mA
- 3 fully programmable relay outputs
- Integrated RS485 serial port for communication
- Fast and repeatable reaction time to analogue, digital and fieldbus commands
- Detachable control board

# MICROMASTER 430

## Part Numbers

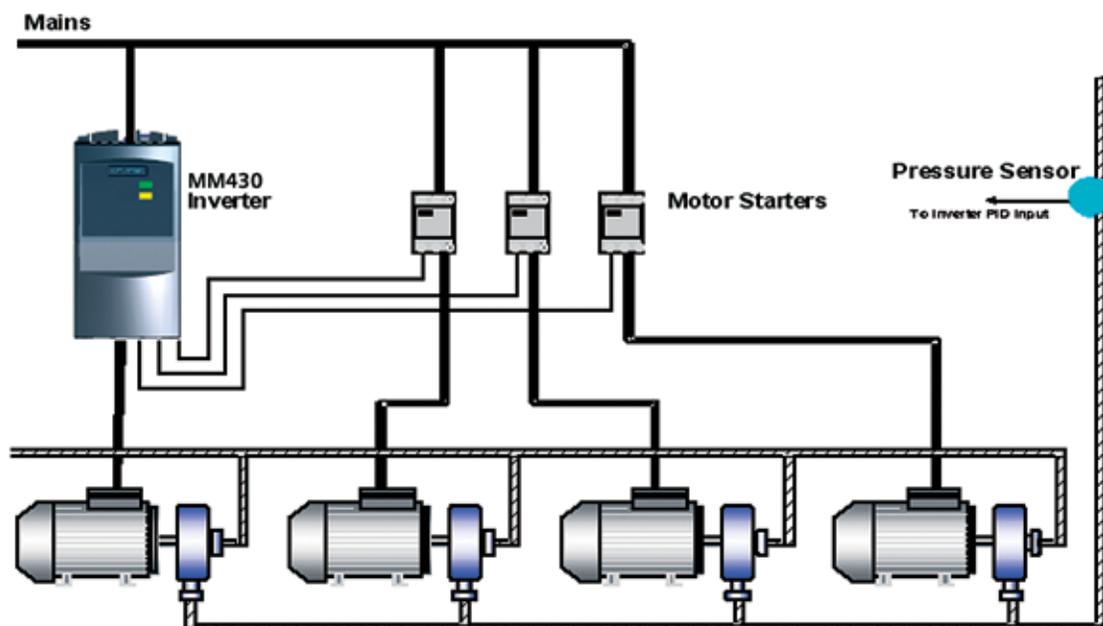
Supply Voltage - 380 V... 480 V 3 AC		Power Modules	
Rating	Frame Size	Industrial	Filtered #
7.5 kW / 19 A	C	6SE6430-2UD27-5CA0	6SE6430-2AD27-5CA0
11 kW / 26 A	C	6SE6430-2UD31-1CA0	6SE6430-2AD31-1CA0
15 kW / 32 A	C	6SE6430-2UD31-5CA0	6SE6430-2AD31-5CA0
18.5 kW / 38 A	D	6SE6430-2UD31-8DA0	6SE6430-2AD31-8DA0
22 kW / 45 A	D	6SE6430-2UD32-2DA0	6SE6430-2AD32-2DA0
30 kW / 62 A	D	6SE6430-2UD33-0DA0	6SE6430-2AD33-0DA0
37 kW / 75 A	E	6SE6430-2UD33-7EA0	6SE6430-2AD33-7EA0
45 kW / 90 A	E	6SE6430-2UD34-5EA0	6SE6430-2AD34-5EA0
55 kW / 110 A	F	6SE6430-2UD35-5FA0	6SE6430-2AD35-5FA0
75 kW / 145 A	F	6SE6430-2UD37-5FA0	6SE6430-2AD37-5FA0
90 kW / 178 A	F	6SE6430-2UD38-8FA0	6SE6430-2AD38-8FA0
110 kW / 205 A	FX	6SE6430-2UD41-1FA0	6SL3000-0BE32-5AA0*
132 kW / 250 A	FX	6SE6430-2UD41-3FA0	6SL3000-0BE34-4AA0*
160 kW / 302 A	GX	6SE6430-2UD41-6GA0	6SL3000-0BE34-4AA0*
200 kW / 370 A	GX	6SE6430-2UD42-0GA0	6SL3000-0BE34-4AA0*
250 kW / 477 A	GX	6SE6430-2UD42-5GA0	6SL3000-0BE36-0AA0*

\* Additional block module to be used with the industrial drive. When using the combination of the industrial drive and block filter (90 kW and above), the appropriate 'Line Reactor' must be used.

# EMC filtering generally suitable for 1st environment; additional filter options available on request - please refer to page 51 for specific categorisations.

Options	
6SE6400-0BE00-0AA1	BOP 2 - Basic Operator Panel
6SE6400-1PC00-0AA0	PC - Micromaster Connection Kit
6SE6400-0PM00-0AA0	Standard Panel Mounting Kit (for BOP or AOP)
6SE6400-1PB00-0AA0	Profibus Module
6SE6400-1DN00-0AA0	Device Net Module
6SE6400-1CB00-0AA0	Can Bus Module
6SL3072-0AA00-0AG0	Starter Commissioning Tool on DVD

### Cascade pump control example



# MICROMASTER 440

The All Purpose Drive



## MICROMASTER 440

Output up to 250 kW for centrifugal pumps & fans

Overloads available up to 200%

Compact IP20 housing

Simple to install and commission

Integrated logic control functions

Robust construction

Designed to make EMC compliance easy

Wide range of user interface and communications options

Operating temperature -10°C to +50°C (0°C to +40°C over 75 kW and variable torque ratings)

Integrated PID Controller

Integrated (100% rated) brake chopper for all units to 75 kW - (separate module available for units 90-250 kW)

Remote I/O function via serial communication or fieldbus link

Direct "plc" connection for low cost networking

## Design

The MM440 is the flagship model in the MICROMASTER family whose flexibility and performance ensure its suitability for a vast array of drive applications. In addition to variable torque pump and fan applications, for which dual ratings are provided, the 440 also covers more demanding tasks such as cranes and hoisting gear, extruders, high bay warehouses and packaging machines.

## Performance Features and Benefits

- High quality sensorless Vector control system as standard with encoder feedback option when required
- Flux Current Control (FCC) for improved dynamic response and optimised motor control
- Torque control mode
- Simple positioning function
- Kinetic buffering for ride through of brief supply interruptions
- Slip compensation ensuring constant motor speeds under changing load conditions
- "Flying re-start" function allows the inverter to be re-connected to motors which are still spinning after brief power interruptions
- Multi-point V / f characteristics for simple adaption to different motor types
- Sophisticated dc injection braking and "compound braking" to ensure minimum motor stopping times without external braking resistors
- Fast current limit (FCL) guarantees that if the specified ramp times are too short for the load the drive adapts and does not trip
- Integrated kilowatt-hour (kWh) measurement for energy consumption monitoring
- Binary and analogue connection technology (BICO) allows the inputs / outputs to be soft-wired to blocks in the drive inverter. (Includes logic and arithmetic functions)
- Complete inverter and motor protection comprising under-voltage / overvoltage, inverter over temperature, earth fault protection, short circuit protection, motor thermal protection, locked motor and stall prevention
- MICROMASTER 440 carries the CE mark for conformance to the low voltage and EMC directives. It is  $\text{UL}$  and  $\text{cUL}$  listed

## The Details

- 6 fully programmable opto-isolated digital inputs (7th / 8th inputs via analogue inputs)
- 2 scalable, freely programmable analogue inputs, 0-10 V, 0 / 4 - 20 mA
- 2 programmable and scalable analogue outputs, 0 (4) mA to 20 mA
- 3 fully programmable relay outputs
- Integrated RS485 serial port for communication
- Fast and repeatable reaction time to analogue, digital and fieldbus commands
- Detachable control board

# MICROMASTER 440

## Part Numbers

Supply Voltage - 200 V... 240 V 1 AC		Power Modules	
Rating	Frame Size	Industrial	Filtered #
0.12 kW / 0.9 A	A	6SE6440-2UC11-2AA1	6SE6440-2AB11-2AA1
0.25 kW / 1.7 A	A	6SE6440-2UC12-5AA1	6SE6440-2AB12-5AA1
0.37 kW / 2.3 A	A	6SE6440-2UC13-7AA1	6SE6440-2AB13-7AA1
0.55 kW / 3.0 A	A	6SE6440-2UC15-5AA1	6SE6440-2AB15-5AA1
0.75 kW / 3.9 A	A	6SE6440-2UC17-5AA1	6SE6440-2AB17-5AA1
1.1 kW / 5.5 A	B	6SE6440-2UC21-1BA1	6SE6440-2AB21-1BA1
1.5 kW / 7.4 A	B	6SE6440-2UC21-5BA1	6SE6440-2AB21-5BA1
2.2 kW / 10.4 A	B	6SE6440-2UC22-2BA1	6SE6440-2AB22-2BA1
3 kW / 13.6 A	C	6SE6440-2UC23-0CA1	6SE6440-2AB23-0CA1

Supply Voltage - 380 V... 480 V 3 AC		Power Modules	
Rating	Frame Size	Industrial	Filtered #
0.37 kW / 1.2 A	A	6SE6440-2UD13-7AA1	6SE6400-2FA00-6AD0*
0.55 kW / 1.7 A	A	6SE6440-2UD15-5AA1	6SE6400-2FA00-6AD0*
0.75 kW / 2.2 A	A	6SE6440-2UD17-5AA1	6SE6400-2FA00-6AD0*
1.1 kW / 3.1 A	A	6SE6440-2UD21-1AA1	6SE6400-2FA00-6AD0*
1.5 kW / 4.4 A	A	6SE6440-2UD21-5AA1	6SE6400-2FA00-6AD0*
2.2 kW / 5.9 A	B	6SE6440-2UD22-2BA1	6SE6440-2AD22-2BA1
3 kW / 7.7 A	B	6SE6440-2UD23-0BA1	6SE6440-2AD23-0BA1
4 kW / 10.2 A	B	6SE6440-2UD24-0BA1	6SE6440-2AD24-0BA1
<b>LO (VT)</b>	<b>HO (CT)</b>		
7.5 kW / 19 A	5.5 kW / 13.2 A	C	6SE6440-2UD25-5CA1
11 kW / 26 A	7.5 kW / 19.0 A	C	6SE6440-2UD27-5CA1
15 kW / 32 A	11 kW / 26.0 A	C	6SE6440-2UD31-1CA1
18.5 kW / 38 A	15 kW / 32 A	D	6SE6440-2UD31-5DA1
22 kW / 45 A	18.5 kW / 38 A	D	6SE6440-2UD31-8DA1
30 kW / 62 A	22 kW / 45 A	D	6SE6440-2UD32-2DA1
37 kW / 75 A	30 kW / 62 A	E	6SE6440-2UD33-0EA1
45 kW / 90 A	37 kW / 75 A	E	6SE6440-2UD33-7EA1
55 kW / 110 A	45 kW / 90 A	F	6SE6440-2UD34-5FA1
75 kW / 145 A	55 kW / 110 A	F	6SE6440-2UD35-5FA1
90 kW / 278 A	75 kW / 145 A	F	6SE6440-2UD37-5FA1
110 kW / 205 A	90 kW / 178 A	FX	6SE6440-2UD38-8FA1
132 kW / 250 A	110 kW / 205 A	FX	6SE6440-2UD41-1FA1
160 kW / 302 A	132 kW / 250 A	GX	6SE6440-2UD41-3GA1
200 kW / 370 A	160 kW / 302 A	GX	6SE6440-2UD41-6GA1
250 kW / 477 A	250 kW / 477 A	GX	6SE6440-2UD42-0GA1
			6SL3000-0BE32-5AA0*
			6SL3000-0BE34-4AA0*
			6SL3000-0BE34-4AA0*
			6SL3000-0BE36-0AA0*

200 V ... 240 V 3 AC and 500 V ... 600 V 3 AC units available on request.

NOTE: HO = High Overload Rating (0.12 kW ... 75 kW - 1.5 x rated current for 60s in a 300s cycle, 90 kW ... 200 kW - 1.36 x rated current for 57s in a 300s cycle).  
LO = Low Overload Rating (5.5 kW ... 90 kW - 1.1 x rated current for 60s in 300s cycle, 110 kW ... 250 kW - 1.1 x rated current for 59s in 300s cycle).

\* Additional footprint module to be used with the industrial drive. From 90 kW and above is block mounted. When using the combination of the industrial drive and block filter (90 kW and above), the appropriate 'Line Reactor' must be used.

# EMC filtering generally suitable for 1st environment; additional filter options available on request - please refer to page 51 for specific categorisations.

Options	
6SE6400-0BP00-0AA1	BOP - Basic Operator Panel (see MM420 info)
6SE6400-0AP00-0AA1	AOP - Advanced Operator Panel
6SE6400-1PC00-0AA0	PC - Micromaster Connection Kit
6SE6400-0MD00-0AA0	Multidrop Panel Mounting Kit (for AOP)
6SE6400-0PM00-0AA0	Standard Panel Mounting Kit (for BOP or AOP)
6SE6400-0EN00-0AA0	Encoder Feedback Module
6SE6400-1PB00-0AA0	Profibus Module

Options	
6SE6400-1DN00-0AA0	Device Net Module
6SE6400-1CB00-0AA0	Can Bus Module
6SE6400-0GP00-0AA0	Frame Size A Gland Plate
6SE6400-0GP00-0BA0	Frame Size B Gland Plate
6SE6400-0GP00-0CA0	Frame Size C Gland Plate
6SL3072-0AA00-0AGO	Starter Commissioning Tool on DVD

# MICROMASTER Options Overview

## Drive Programming Basic Operator Panel (BOP)

With the BOP, individual parameter settings can be made. Values and units are on a 5-digit display. It can be directly mounted on the inverter or in a control-cabinet door using a mounting kit.



## Basic Operator Panel 2 (BOP-2) (MICROMASTER 430 Only)

With the BOP-2, individual parameter settings can be made. Values and units are on a 5-digit display.



## Advanced Operator Panel (AOP)

The AOP enables MICROMASTER parameter sets to be easily read and modified. The value and meaning can be displayed in several languages.



The AOP can be directly mounted on the drive or communicate via a door mounting kit. With the door mounting kit for multiple inverter control the AOP can communicate with up to 31 drives.

For servicing purposes the AOP supports download and upload of complete parameter sets.

## Operator Panel Mounting Kits

### BOP / AOP door mounting kit for single drive control

For mounting an operator panel in a control cabinet door. Degree of protection is IP56. Contains a cable adaptor board with screwless terminals for use with standard cables.

### AOP door mounting kit for multiple drive control

For mounting an operator panel in a control cabinet door. Degree of protection is IP56. The AOP can communicate with 31 drives over the RS-485 connection.

### PC to Drive Connection Kit

For parameterising the drive directly from a PC. Kit consists of an isolated RS-232 adaptor board for reliable point-to-point connection and an RS-232 standard cable.

## Fieldbus Communication & Encoder Module

### Profibus module

Remote connection at up to 12 Mbaud is possible on the PROFIBUS network. The module has a separate 24 V connection which can be used if access is required with the main power removed.



### CAN bus module

For integrating MICROMASTERS into the CAN bus fieldbus system.

Remote and local operation of the inverter can be combined by using an operator panel with any of the communication modules.

### DeviceNet module

For networking the inverters to the DeviceNet fieldbus system. A maximum transmission rate of 500 kbaud is possible.

### Encoder module

The module enables direct connection of the most widely used HTL and TTL digital pulse encoders. This offers the following functions.

- Full load torque at zero speed
- Extremely accurate speed control
- Increased dynamic response of speed and torque control



Compatibility - Operator Panels		(✓ Possible combination)		
Accessories	Order No.	420	430	440
BOP	6SE6400-0BP00-0AA1	✓		✓
AOP	6SE6400-0AP00-0AA1	✓		✓
BOP-2	6SE6400-0BE00-0AA0		✓	

Compatibility - Modules		(✓ Possible combination)		
Accessories	Order No.	420	430	440
PROFIBUS	6SE6400-1PB00-0AA0	✓	✓	✓
DeviceNet	6SE6400-1DN00-0AA0	✓	✓	✓
CAN bus	6SE6400-1CB00-0AA0	✓	✓	✓
Pulse Encoder Evaluation	6SE6400-0EN00-0AA0		✓	✓

## Braking Resistors

MICROMASTER 440 has an integrated 100% rated braking chopper (to 75 kW CT) for direct connection of a braking resistor where high braking duties are required. Selections opposite are nominally rated. For drives over 90 kW, please contact our internal sales department for advice on brake resistor and chopper module.

## LC / Sinusoidal Filters

The LC filter/sinusoidal filter limits the rate of rise of voltage and the capacitive charge/discharge currents which usually occur with inverter operation. This means that much longer shielded motor cables are possible when using LC filters/ sinusoidal filters and the service life of the motor achieves values similar to those with direct mains operation. This only applies to motors with an underlined motor insulation characteristics.

## Gland Plates

Gland plates are available for drives with frame sizes A, B and C. In frame sizes D and above the gland plates are integrated in the basic design. The gland plate enables shielded connection of the power and control cables, ensuring optimum EMC performance.

# MICROMASTER Accessories

MICROMASTER Line Reactors / Output Reactors / Braking Resistors



## Line Reactor

Used to smooth voltage peaks, bridge commutating dips and reduce harmonics on the power supply. Footprint mounted to 45 kW VT (Block type for 55 kW VT-250 kW VT). Standard reactors 2%, 4% reactors available on application.

## Output Reactor

Output reactors (chokes) should be used to reduce capacitive currents and  $dV / dt$  in long motor cables.

Typically required when the cable length exceeds 50-150 m depending on power rating and cable type with higher powers allowing longer cable lengths. Motor cable runs of several hundred metres can be accommodated. Footprint mounted to 15 kW VT (Block type for 18.5 kW VT-250 kW VT).

### Supply Voltage - 200 V ... 240 V 1 AC

Rating	Frame Size	Line Reactor	Output Reactor	Brake Resistor (MM440 only)
0.12 kW	A	6SE6400-3CC00-4AB3	6SE6400-3TC00-4AD3	6SE6400-4BC05-0AA0
0.25 kW	A	6SE6400-3CC00-4AB3	6SE6400-3TC00-4AD3	6SE6400-4BC05-0AA0
0.37 kW	A	6SE6400-3CC01-0AB3	6SE6400-3TC00-4AD3	6SE6400-4BC05-0AA0
0.55 kW	A	6SE6400-3CC01-0AB3	6SE6400-3TC00-4AD3	6SE6400-4BC05-0AA0
0.75 kW	A	6SE6400-3CC01-0AB3	6SE6400-3TC00-4AD3	6SE6400-4BC05-0AA0
1.1 kW	B	6SE6400-3CC02-6BB3	6SE6400-3TC01-0BD3	6SE6400-4BC11-2BA0
1.5 kW	B	6SE6400-3CC02-6BB3	6SE6400-3TC01-0BD3	6SE6400-4BC11-2BA0
2.2 kW	B	6SE6400-3CC02-6BB3	6SE6400-3TC01-0BD3	6SE6400-4BC11-2BA0
3 kW	C	6SE6400-3CC03-5CB3	6SE6400-3TC03-2CD3	6SE6400-4BC12-5CA0

### Supply Voltage - 380 V... 480 V 3 AC

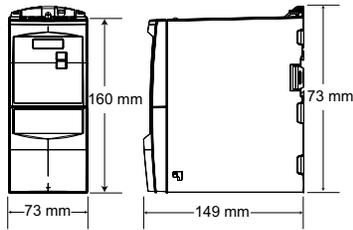
Rating	Frame Size	Line Reactor	Output Reactor	Brake Resistor (MM440 only)
0.37 kW	A	6SE6400-3CC00-2AD3	6SE6400-3TC00-4AD2	6SE6400-4BD11-0AA0
0.55 kW	A	6SE6400-3CC00-2AD3	6SE6400-3TC00-4AD2	6SE6400-4BD11-0AA0
0.75 kW	A	6SE6400-3CC00-4AD3	6SE6400-3TC00-4AD2	6SE6400-4BD11-0AA0
1.1 kW	A	6SE6400-3CC00-4AD3	6SE6400-3TC00-4AD2	6SE6400-4BD11-0AA0
1.5 kW	A	6SE6400-3CC00-6AD3	6SE6400-3TC00-4AD2	6SE6400-4BD11-0AA0
2.2 kW	B	6SE6400-3CC01-0BD3	6SE6400-3TC01-0BD3	6SE6400-4BD12-0BA0
3 kW	B	6SE6400-3CC01-0BD3	6SE6400-3TC01-0BD3	6SE6400-4BD12-0BA0
4 kW	B	6SE6400-3CC01-4BD3	6SE6400-3TC01-0BD3	6SE6400-4BD12-0BA0
LO (VT)	HO (CT)			
7.5 kW	5.5 kW	C	6SE6400-3CC02-2CD3	6SE6400-4BD16-5CA0
11 kW	7.5 kW	C	6SE6400-3CC02-2CD3	6SE6400-4BD16-5CA0
15 kW	11 kW	C	6SE6400-3CC03-5CD3	6SE6400-4BD16-5CA0
18.5 kW	15 kW	D	6SE6400-3CC04-4DD0	6SE6400-4BD21-2DA0
22 kW	18.5 kW	D	6SE6400-3CC04-4DD0	6SE6400-4BD21-2DA0
30 kW	22 kW	D	6SE6400-3CC05-2DD0	6SE6400-4BD21-2DA0
37 kW	30 kW	E	6SE6400-3CC08-3ED0	6SE6400-4BD22-2EA1
45 kW	37 kW	E	6SE6400-3CC08-3ED0	6SE6400-4BD22-2EA1
55 kW	45 kW	F	6SE6400-3CC11-2FD0 <sup>1)</sup>	6SE6400-4BD24-0FA0
75 kW	55 kW	F	6SE6400-3CC11-2FD0 <sup>1)</sup>	6SE6400-4BD24-0FA0
90 kW	75 kW	F	6SE6400-3CC11-7FD0 <sup>1)</sup>	6SE6400-4BD24-0FA0
110 kW	90 kW	FX	6SL3000-0CE32-3AA0 <sup>1)</sup>	ON APPLICATION
132 kW	110 kW	FX	6SL3000-0CE32-8AA0 <sup>1)</sup>	ON APPLICATION
160 kW	132 kW	GX	6SL3000-0CE33-3AA0 <sup>1)</sup>	ON APPLICATION
200 kW	160 kW	GX	6SL3000-0CE35-1AA0 <sup>1)</sup>	ON APPLICATION
250 kW	200 kW	GX	6SL3000-0CE35-1AA0 <sup>1)</sup>	ON APPLICATION

HO = High Overload rating (Constant Torque) LO = Low Overload rating (Variable Torque).

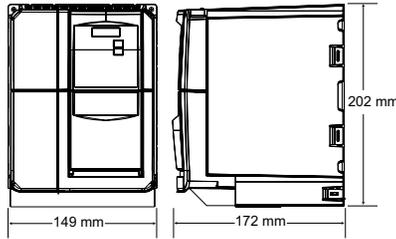
1) Block mounted.

# MICROMASTER Dimensions

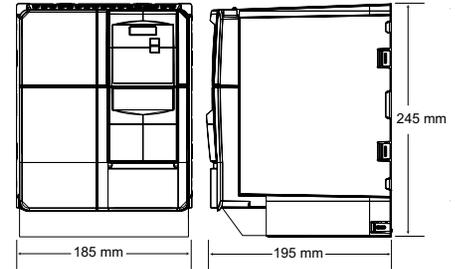
## 420/430/440 - Standard Frame Sizes



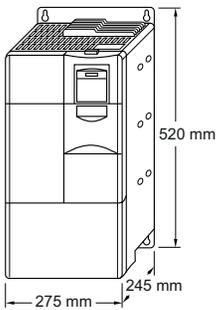
Frame Size A



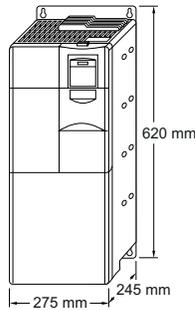
Frame Size B



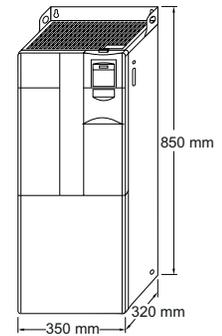
Frame Size C



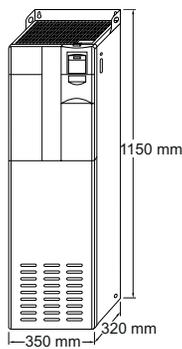
Frame Size D



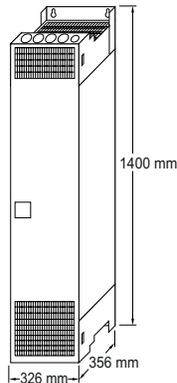
Frame Size E



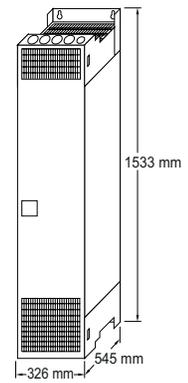
Frame Size F  
without filter



Frame Size F  
with class A EMC filter



Frame Size FX



Frame Size GX

### Notes

For cabinet sizing purposes, please allow 3% of the drive rating as heat loss.

Allow ventilation clearances around the drives as follows:

Frame size	Above / Below mm	Side < 40°C	Front	Drill & Fixing Pattern	
				Fixing	Drill - W x L
A*	100	0	0	2 x M4	0 x 160 x 4.5 Ø
B*	100	0	0	4 x M4	138 x 174 x 4.5 Ø
C*	100	0	0	4 x M5	174 x 204 5.5 Ø
D	300	0	0	4 x M8	235 x 486 x 8.5 Ø
E	300	0	0	4 x M8	275 x 650 x 8.5 Ø
F without filter	350	0	0	4 x M8	300 x 810 x 8.5 Ø
F with filter	350	0	0	4 x M8	300 x 1110 x 8.5 Ø
FX	250 / 150	0	40	6 x M8	125 / 125 x 1375 x 8.5 Ø
GX	250 / 150	0	50	6 x M8	125 / 125 x 1508 x 8.5 Ø

Note: If a Communication Module is fitted the depth increases by 23mm. If a Encoder module is fitted in addition the depth increases by a further 23mm.

\*Height increases by 48mm, 56mm and 64mm respectively with Gland Plate.

# Power Quality and Energy Efficiency

## Power Quality Services

### Harmonic Measurement Service and Power Quality Analysis

Power frequency harmonics are a key consideration for many users and Siemens is able to offer a comprehensive package of products, system analysis, software tools and the services to guarantee compliance to the UK regulations G5/4-1: Planning levels for harmonic distortion in the UK supply network (available from the energy networks association). Available both as pre and post installation services in order to measure harmonic levels, determine regulatory compliance and to identify any practical measures required.

#### The Siemens offer consists of the following:

- Harmonic prediction service
- System design consultation
- Site surveys – including 7 day “ER G5/4-1” measurements across multiple supply transformers
- Evaluation of optimum harmonic solution – cost and size
- Comprehensive and authoritative reporting tools

## Energy Efficiency Consultation

The issues of high and unstable energy prices, increased costs, mandatory regulatory demands, carbon reduction targets and corporate social responsibility have all conspired to increase pressure on hard pressed UK manufacturing. In combination, these demands are squeezing margins, reducing profits and ultimately, negatively impacting shareholder value.

Correctly managed, energy costs are one of the easiest ways to reduce cost in a modern organisation. In order to help industry control its energy costs. Siemens has developed a series of best practice procedures which can create a systematic energy plan leading to a virtuous circle of reduced costs, lower emissions, improved profitability and enhanced shareholder value.

#### Siemens energy solutions are characterised by:-

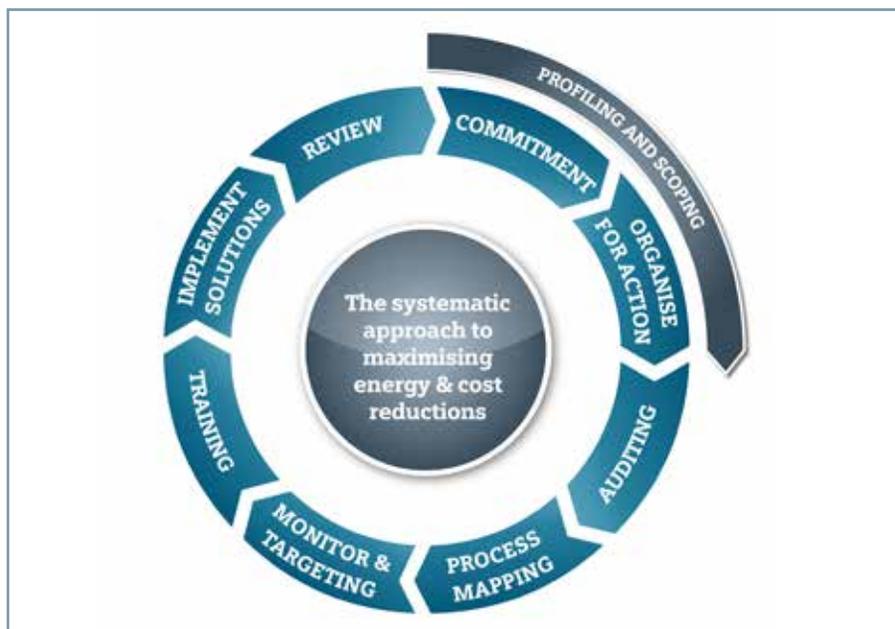
- Dramatically reduced energy and utility costs (typically 10 - 50%)
- Simplified regulatory compliance
- Waste minimisation and process improvements

- Reduced carbon footprint
- Increased brand value / company reputation

Reflecting the challenges of the current financial landscape, Siemens has developed a range of financially sympathetic solutions which maximise operating cost reductions - without placing unacceptable strain on capital expenditure:

- Professional energy and utility audits
- Direct energy saving products
- Measuring and monitoring tools
- Management and control solutions
- Innovative financing solutions
- **Evaluation of energy reduction with VSDs and motors using the SINASAVE simulation tool**

The implementation of a systematic energy plan can help mitigate against rising energy costs, deliver real competitive advantage, safeguard margin and thereby enhance corporate profitability. The on-going savings from following the systematic approach could be 400% greater when compared to the ad-hoc approach.



# Energy Efficient Drives

Electric motors represent almost two thirds of the total industrial power demand. The amount of energy used will have a big impact on operating costs as well as the effects on the environment.

**Efficient Infeed Technology** - provides the ability to feed back regenerative energy developed with motor braking into the mains supply. Traditionally this energy would be dissipated as heat through an additional braking resistor.

**Efficient Infeed Technology has significant benefits:**

- Continuous braking with 100% rated power
- Energy savings through regenerative feedback
- Braking resistor, line reactor and brake chopper are eliminated
- Configuration costs for brake resistor and cabling eliminated
- Lower harmonic content than standard inverters
- Less space than a conventional converter
- Up to 22% lower power infeed
- No additional heat generated through braking
- Cost and space savings

**Example:**

An application with a hoist drive of a stacker crane was made using standard technology compared with 'Efficient Infeed Technology'. The result was a cost saving of 40% and a space saving of 77%. How was this achieved?

<b>Reduced costs:</b>	<b>Reduced space:</b>
No Input Choke required	No Input Choke required
No braking resistors required	No braking resistors required
Lower Energy costs	

## Release energy-saving potential and optimise energy usage

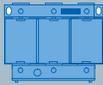
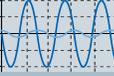
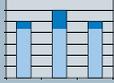
SINAMICS inverters with intelligent functions make it possible. Depending on the application and the load profile, with the intelligent energy-saving functions in SINAMICS inverters, energy usage can be reduced.

**ECOMode** - In the ECOMode, the motor operating point in the partial load range is automatically adapted and optimised. This function reduces motor losses for machines that do not require the high torque over the complete operating range.

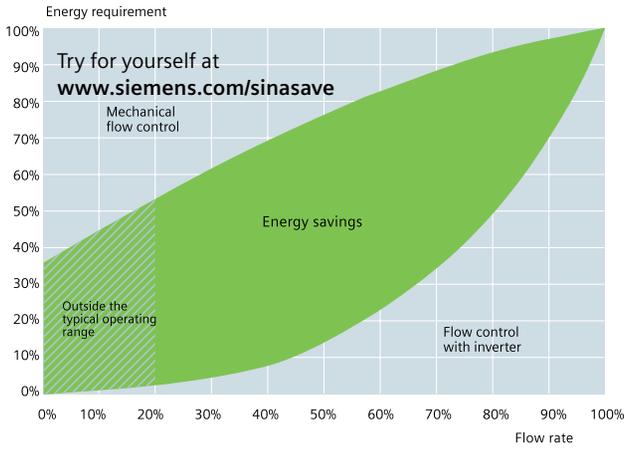
**Hibernation mode** - Variable-speed drives that are temporarily used are switched into the hibernation mode. The drive is automatically reactivated depending on the demand.

**Bypass mode** - Using the bypass mode, the inverter is electrically bypassed as soon as the motor frequently operates close to its operating speed. This allows inverter losses to be avoided, and the overall efficiency increases.

**Motor staging** - In pump, fan and compressor applications requiring high power ratings, the complete power demand is distributed over several motors. These motors are switched in and out using partially or fully controlled cascades in conjunction with inverters, therefore facilitating an energy-efficient drive system.

	Standard Technology	Efficient Infeed Technology
Line reactor 	Required	Not required 
Braking resistor 	Required	Not required 
Configuration overhead 	Standard	Low 
Generated harmonics 	Standard	Minimal 
Heat generated when braking 	Yes	No 
Power infeed 	Standard	Approx. 22% less 
Power consumption 	Standard	Approx. 22% less 
Energy efficiency 	Standard	Good 
Reactive power compensation 	No	Yes 
Installation outlay 	Standard	Low 

G\_D011\_EN\_00182



**Energy consumption values/energy-saving counter** - During operation, the actual energy consumption can be output - or using an energy-saving counter - the amount of energy accumulated over the operating hours is compared to a fixed speed drive and the difference is output.

**PROFenergy for sustainability** - SINAMICS G with PROFINET interface supports PROFenergy. PROFenergy is a PROFINET-based profile that allows loads to be centrally coordinated and controlled independent of any particular manufacturer and device. Further, it can also provide standardised analytical data for the energy management process.

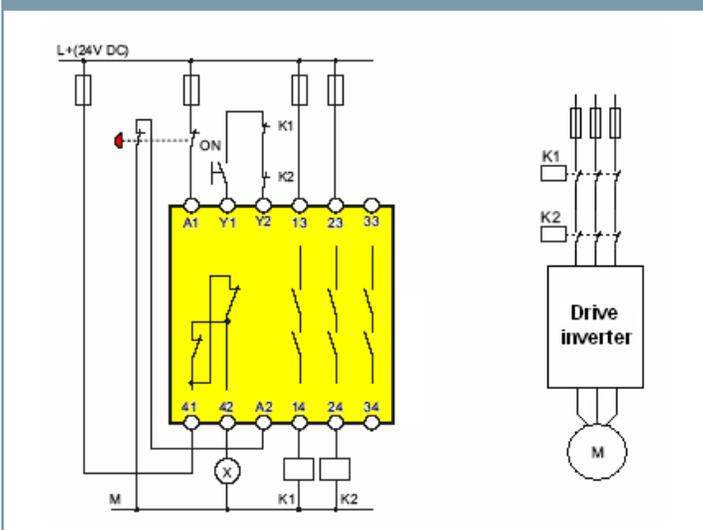
*“The prevention of accidents should not be seen as a piece of legislation, but as moral obligation and sound economic sense.”*

Werner von Siemens, 1880

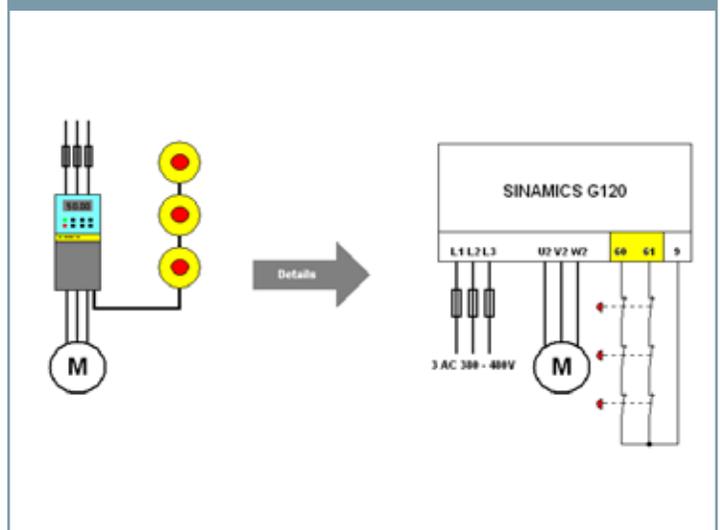
The trend towards greater complexity and increasing modularity in machines has seen a shift in safety functions away from traditional design (using contactors between drive and motor) and into the machine control system and drives. This gives many benefits:

- Complex hardware used to implement safety functions is no longer necessary
- Integrated safety functions act much faster than the traditional designs
- Implementation over a fieldbus e.g. Profibus to reduce wiring overheads
- Perceived to be less interfering so the temptation to bypass the safety system by the machine operator is significantly reduced
- Comprehensive diagnostics reduce downtimes increasing productivity

Example - Traditional Safety System (STO)



Example - Integrated Safety Technology (STO)



The use of certified integrated safety functions simplifies the certification of the safety category that is required for a machine.

The implementation of safety concepts is based on the idea that safety-relevant events will first be detected, then evaluated, and then reacted upon. Fail-safe drives are characterised by their integrated safety functions, which they provide to the user as possible responses to safety-relevant events. The most important integrated safety functions available for Siemens drives are described below, as defined in Part 5-2 of the international standard IEC 61800 for variable-speed drive systems.

## Description of Safety functions:

### ■ Safe Torque Off (STO)

This function disables the drive pulses and stops the motor developing torque - zero torque condition

### ■ Safe Stop 1 (SS1)

The drive brakes the motor and then activates the STO function and SBC (if used)

### ■ Safely Limited Speed (SLS)

This function monitors the drive and depending on the mode selected either limits the motor speed to a safe value or monitors for maximum speed as set in parameters

### ■ Safe Brake Control (SBC)

This function safely applies a holding brake after STO is activated, which means that the drive can no longer move, e.g. due to gravity

### ■ Safe Direction Detection (SDI)

This function ensures that a selected direction of rotation is maintained

### ■ Safe Stop 2 (SS2)

Like the SSI function, the SS2 function actively decelerates the motor, however when stationary the SOS function is used instead of STO

### ■ Safe Operating Stop (SOS)

The stationary motor is held in position and monitored by the drive. Full torque is available. SOS is ideal for applications where the drive must apply a holding torque i.e waiting for a machine function to finish

### ■ Safe Speed Monitor (SSM)

This function reports if the speed goes below a specified speed. No drive-autonomous response occurs

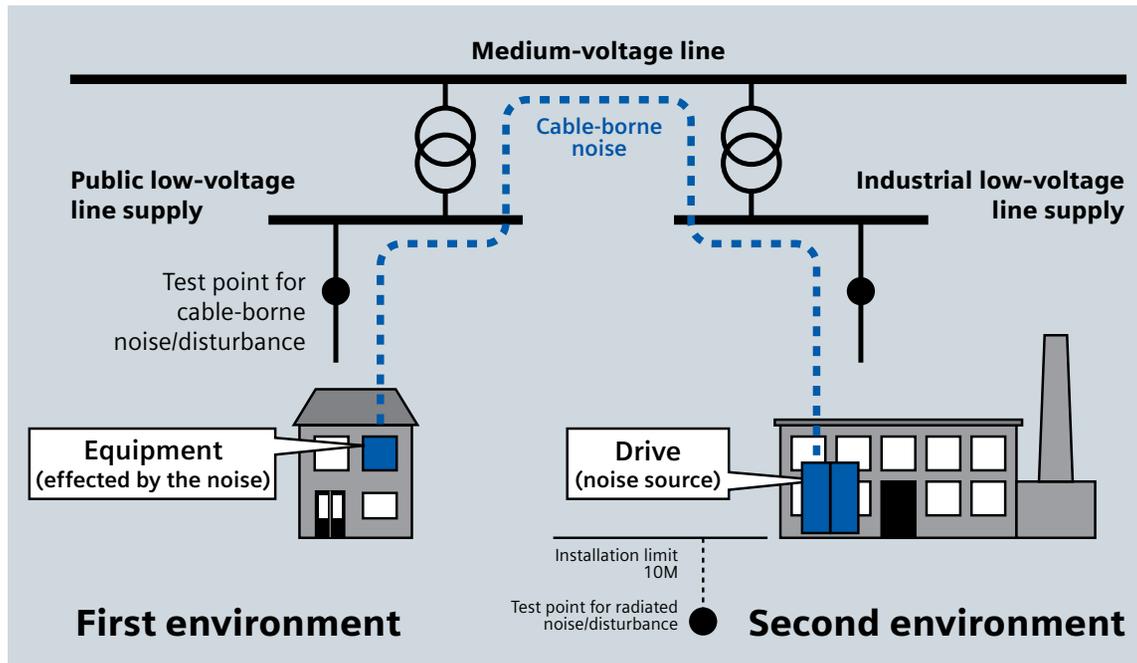
Safety Integrated certified to EN954-1 Cat.3, EN ISO 13849-1 PLd and IEC61508 SIL2.

**Note: Not all Siemens drives have integrated safety functions. The functions available on each drive are drive dependent and some functions may require a licence.**

# Electromagnetic Compatibility (EMC)

Electromagnetic compatibility describes - according to the definition of the EMC directive - "the capability of a device to work satisfactorily in the electromagnetic environment without itself causing electromagnetic interferences which are unacceptable for other devices present in this environment". To guarantee that the appropriate EMC directives are observed, the devices must demonstrate sufficiently high noise immunity, and also the emitted interference must be limited to acceptable values.

The EMC requirements for variable-speed drive systems are described in the product standard EN 61800-3. A variable speed drive system (or power drive system, PDS) consists of the drive converter and the electric motor including cables. The driven machine is not part of the drive system. EN 61800-3 defines different limits depending on the location of the drive system, referred to as the first and second environments:



The **first environment** comprises living accommodation or locations where the drive system is directly connected to the public low-voltage network without an intermediate transformer.

The **second environment** is understood to be all locations outside living areas. These are basically industrial areas which are powered from the medium-voltage network via their own transformers.

Four different categories are defined in EN 61800-3 Ed.2 depending on the location and the power of the drive:

**Category C1:** Drive systems for rated voltages < 1000 V for unlimited use in the first environment.

**Category C2:** Stationary drive systems for rated voltages < 1000 V for use in the second environment. Use in the first environment is possible if the drive system is installed and used by qualified personnel. The warning and installation information supplied by the manufacturer must be observed.

**Category C3:** Drive systems for rated voltages < 1000 V for exclusive use in the second (industrial) environment.

**Category C4:** Drive systems for rated voltages > 1000 V or for rated currents > 400 A for use in complex systems in the second environment.

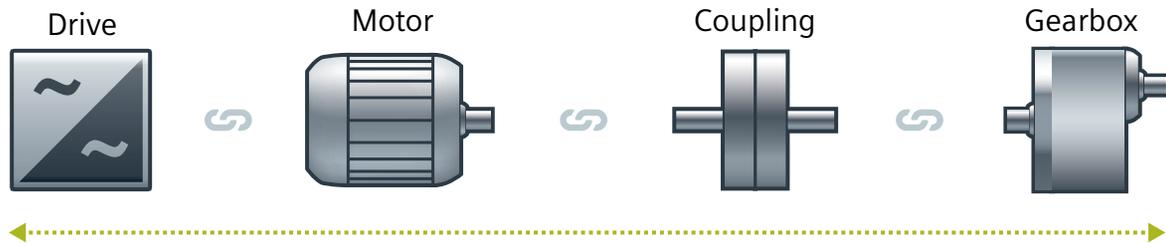
First environment	C1	Second environment
	C2	
	C3	
	C4	

Notes: The level of EMC filtering should be selected to match the specific application and environment.

Correct installation techniques are mandatory in order to meet the requirements of the EMC directive and to comply with warranty requirements.

# Integrated Drive Systems Overview

## Horizontal integration



## Integrated drive portfolio:

All frequency converters, motors, couplings, and gear units available from a single source. Perfectly integrated, perfectly interacting for all power and performance classes whether a standard or tailored solution.

### Variable Speed Drives

- A range of variable speed drives from 0.12 kW to 120 MW
- Modular concept
- 1 phase and 3 phase connection
- Low voltage and medium voltage line supply
- V/f control/Vector control/Servo control
- Ingress protection up to IP65
- Chassis type and customer specific cabinet solutions
- Safety Integrated
- Energy saving regenerative capabilities

### Motors

- A range of IEC squirrel cage motors from 0.12 kW to 1250 kW
- Aluminium and Cast Iron housing
- IE2 and IE3 available
- 63 frame to 450 frame
- Explosion proof motors - type "e" / type "d" / type "de" / typw "n" / dust zone 21 and 22
- Ingress protection IP55 to IP65
- Approvals - CE, CCC, UL, CSA, ATEX, GOST and NEPSI

### Geared Units and Geared Motor Units

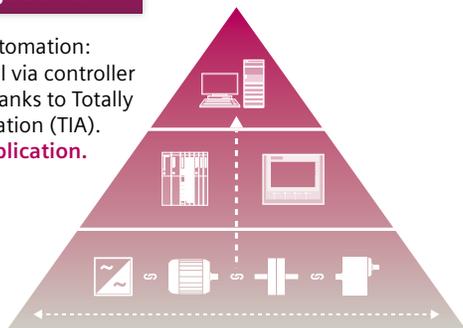
- Torques from 30Nm to > 900 kNm
- Ratios from 1:23:1 to 70,000:1
- Helical, helical bevel, worm gear units and planetary gear units
- IE1 and IE2 Approved
- Approvals: CE, CCC, UL, CSA, ATEX, GOST-R, CEEL and NEMA

### Couplings

- Comprehensive range of flexible, gear, steel, fluid couplings and torque limiters
- Torque ranges from 15 Nm to 10,000,000 Nm
- Couplings for Motor to Gearbox and Gearbox to Load

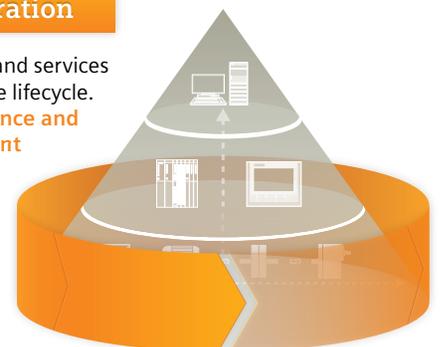
## Vertical integration

Integrated into automation: from the field level via controller level up to MES thanks to Totally Integrated Automation (TIA).  
**Whatever the application.**



## Lifecycle integration

Integrated software and services throughout the entire lifecycle.  
**For better performance and maximum investment protection.**



Discover more at [www.siemens.com/ids](http://www.siemens.com/ids)

# SIMOTICS Motors

The World's Best Selling Motors

## Low Voltage Motors

As global market leaders, we ship more than 16,000MW of motor power annually - a complete portfolio of standard motors and customised designs which cover every application from pumps, fans and compressors through to highly sophisticated drive systems.



## Technical data

Frame sizes	63 - 450
Power range	0.12 kW ... 1250 kW (4-pole)
Number of Poles	2, 4, 6 and 8
Degree of protection	IP55 (or greater)
Voltages	All common voltages
Frequency	50Hz and 60 Hz
Design	IM B3, IM B5, IM B35, IM B14 and others
Enclosure	Frame sizes 63 - 225 aluminium Frame sizes 100 - 450 cast iron
Type of cooling	Fan cooled
Temperature class	Class F insulation, Class B temperature rise
Insulating system	Inverter-proof insulation system DURIGNIT® IR 2000

For frame sizes 280 and above on inverter duty, an insulated non-drive end (NDE) bearing is recommended - available as an option.

## Features and Benefits

- Lower running costs, longer lifetimes, resulting in quicker payback time of your capital
- IE3 efficiency in standard frame sizes - no increase in frame due to efficiency
- Service factor of 1.15 for IE2 and IE3
- Inverter resistant patented insulation system (supply voltages <500V)
- Energy Technology List qualified motors
- Modular mounting concept including force ventilation kits, encoders and brake modules
- Improved Bearing Life

## General Purpose Range

- IE1, IE2 and IE3 Efficiency
- For general purpose applications e.g. Pumps and Fans
- Aluminum frame for light weight design
- Increased power line: with one standard power step higher in IE2 - with the same shaft height
- Available with options like thermistors, heaters, encoders and external earth etc



## Severe Duty Range

- IE2 and IE3 Efficiency
- For rugged and harsh application e.g. Chemical and Oil & Gas industries
- Cast Iron design
- Performance line motors (1LE16 range) for rugged environments e.g. chemical industries. Supplied standard with thermistors, steel rating plate, metal fan cowl and 3 years warranty
- Increased power line: with one standard power step higher in IE2 - with the same shaft height



## Energy Efficiency Legislation

With an increasing emphasis on the need to reduce CO2 emissions, the EU has introduced new legislation, with regards to the energy efficiency levels of electric motors, as part of their EuP (Energy using Products) Directive. Important dates and minimum efficiency requirement as per EuP are;

### 16th June 2011

Minimum IE2 for 0.75kW to 375kW for induction motors for S1 duty

### 1st Jan 2015

Minimum IE3 for 7.5kW to 375kW or IE2 plus and Inverter

### 1st Jan 2017

Minimum IE3 for 0.75kW to 375kW or IE2 plus and Inverter



# WIMES

# Gearboxes

## SIMOGEAR - Siemens Standard Geared Motor

	Inline Geared Motor	Flange Mounted Geared Motor	Helical Bevel 2-stage	Helical bevel 3-stage	Worm Geared Motor 2-stage	Worm Geared Motor 1-stage
						
Gear Unit Size	E39...E149 (1-stage) Z19...Z189 (2-stage) D19...D189 (2-stage)	FZ29...FZ229 (2-stage) FD29...FD229 (3-stage)	B19...B49 (2-stage)	K39...K229 (3-stage)	C29...C89 (2-stage)	S09...S29 (1-stage)
Ratio Range	1,1...10 (1-stage) 3,4...60,97 (2-stage) 39,34...330 (3-stage) 250...50,000 (multi-stage)	3,57...60,21 (2-stage) 46,36...357 (3-stage) 250...50,000 (multi-stage)	3,47...59,28 (2-stage)	5,17...244 (3-stage) 250...50,000 (multi-stage)	10,290 (2-stage) 250...25,000 (multi-stage)	5...100 (1-stage)
Max Motor Power (kW)	200	200	7.5	200	15	0.75

SIEMENS Standard Gear units offer you all the options you need to drive your equipment. With the most comprehensive range of Mechanical Transmission products in the field Siemens can give you a standard solution with a fast delivery from our site in Leeds or an industry specific solution. Alternatively we can use our onsite design department to help you design a fully customised mixture of our products to give you the most optimised solution.

## Siemens - Comprehensive Range of Couplings

		Couplings	Flexible Couplings	High Flexible Couplings
Overall torque range: 10...10,000,000 Nm	Overall size range: 48...2800 mm	FLUDEX (Fluid Coupling)	N-EUPEX (Claw Coupling)	ELPEX (Rubber Coupling)
				
		ARPEX (All steel disc Coupling)	BIPEX (Jaw Coupling)	ELPEX-B (Rubber Tire Coupling)
				
		ZAPEX (Gear Coupling)	RUPEX (Pin & Bush Coupling)	ELPEX-S (Rubber Disc Coupling)
				

Siemens has the most comprehensive range of couplings in the world. So regardless of what your application is we have the right coupling for you. We can meet any torque or speed requirement you have and bridge any DBSE your systems demands. Using our vast range we can create hybrid systems to include mechanical torque limiters and/or soft starts. We can absorb your high vibrational loads or give precise positioning.

# TIA Portal - StartDrive



PROFINET

With the Totally Integrated Automation Portal (TIA Portal), Siemens follows a vision of providing an engineering framework for implementing automation solutions in all industries around the globe. From designing, commissioning, operating and maintaining to upgrading automation systems, TIA Portal saves engineering time, cost, and effort. and second environments:

With the integration of SINAMICS Startdrive , our vision now extends to drive technology. This means that a wealth of functions are provided – but at the same time with simple usability.

- The same user navigation for control system, HMI and drive technology increases the engineering productivity and reduces the potential for making errors
- A common hardware configuration for all components of the application facilitates that the converter automatically goes online, even beyond network boundaries (routing functionality). This significantly simplifies commissioning.
- Common data management for the control system and converter in one tool automatically guarantees consistency, e.g. the bus address and message frame types. As a consequence, commissioning times and potential errors are significantly reduced
- A common library concept guarantees the simple reusability of the converter, including the parameters and hardware components
- The effective and intuitive communication connection between the converter and the control using drag & drop simplifies configuring considerably
- Useful functions such as undo/redo or copy/paste, known from the Windows environment, facilitate an intuitive workstyle and allow drive configurations to be simply copied

SINAMICS StartDrive is available with Simatic V12, can be ordered as a 'Stand' alone package with the following Order number: 6SL3072-4CA02-1XG0 or can be downloaded via our support site via the following link:  
<http://support.automation.siemens.com/WW/view/en/68034568>.

The following drives are integrated into StartDrive:  
G120 (CU230P-2, CU240B-2, CU240E-2), G120P, G120C & G120D.

The CU250S-2 will be integrated in V13, scheduled for 1st Quarter of 2014.

## SINAMICS StartDrive offers significant benefits

- Users can easily parameterize their converters supported by user-friendly wizards and screen forms
- For the experienced user the complete parameter list is available
- The various steps when engineering a converter are intuitively structured according to the particular task and promote a structured workflow
- Additional user-friendly functions – for example toggling between SI/US units for the converters – simplify engineering
- Intuitive parameterization of the safety functions integrated in the drive using graphic screen forms.
- Simple configuration of the matching SIMOTICS motors.
- Diagnostics are passed through to the PLC/HMI in plain text
- The trace function allows you to easily remedy faults when commissioning on after installation

Experience once gained – for example how to configure a control system – can be simply applied when configuring the converter. This significantly reduces training and engineering costs.

# Drives Software and Configurators

## SIZER Configuring Tool

The SINAMICS MICROMASTER SIZER tool supports the sizing, configuration and selection of the components required for drive applications step by step. A parts list, technical specifications, characteristic curves and dimensions drawings are then available to export.

Sizer can be purchased on DVD with order code 6SL3070-0AA00-0AG0 or downloaded free of charge if you hold a license from a purchased version at: [www.siemens.com/sizer](http://www.siemens.com/sizer)



## STARTER Commissioning Tool

STARTER is the graphical commissioning package for the MICROMASTER and SINAMICS Drive range. Simple wizards to guide you through the commissioning stages gives you the ability to generate user definable parameter sets and take control of the drive locally. STARTER can run as a stand-alone PC application, however the tool is also integrated Drives ED and SIMOTION SCOUT.

Starter can be purchased on DVD with order code 6SL3072-0AA00-0AG0 or downloaded free of charge if you hold a license from a purchased version at: [www.siemens.com/starter](http://www.siemens.com/starter)



## SINAMICS StartDrive

SINAMICS StartDrive is the optional Drive Tool that can be integrated into the TIA Portal and can be used for configuring, commissioning and performing diagnostics. At present G120C, G120P, G120 (Control Units CU230P-2, CU240E-2) and G120D are integrated. The Control Unit CU250S-2 will be integrated in V13 scheduled for release 1st Quarter 2014.

For more information please see the information on the opposite page or on the web at [www.siemens.com/startdrive](http://www.siemens.com/startdrive)



## DRIVE ES Engineering System

Drive ES is the engineering system used to integrate the communication, configuration and data management functions of Siemens drive technology into the SIMATIC automation world through SIMATIC Manager of Step7. The functions of Drives ES basic are available with Starter V3.4 SP2 for Sinamics & Micromaster function with a full integration of Step 7 from V4.4. Drives ES Basic is still required for Masterdrive and Simodrive Drive ES SIMATIC also offers standard libraries and uniform operator control interfaces for a standard 'look and feel' and for a simpler handling of all TIA and drive components and Drive ES PCS7 Package enables simple integration into a PCS7 SCADA package.



\* Requires an installation of SIMATIC Step 7 V 5.4 minimum.

Drive ES Basic V5.5*	6SW1700-5JA00-5AA0
Drive ES SIMATIC	Call for part number
Drive ES PCS7	Call for part number

## DT Configurator

The Drive Technology (DT) Configurator supports you when selecting the optimum products for your application – starting from gearboxes, motors, converters as well as the associated options and components up to control systems, software licenses and connection systems. Whether with little or detailed product knowledge you can easily, quickly and efficiently configure your particular drive using product group pre-selectors, targeted navigation through selection menus or by entering item numbers directly to select the products. You can find the DT Configurator at: [www.siemens.com/dtconfigurator](http://www.siemens.com/dtconfigurator)

## SINASAVE

SinaSave software calculates the great savings possible for your motor and drive applications (up to 70 percent are possible) and how quickly your investment in an energy-efficient technology will pay off. Frequently, the payback period is just a few months:

[www.siemens.com/sinasave](http://www.siemens.com/sinasave)



## APPS

The following Apps are available free of charge for both Apple and Android devices at:

[www.siemens.com/industry-apps](http://www.siemens.com/industry-apps)



Sinamics Selector



Sinamics Support



Online Support

# Industry Services

## Service, Spares, Technical Support

From project concept to implementation and beyond, Siemens Industry provides comprehensive life cycle support:

- Field service – Service Engineers performing installation, commissioning, maintenance and breakdown recovery
- Technical support
- Application consultancy and Product Specialists
- Spares - Warranty handling, spare parts, service exchange and repairs
- Optimisation and Modernisation
- Online – a comprehensive information system available on the internet

In addition to the above, we offer a number of proactive services to enhance the availability and performance of all types of installations, such as:

### Service / maintenance contract options

- 7 days / week, 365 days / year
- Fast response to site
- Tailored service contracts available to meet individual customer requirements

### Asset management options

- Plant maintenance management – including preventative measures
- Bonded stock availability
- Repair contracts
- Software update service (SUS)
- Leasing

### Process improvement strategies

- Consultancy
- Site audits

## SITRAIN - Customer Training Solutions

Customer training is part of a range of Siemens support programmes aimed at optimising the skills of staff involved in designing, installing and maintaining Siemens automation and drives systems.

### Professional Training from SITRAIN

- Is the fastest way to acquire knowledge
- Reduces the cost of downtime and system building
- Assists the retention of staff
- Builds staff confidence and competence
- Supported QA and Health & safety requirements
- Offers Siemens certification options

As part of the comprehensive programme of training solutions for Siemens automation and drives applications, SITRAIN offers the following SINAMICS G120 Drives Course which can be attended in standard format as a scheduled course. Alternatively the course can be tailored to customer requirements and delivered either at Siemens or the customer site.

### SINAMICS G120 Servicing and Start-up.

**Code: DR-G120-SI (3 days) £1,430.00 + VAT per person.**

This is a practical introduction to commissioning and maintaining the SINAMIC G120 drive, as well as the use of associated software, and includes:

- SINAMICS Overview
- SINAMICS G120 Hardware Overview
- Commissioning with STARTER
- Control Word, Status Word, Setpoint
- Parameters and BICO Technology
- Integration in SIMATIC
- Control
- Converter Functions
- Data Management
- Diagnostics
- Safety Functions – Safety Integrated

### Drives Training Solutions

As well as training for the SINAMICS G120 drives family, SITRAIN UK can deliver drives training solutions for Masterdrive VC, Micromaster MM4, SINAMICS G110, S120, S150, G130, G150, SINAMICS DC and Perfect Harmony Drives.

**Customer Care Centre**  
From UK Tel: 08458 507600  
From IRL Tel: 1890 507600

E-mail: [service.gbi.industry@siemens.com](mailto:service.gbi.industry@siemens.com)

Send your Technical Support request directly to a Siemens Technical Support expert via our on-line Support Request:

[www.siemens.co.uk/automation-sr](http://www.siemens.co.uk/automation-sr)

For all your training needs and to make a booking, contact:

Tel: +44 (0)161 446 6111

Fax: +44 (0)161 446 5742

E-mail: [training.ad.uk@siemens.com](mailto:training.ad.uk@siemens.com)

Internet: [www.siemens.co.uk/sitrain](http://www.siemens.co.uk/sitrain)

# Useful Information



## Catalogues

Standard Drives	SINAMICS G110	D31
	SINAMICS G120C	D31
	SINAMICS G120P	D31
	SINAMICS G120	D31
	SINAMICS G110D	D31
	SINAMICS G120D	D31
	MICROMASTER range	DA51.2
Basic Positioning	SINAMICS S110	D31
Engineered Drives	SINAMICS S120	PM21
Large Drives	SINAMICS G130 / G150	D11
DC Drives	SINAMICS DCM	D23.1
Low Voltage Motors	IE2 and IE3	D81.1
Gearboxes	MOTOX	D87.1

**Please call our literature hotline on 0845 7 70 50 70 to obtain any of the above catalogues or further information on the complete range of automation and drives products. Alternatively, literature can be ordered on line at: [www.siemens.co.uk/automationliterature](http://www.siemens.co.uk/automationliterature)**

## Websites

Siemens Industry	<a href="http://www.siemens.co.uk/industry">www.siemens.co.uk/industry</a>
Siemens Drives Technologies Home page	<a href="http://www.siemens.co.uk/drives">www.siemens.co.uk/drives</a>
SINAMICS G110	<a href="http://www.siemens.com/sinamics-G110">www.siemens.com/sinamics-G110</a>
SINAMICS G120C	<a href="http://www.siemens.com/sinamics-G120C">www.siemens.com/sinamics-G120C</a>
SINAMICS G120P	<a href="http://www.siemens.com/sinamics-G120P">www.siemens.com/sinamics-G120P</a>
SINAMICS G120	<a href="http://www.siemens.com/sinamics-G120">www.siemens.com/sinamics-G120</a>
SINAMICS G110D	<a href="http://www.siemens.com/sinamics-G110D">www.siemens.com/sinamics-G110D</a>
SINAMICS G120D	<a href="http://www.siemens.com/sinamics-G120D">www.siemens.com/sinamics-G120D</a>
SINAMICS MICROMASTER	<a href="http://www.siemens.com/micromaster">www.siemens.com/micromaster</a>
SINAMICS S110	<a href="http://www.siemens.com/sinamics-S110">www.siemens.com/sinamics-S110</a>
SINAMICS S120	<a href="http://www.siemens.com/sinamics-S120">www.siemens.com/sinamics-S120</a>
SINAMICS G130	<a href="http://www.siemens.com/sinamics-G130">www.siemens.com/sinamics-G130</a>
SINAMICS G150	<a href="http://www.siemens.com/sinamics-G150">www.siemens.com/sinamics-G150</a>
Motors	<a href="http://www.siemens.com/motors">www.siemens.com/motors</a>
Geared Motors	<a href="http://www.siemens.com/gearedmotors">www.siemens.com/gearedmotors</a>
For the complete portfolio of products, solutions and references for Pumps, Fans and Compressors	<a href="http://www.siemens.com/pumps">www.siemens.com/pumps</a> <a href="http://www.siemens.com/fans">www.siemens.com/fans</a> <a href="http://www.siemens.com/compressors">www.siemens.com/compressors</a>
Solution Partners	<a href="http://www.siemens.com/automation/solutionpartner">www.siemens.com/automation/solutionpartner</a>
SINASAVE	<a href="http://www.siemens.com/sinasave">www.siemens.com/sinasave</a>

From UK Tel: 08458 507600

From IRL Tel: 1890 507600

E-mail: [sales.gbi.industry@siemens.com](mailto:sales.gbi.industry@siemens.com)

## Siemens Drives and Motor Enquiry Sheet

Type of Application			
Quantity			
Supply Voltage			If other, please specify
Type of Drive			
Basic project requirement			
Cable lengths			
Environmental Conditions			

### Customer Contact Details

Name	
Company	
Tel	
Email	
Customer Ref.	
Siemens Ref.	

### Notes

Company Structure	
Specified Business/Relationship with Siemens	
Decision Maker	
Timescales	
Assistance required	
Serial/one off	
Trading Information	
Budget or detailed quote	

## Motor Specifications

Speed (rpm)	
Load Torque (Nm)	
Rated Voltage (v)	
Rated Output (kW)	
Min Load Speed (rpm)	
Power at Min Load Speed	
Max Load Speed	
Power at Max Load Speed	
Paint finish, if any	
Type of cooling	
Motor Altitude (m)	

Feed back device	
Rotary/Linear movement	
Mass to be moved	
Interis or torque speed requirements	
Required velocity	
Type of mechanical arrangement	
Brake required	
Hanging load or hoisting application	
Environment conditions	
Special considerations	

## Drive Specifications

Power (kW)		
Drive Altitude (m)		
Type of Control Required		
Load Characteristics		If other, please specify
Overload Requirements		If other, please specify
IP Protection		If other, please specify
Braking		If other, please specify
Braking Cycle		
Number of axis required		
Power ride through function		

Safety Integrated	
Harmonic Considerations	
Type of Cooling Required	
RFI / EMC Requirements	
Output Choke	
Machine duty cycle	

### Panel Requirements

Type of cooling	
Panel Glanding	
Cable requirements std/flex	
Standard panel mounting kit	
Bulkhead connections	
Door mounted operator interface	

## Customer specific requirements

Customer Capability of PLCs	
Is training/support required	
Is a RSC contract required	

PLC - Will system include PLC control, if so which	
Type of communication bus	
Is there a size restriction for the elcetrical panels	

The information provided in this brochure contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract. Availability and technical specifications are subject to change without notice.

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All prices exclude VAT and are subject to change without notice.

Siemens standard terms and conditions apply.

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**[www.siemens.co.uk/drives](http://www.siemens.co.uk/drives)**

**SIEMENS**

# Siemens Variable Speed Drives

Price List

Effective October 2013

# SINAMICS G110

Supply Voltage - 200 V ... 240 V 1 AC			Power Modules			
Rating	Frame Size	Type	Industrial	List Price	Filtered #	List Price
0.12 kW / 0.9 A	A	Analogue	6SL3211-0AB11-2UA1	£98	6SL3211-0AB11-2BA1	£109
		USS	6SL3211-0AB11-2UB1	£98	6SL3211-0AB11-2BB1	£109
0.25 kW / 1.7 A	A	Analogue	6SL3211-0AB12-5UA1	£106	6SL3211-0AB12-5BA1	£119
		USS	6SL3211-0AB12-5UB1	£106	6SL3211-0AB12-5BB1	£119
0.37 kW / 2.3 A	A	Analogue	6SL3211-0AB13-7UA1	£112	6SL3211-0AB13-7BA1	£129
		USS	6SL3211-0AB13-7UB1	£112	6SL3211-0AB13-7BB1	£129
0.55 kW / 3.2 A	A	Analogue	6SL3211-0AB15-5UA1	£123	6SL3211-0AB15-5BA1	£138
		USS	6SL3211-0AB15-5UB1	£123	6SL3211-0AB15-5BB1	£138
0.75 kW / 3.9 A	A	Analogue	6SL3211-0AB17-5UA1	£136	6SL3211-0AB17-5BA1	£151
		USS	6SL3211-0AB17-5UB1	£136	6SL3211-0AB17-5BB1	£151
1.1 kW / 6.0 A	B	Analogue	6SL3211-0AB21-1UA1	£154	6SL3211-0AB21-1AA1	£177
		USS	6SL3211-0AB21-1UB1	£154	6SL3211-0AB21-1AB1	£177
1.5 kW / 7.8 A	B	Analogue	6SL3211-0AB21-5UA1	£175	6SL3211-0AB21-5AA1	£204
		USS	6SL3211-0AB21-5UB1	£175	6SL3211-0AB21-5AB1	£204
2.2 kW / 11 A	C	Analogue	6SL3211-0AB22-2UA1	£210	6SL3211-0AB22-2AA1	£241
		USS	6SL3211-0AB22-2UB1	£210	6SL3211-0AB22-2AB1	£241
3 kW / 13.6 A	C	Analogue	6SL3211-0AB23-0UA1	£244	6SL3211-0AB23-0AA1	£280
		USS	6SL3211-0AB23-0UB1	£244	6SL3211-0AB23-0AB1	£280

Version with flat heat sink also available.

# EMC filtering generally suitable for 1st environment; additional filter options available on request.

Options		List Price
6SL3255-0AA00-4BA1	Basic Operator Panel (BOP)	£23
6SL3255-0AA00-2AA1	PC Inverter Connection Kit (inc connector, RS232 cable (3m) and Sizer DVD)	£26
6SL3097-4CA00-0YG1	Manual collection on DVD	£45

Supply Voltage - 200 V ... 240 V 1 AC			
Rating	Frame Size	Line Reactor (G110 only)	List Price
0.12 kW	A	6SE6400-3CC00-4AB3	£60
0.25 kW	A	6SE6400-3CC00-4AB3	£60
0.37 kW	A	6SE6400-3CC01-0AB3	£60
0.55 kW	A	6SE6400-3CC01-0AB3	£60
0.75 kW	A	6SE6400-3CC01-0AB3	£60
1.1 kW	B	6SE6400-3CC02-6BB3	£85
1.5 kW	B	6SE6400-3CC02-6BB3	£85
2.2 kW	B	6SE6400-3CC02-6BB3	£85
3 kW	C	6SE6400-3CC03-5CB3	£86

# SINAMICS G120C

Supply Voltage - 380 V... 480 V 3 AC		Power Modules					
Rating		Frame Size	Type	Industrial	List Price	Filtered #	List Price
LO (VT)	HO (CT)						
0.37 kW / 1.3 A	0.55 kW / 1.7 A	A	USS/MOD Bus	6SL3210-1KE11-8UB1	£335	6SL3210-1KE11-8AB1	£397
			Profibus	6SL3210-1KE11-8UP1	£407	6SL3210-1KE11-8AP1	£469
			Profinet	6SL3210-1KE11-8UF1	£407	6SL3210-1KE11-8AF1	£469
0.55 kW / 1.7 A	0.75 kW / 2.2 A	A	USS/MOD Bus	6SL3210-1KE12-3UB1	£350	6SL3210-1KE12-3AB1	£412
			Profibus	6SL3210-1KE12-3UP1	£422	6SL3210-1KE12-3AP1	£484
			Profinet	6SL3210-1KE12-3UF1	£422	6SL3210-1KE12-3AF1	£484
0.75 kW / 2.2 A	1.1 kW / 3.1 A	A	USS/MOD Bus	6SL3210-1KE13-2UB1	£371	6SL3210-1KE13-2AB1	£430
			Profibus	6SL3210-1KE13-2UP1	£443	6SL3210-1KE13-2AP1	£503
			Profinet	6SL3210-1KE13-2UF1	£443	6SL3210-1KE13-2AF1	£503
1.1 kW / 3.1 A	1.5 kW / 4.1 A	A	USS/MOD Bus	6SL3210-1KE14-3UB1	£400	6SL3210-1KE14-3AB1	£452
			Profibus	6SL3210-1KE14-3UP1	£472	6SL3210-1KE14-3AP1	£524
			Profinet	6SL3210-1KE14-3UF1	£472	6SL3210-1KE14-3AF1	£524
1.5 kW / 4.1 A	2.2 kW / 5.6 A	A	USS/MOD Bus	6SL3210-1KE15-8UB1	£445	6SL3210-1KE15-8AB1	£497
			Profibus	6SL3210-1KE15-8UP1	£517	6SL3210-1KE15-8AP1	£569
			Profinet	6SL3210-1KE15-8UF1	£517	6SL3210-1KE15-8AF1	£569
2.2 kW / 5.6 A	3.0 kW / 7.3 A	A	USS/MOD Bus	6SL3210-1KE17-5UB1	£520	6SL3210-1KE17-5AB1	£582
			Profibus	6SL3210-1KE17-5UP1	£593	6SL3210-1KE17-5AP1	£654
			Profinet	6SL3210-1KE17-5UF1	£593	6SL3210-1KE17-5AF1	£654
3.0 kW / 7.3 A	4.0 kW / 8.8 A	A	USS/MOD Bus	6SL3210-1KE18-8UB1	£577	6SL3210-1KE18-8AB1	£660
			Profibus	6SL3210-1KE18-8UP1	£649	6SL3210-1KE18-8AP1	£731
			Profinet	6SL3210-1KE18-8UF1	£649	6SL3210-1KE18-8AF1	£731
4.0 kW / 8.8 A	5.5 kW / 12.5 A	B	USS/MOD Bus	6SL3210-1KE21-3UB1	£696	6SL3210-1KE21-3AB1	£773
			Profibus	6SL3210-1KE21-3UP1	£768	6SL3210-1KE21-3AP1	£844
			Profinet	6SL3210-1KE21-3UF1	£768	6SL3210-1KE21-3AF1	£844
5.5 kW / 12.5 A	7.5 kW / 16.5 A	B	USS/MOD Bus	6SL3210-1KE21-7UB1	£839	6SL3210-1KE21-7AB1	£947
			Profibus	6SL3210-1KE21-7UP1	£912	6SL3210-1KE21-7AP1	£1,020
			Profinet	6SL3210-1KE21-7UF1	£912	6SL3210-1KE21-7AF1	£1,020
7.5 kW / 16.5 A	11 kW / 25 A	C	USS/MOD Bus	6SL3210-1KE22-6UB1	£1,081	6SL3210-1KE22-6AB1	£1,232
			Profibus	6SL3210-1KE22-6UP1	£1,151	6SL3210-1KE22-6AP1	£1,303
			Profinet	6SL3210-1KE22-6UF1	£1,151	6SL3210-1KE22-6AF1	£1,303
11 kW / 25 A	15 kW / 31 A	C	USS/MOD Bus	6SL3210-1KE23-2UB1	£1,571	6SL3210-1KE23-2AB1	£1,712
			Profibus	6SL3210-1KE23-2UP1	£1,641	6SL3210-1KE23-2AP1	£1,783
			Profinet	6SL3210-1KE23-2UF1	£1,641	6SL3210-1KE23-2AF1	£1,783
15 kW / 31 A	18.5 kW / 37 A	C	USS/MOD Bus	6SL3210-1KE23-8UB1	£1,879	6SL3210-1KE23-8AB1	£2,010
			Profibus	6SL3210-1KE23-8UP1	£1,954	6SL3210-1KE23-8AP1	£2,081
			Profinet	6SL3210-1KE23-8UF1	£1,954	6SL3210-1KE23-8AF1	£2,081

NOTE: HO(CT) - Constant Torque Applications, LO(VT) - Variable Torque Applications. For overload ratings please refer to the DA31 catalogue.  
# EMC filtering generally suitable for 1st environment.

Options		List Price
6SL3255-0AA00-4CA1	Basic Operator Panel 2 (BOP-2)	£41
6SL3255-0AA00-4JA1	Intelligent Operator Panel (IOP)	£157
6SL3256-0AP00-0JA0	IOP / BOP-2 Door Mounting Kit	£32
6SL3255-0AA00-4HA0	IOP Handheld	£282
6SL3255-0AA00-2CA0	PC Inverter connection kit 2 for G120C, G120P and G120 Control Units CU230P-2, CU230B-2, CU230E-2 & CU250S-2	£26
6SL3254-0AM00-0AA0	Memory Card (MMC)	£55
6SL3054-4AG00-2AA0	SINAMICS SD card 512 MB	£55

For Input Reactors, Output Reactors and Braking Resistors please see SINAMICS Accessories on page 10.

# SINAMICS G120P Power Modules

PM230 IP55 Supply Voltage - 380 V ... 480 V 3 AC			Power Modules			
Rating		Frame Size	PM230 IP55 Class A Filter	List Price	PM230 IP55 Class B Filter	List Price
LO (VT)	HO (CT)					
0.37 kW / 1.3 A	0.25 kW / 0.9 A	A	6SL3223-ODE13-7AA0	£216	6SL3223-ODE13-7BA0	£240
0.55 kW / 1.7 A	0.37 kW / 1.3 A	A	6SL3223-ODE15-5AA0	£228	6SL3223-ODE15-5BA0	£257
0.75 kW / 2.2 A	0.55 kW / 1.7 A	A	6SL3223-ODE17-5AA0	£248	6SL3223-ODE17-5BA0	£277
1.1 kW / 3.1 A	0.75 kW / 2.2 A	A	6SL3223-ODE21-1AA0	£265	6SL3223-ODE21-1BA0	£292
1.5 kW / 4.1 A	1.1 kW / 3.1 A	A	6SL3223-ODE21-5AA0	£301	6SL3223-ODE21-5BA0	£336
2.2 kW / 5.9 A	1.5 kW / 4.1 A	A	6SL3223-ODE22-2AA0	£365	6SL3223-ODE22-2BA0	£409
3.0 kW / 7.7 A	2.2 kW / 5.9 A	A	6SL3223-ODE23-0AA0	£457	6SL3223-ODE23-0BA0	£509
4 kW / 10.2 A	3 kW / 7.7 A	B	6SL3223-ODE24-0AA0	£540	6SL3223-ODE24-0BA0	£601
5.5 kW / 13.2 A	4 kW / 10.2 A	B	6SL3223-ODE25-5AA0	£632	6SL3223-ODE25-5BA0	£705
7.5 kW / 18 A	5.5 kW / 13.2 A	B	6SL3223-ODE27-5AA0	£821	6SL3223-ODE27-5BA0	£920
11 kW / 26 A	7.5 kW / 18 A	C	6SL3223-ODE31-1AA0	£1,162	6SL3223-ODE31-1BA0	£1,303
15 kW / 32 A	11 kW / 26 A	C	6SL3223-ODE31-5AA0	£1,505	6SL3223-ODE31-5BA0	£1,742
18.5 kW / 38 A	15 kW / 32 A	C	6SL3223-ODE31-8AA0	£1,843	-	-
18.5 kW / 38 A	15 kW / 32 A	D	-	-	6SL3223-ODE31-8BA0	£2399
22 kW / 45 A	18.5 kW / 38 A	D	6SL3223-ODE32-2AA0	£2,166	6SL3223-ODE32-2BA0	£2,722
30 kW / 60 A	22 kW / 45 A	D	6SL3223-ODE33-0AA0	£2,742	6SL3223-ODE33-0BA0	£3,560
37 kW / 75 A	30 kW / 60 A	E	6SL3223-ODE33-7AA0	£3,363	6SL3223-ODE33-7BA0	£4,505
45 kW / 90 A	37 kW / 75 A	E	6SL3223-ODE34-5AA0	£4,106	6SL3223-ODE34-5BA0	£5,484
55 kW / 110 A	45 kW / 90 A	F	6SL3223-ODE35-5AA0	£4,808	6SL3223-ODE35-5BA0	£6,383
75 kW / 145 A	55 kW / 110 A	F	6SL3223-ODE37-5AA0	£5,767	6SL3223-ODE37-5BA0	£7,686
90 kW / 178 A	75 kW / 145 A	F	6SL3223-ODE38-8AA0	£6,747	6SL3223-ODE38-8BA0	£9,115

PM230 IP20 Supply Voltage - 380 V ... 480 V 3 AC			Power Modules			
Rating		Frame Size	PM230 IP20 Unfiltered	List Price	PM230 IP20 Class A Filter	List Price
LO (VT)	HO (CT)					
0.37 kW / 1.3 A	0.25 kW / 0.9 A	A	6SL3210-1NE11-3UL0	£171	6SL3210-1NE11-3AL0	£204
0.55 kW / 1.7 A	0.37 kW / 1.3 A	A	6SL3210-1NE11-7UL0	£181	6SL3210-1NE11-7AL0	£217
0.75 kW / 2.2 A	0.55 kW / 1.7 A	A	6SL3210-1NE12-2UL0	£198	6SL3210-1NE12-2AL0	£234
1.1 kW / 3.1 A	0.75 kW / 2.2 A	A	6SL3210-1NE13-1UL0	£206	6SL3210-1NE13-1AL0	£247
1.5 kW / 4.1 A	1.1 kW / 3.1 A	A	6SL3210-1NE14-1UL0	£237	6SL3210-1NE14-1AL0	£282
2.2 kW / 5.9 A	1.5 kW / 4.1 A	A	6SL3210-1NE15-8UL0	£272	6SL3210-1NE15-8AL0	£325
3.0 kW / 7.7 A	2.2 kW / 5.9 A	A	6SL3210-1NE17-7UL0	£342	6SL3210-1NE17-7AL0	£408
4 kW / 10.2 A	3 kW / 7.7 A	B	6SL3210-1NE21-0UL0	£399	6SL3210-1NE21-0AL0	£482
5.5 kW / 13.2 A	4 kW / 10.2 A	B	6SL3210-1NE21-3UL0	£469	6SL3210-1NE21-3AL0	£565
7.5 kW / 18 A	5.5 kW / 13.2 A	B	6SL3210-1NE21-8UL0	£610	6SL3210-1NE21-8AL0	£729
11 kW / 26 A	7.5 kW / 18 A	C	6SL3210-1NE22-6UL0	£833	6SL3210-1NE22-6AL0	£998
15 kW / 32 A	11 kW / 26 A	C	6SL3210-1NE23-2UL0	£1,136	6SL3210-1NE23-2AL0	£1,283
18.5 kW / 38 A	15 kW / 32 A	C	6SL3210-1NE23-8UL0	£1,399	6SL3210-1NE23-8AL0	£1,560
22 kW / 45 A	18.5 kW / 38 A	D	6SL3210-1NE24-5UL0	£1,667	6SL3210-1NE24-5AL0	£1,843
30 kW / 60 A	22 kW / 45 A	D	6SL3210-1NE26-0UL0	£2,126	6SL3210-1NE26-0AL0	£2,323
37 kW / 75 A	30 kW / 60 A	E	6SL3210-1NE27-5UL0	£2,586	6SL3210-1NE27-5AL0	£2,884
45 kW / 90 A	37 kW / 75 A	E	6SL3210-1NE28-8UL0	£3,176	6SL3210-1NE28-8AL0	£3,515
55 kW / 110 A	45 kW / 90 A	F	6SL3210-1NE31-1UL0	£3,752	6SL3210-1NE31-1AL0	£4,146
75 kW / 145 A	55 kW / 110 A	F	6SL3210-1NE31-5UL0	£4,429	6SL3210-1NE31-5AL0	£4,843

NOTE: HO(CT) - Constant Torque Applications, LO(VT) - Variable Torque Applications. For overload ratings please refer to the D31 catalogue.

# SINAMICS G120 Power Modules

PM230 IP20 Push Through Supply Voltage - 380 V ... 480 V 3 AC		Power Modules				
Rating		Frame Size	PM230 IP20 Unfiltered PT	List Price	PM230 IP20 PT with Class A Filter	List Price
LO (VT)	HO (CT)					
3 kW / 7.7 A	2.2 kW / 5.9 A	A	6SL3211-1NE17-7UL0	£384	6SL3211-1NE17-7AL0	£453
7.5 kW / 18 A	5.5 kW / 13.2 A	B	6SL3211-1NE21-8UL0	£684	6SL3211-1NE21-8AL0	£811
18.5 kW / 38 A	15 kW / 32 A	C	6SL3211-1NE23-8UL0	£1,569	6SL3211-1NE23-8AL0	£1,743

PM240-2 Supply Voltage - 380 V ... 480 V 3 AC		Power Modules				
Rating		Frame Size	Industrial	List Price	Filtered #	List Price
LO (VT)	HO (CT)					
0.55 kW / 1.7 A	0.37 kW / 1.3 A	A	6SL3210-1PE11-8UL0	£210	6SL3210-1PE11-8AL0	£247
0.75 kW / 2.2 A	0.55 kW / 1.7 A	A	6SL3210-1PE12-3UL0	£226	6SL3210-1PE12-3AL0	£268
1.1 kW / 3.1 A	0.75 kW / 2.2 A	A	6SL3210-1PE13-2UL0	£243	6SL3210-1PE13-2AL0	£284
1.5 kW / 4.1 A	1.1 kW / 3.1 A	A	6SL3210-1PE14-3UL0	£280	6SL3210-1PE14-3AL0	£326
2.2 kW / 5.6 A	1.5 kW / 4.1 A	A	6SL3210-1PE16-1UL0	£326	6SL3210-1PE16-1AL0	£387
3.0 kW / 7.3 A	2.2 kW / 5.6 A	A	6SL3210-1PE18-0UL0	£410	-	-

PM240-2 Push Through Supply Voltage - 380 V ... 480 V 3 AC		Power Modules				
Rating		Frame Size	Industrial	List Price	Filtered #	List Price
LO (VT)	HO (CT)					
1.5 kW / 4.1 A	2.2 kW / 5.6 A	A	-	-	6SL3211-1PE16-1AL0	£417
2.2 kW / 5.6 A	3.0 kW / 7.3 A	A	6SL3211-1PE18-0UL0	£451	-	-

NOTE: HO(CT) - Constant Torque Applications, LO(VT) - Variable Torque Applications. For overload ratings please refer to the D31 catalogue.  
# EMC filtering generally suitable for 1st environment; additional filter options available on request.

# SINAMICS G120 Power Modules

PM240 Supply Voltage - 380 V... 480 V 3 AC		Power Modules						
Rating		Frame Size	Industrial	List Price	Filtered #	List Price	Additional Filter to use with Industrial PM240*	List Price
0.37 kW / 1.3 A		A	6SL3224-0BE13-7UA0	£198	-	-	6SE6400-2FA00-6AD0	£66
0.55 kW / 1.7 A		A	6SL3224-0BE15-5UA0	£213	-	-	6SE6400-2FA00-6AD0	£66
0.75 kW / 2.2 A		A	6SL3224-0BE17-5UA0	£225	-	-	6SE6400-2FA00-6AD0	£66
1.1 kW / 3.1 A		A	6SL3224-0BE21-1UA0	£262	-	-	6SE6400-2FA00-6AD0	£66
1.5 kW / 4.1 A		A	6SL3224-0BE21-5UA0	£308	-	-	6SE6400-2FA00-6AD0	£66
2.2 kW / 5.9 A		B	6SL3224-0BE22-2UA0	£384	6SL3224-0BE22-2AA0	£448	-	-
3 kW / 7.7 A		B	6SL3224-0BE23-0UA0	£455	6SL3224-0BE23-0AA0	£535	-	-
4 kW / 10.2 A		B	6SL3224-0BE24-0UA0	£536	6SL3224-0BE24-0AA0	£630	-	-
LO (VT)	HO (CT)							
7.5 kW / 18 A	5.5 kW / 13.2 A	C	6SL3224-0BE25-5UA0	£694	6SL3224-0BE25-5AA0	£807	-	-
11 kW / 25 A	7.5 kW / 19 A	C	6SL3224-0BE27-5UA0	£887	6SL3224-0BE27-5AA0	£1,045	-	-
15 kW / 32 A	11 kW / 26 A	C	6SL3224-0BE31-1UA0	£1,207	6SL3224-0BE31-1AA0	£1,379	-	-
18.5 kW / 38 A	15 kW / 32 A	D	6SL3224-0BE31-5UA0	£1,571	6SL3224-0BE31-5AA0	£1,727	-	-
22 kW / 45 A	18.5 kW / 38 A	D	6SL3224-0BE31-8UA0	£1,813	6SL3224-0BE31-8AA0	£2,020	-	-
30 kW / 60 A	22 kW / 45 A	D	6SL3224-0BE32-2UA0	£2,131	6SL3224-0BE32-2AA0	£2,333	-	-
37 kW / 75 A	30 kW / 60 A	E	6SL3224-0BE33-0UA0	£2,767	6SL3224-0BE33-0AA0	£3,070	-	-
45 kW / 90 A	37 kW / 75 A	E	6SL3224-0BE33-7UA0	£3,257	6SL3224-0BE33-7AA0	£3,596	-	-
55 kW / 110 A	45 kW / 90 A	F	6SL3224-0BE34-5UA0	£3,798	6SL3224-0BE34-5AA0	£4,202	-	-
75 kW / 145 A	55 kW / 110 A	F	6SL3224-0BE35-5UA0	£4,338	6SL3224-0BE35-5AA0	£4,762	-	-
90 kW / 178 A	75 kW / 145 A	F	6SL3224-0BE37-5UA0	£5,353	6SL3224-0BE37-5AA0	£5,934	-	-
110 kW / 205 A	90 kW / 178 A	F	6SL3224-0BE38-8UA0	£6,075	-	-	6SL3203-0BE32-5AA0	£788
132 kW / 250 A	110 kW / 205 A	F	6SL3224-0BE41-1UA0	£7,035	-	-	6SL3203-0BE32-5AA0	£788
160 kW / 302 A	132 kW / 250 A	GX	6SL3224-0XE41-3UA0	£8,363	-	-	6SL3000-0BE34-4AA0	£1,727
200 kW / 370 A	160 kW / 302 A	GX	6SL3224-0XE41-6UA0	£9,408	-	-	6SL3000-0BE34-4AA0	£1,727
250 kW / 477 A	200 kW / 370 A	GX	6SL3224-0XE42-0UA0	£10,873	-	-	6SL3000-0BE36-0AA0	£1,989

PM250 Supply Voltage - 500 V... 690 V 3 AC		Power Modules					
Rating		Frame Size	Industrial	List Price	Filtered #	List Price	
LO (VT)	HO (CT)						
7.5 kW / 18 A	5.5 kW / 13.2 A	C	-	-	6SL3225-0BE25-5AA1	£1,086	
11 kW / 25 A	7.5 kW / 19 A	C	-	-	6SL3225-0BE27-5AA1	£1,379	
15 kW / 32 A	11 kW / 26 A	C	-	-	6SL3225-0BE31-1AA1	£1,732	
18.5 kW / 38 A	15 kW / 32 A	D	6SL3225-0BE31-5UA0	£2,065	6SL3225-0BE31-5AA0	£2,136	
22 kW / 45 A	18.5 kW / 38 A	D	6SL3225-0BE31-8UA0	£2,419	6SL3225-0BE31-8AA0	£2,495	
30 kW / 60 A	22 kW / 45 A	D	6SL3225-0BE32-2UA0	£2,828	6SL3225-0BE32-2AA0	£2,899	
37 kW / 75 A	30 kW / 60 A	E	6SL3225-0BE33-0UA0	£3,671	6SL3225-0BE33-0AA0	£3,782	
45 kW / 90 A	37 kW / 75 A	E	6SL3225-0BE33-7UA0	£4,272	6SL3225-0BE33-7AA0	£4,394	
55 kW / 110 A	45 kW / 90 A	F	6SL3225-0BE34-5UA0	£4,914	6SL3225-0BE34-5AA0	£5,035	
75 kW / 145 A	55 kW / 110 A	F	6SL3225-0BE35-5UA0	£5,580	6SL3225-0BE35-5AA0	£5,722	
90 kW / 178 A	75 kW / 145 A	F	6SL3225-0BE37-5UA0	£6,858	6SL3225-0BE37-5AA0	£7,050	

NOTE: HO(CT) - Constant Torque Applications, LO(VT) - Variable Torque Applications. For overload ratings please refer to the D31 catalogue.  
# EMC filtering generally suitable for 1st environment; additional filter options available on request.

# SINAMICS G120 Control Units and Options

Control Units	Description	List Price
6SL3243-0BB30-1HA3	CU230P-2 HVAC	£267
6SL3243-0BB30-1FA0	CU230P-2 PN	£325
6SL3243-0BB30-1PA3	CU230P-2 DP	£325
6SL3243-0BB30-1CA3	CU230P-2 CAN	£335
6SL3244-0BB00-1BA1	CU240B-2	£131
6SL3244-0BB00-1PA1	CU240B-2 DP	£172
6SL3244-0BB12-1BA1	CU240E-2	£192
6SL3244-0BB12-1FA0	CU240E-2 PN	£231
6SL3244-0BB12-1PA1	CU240E-2 DP	£231
6SL3244-0BB13-1BA1	CU240E-2 F	£278
6SL3244-0BB13-1FA0	CU240E-2 PN F	£320
6SL3244-0BB13-1PA1	CU240E-2 DP-F	£320
6SL3246-0BA22-1BA0	CU250S-2	£300
6SL3246-0BA22-1CA0	CU250S-2 CAN	£361
6SL3246-0BA22-1PA0	CU250S-2 DP	£343
6SL3246-0BA22-1FA0	CU250S-2 PN	£343

Options	Description	List Price
6SL3255-0AA00-4CA1	Basic Operator Panel 2 (BOP2)	£41
6SL3255-0AA00-4JA1	Intelligent Operator Panel (IOP)	£157
6SL3256-0AP00-0JA0	IOP / BOP2 Door Mounting Kit (for IP20 version mounted in a cabinet)	£33
6SL3255-0AA00-4HA0	IOP Handheld (inc. Holder, IOP, cable, charging unit and rechargeable batteries)	£282
6SL3256-1BA00-0AA0	Blanking cover for PM230 IP55	£15
6SL3255-0AA00-2CA0	PC Inverter Connection Kit 2 for G120C and G120 control units CU230P-2, CU240BE-2, CU240E-2 and CU250S-2	£26
6SL3254-0AM00-0AA0	SINAMICS Micro Memory Card (MMC) 64MB	£55
6SL3054-4AG00-2AA0	SINAMICS SD card 512 MB	£55
6SL3074-0AA10-0AA0	Extended Safety license (SLS, SSM, SDI) for CU250S-2 in Vector or Servo Mode	£162
6SL3074-7AA04-0AA0	Extended Functions license (EPos) for CU250S-2 in Vector Mode	£104
6SL3054-4AG00-2AA0-Z F01	SD card + Extended Safety license (SLS, SSM, SDI) for CU250S-2 in Vector or Servo Mode	£214
6SL3054-4AG00-2AA0-Z E01	SD card + Extended Functions license (EPos) for CU250S-2 in Vector Mode	£155
6SL3054-4AG00-2AA0-Z F01 E01	SD card + Extended Safety + Extended Functions license (EPos) for CU250S-2 in Vector Mode	£317
6SL3252-0BB00-0AA0	Brake relay (including cable harness for connection to the Power Module)	£54
6SL3252-0BB01-0AA0	Safe Brake Relay (including cable harness for connection to the Power Module)	£82

Control Unit Shield Connection Kits	List Price	
6SL3264-1EA00-0FA0	Shield Connection kit 1 for CU230P-2 Control Units	£12
6SL3264-1EA00-0HA0	Shield Connection kit 2 for CU240B/E-2 Control Units	£11
6SL3264-1EA00-0HB0	Shield Connection kit 3 for CU230P-2 PN and CU240B/E-2 PN Control Units	£16
6SL3264-1EA00-0LA0	Shield Connection kit 4 for CU250S-2 Control Units (all variants)	£16

PM230 Power Module Shield connection kits. Note: Shielding kits for PM230 IP20 FSA to FSC are supplied with the Power Modules	List Price	
6SL3262-1AD00-0DA0	PM230 IP20 - Frame size FSD and FSE	£70
6SL3262-1AF00-0DA0	PM230 IP20 - Frame size FSF	£92
6SL3266-1EA00-0DA0	PM230 IP20 Push Through - Frame size FSA	£47
6SL3266-1EB00-0DA0	PM230 IP20 Push Through - Frame size FSB	£52
6SL3266-1EC00-0DA0	PM230 IP20 Push Through - Frame size FSC	£58

PM240 & PM250 Power Module Shield connection kits	List Price	
6SL3262-1AA00-0BA0	Frame size FSA	£34
6SL3262-1AB00-0DA0	Frame size FSB	£38
6SL3262-1AC00-0DA0	Frame size FSC	£41
6SL3262-1AD00-0DA0	Frame size FSD and FSE	£70
6SL3262-1AF00-0DA0	Frame size FSF	£92

Push Through Mounting Frames for PM230 IP20 & PM240-2	List Price	
6SL3260-6AA00-0DA0	Push Through Mounting Frame, size FSA	£42
6SL3260-6AB00-0DA0	Push Through Mounting Frame, size FSB	£47
6SL3260-6AC00-0DA0	Push Through Mounting Frame, size FSC	£52

# SINAMICS G110D

Supply Voltage - 380 V... 500 V 3 AC		Power Modules			
Rating	Frame Size	Filtered without Maintenance Switch (isolator)	List Price	Filtered with Maintenance Switch (isolator)	List Price
0.75 kW / 2.3 A	A	6SL3511-OPE17-5AM0	£635	6SL3511-1PE17-5AM0	£692
1.5 kW / 4.3 A	A	6SL3511-OPE21-5AM0	£748	6SL3511-1PE21-5AM0	£804
3.0 kW / 7.7 A	A	6SL3511-OPE23-0AM0	£961	6SL3511-1PE23-0AM0	£1,015
4.0 kW / 10.2 A	B	6SL3511-OPE24-0AM0	£1,126	6SL3511-1PE24-0AM0	£1,182
5.5 kW / 13.2 A	C	6SL3511-OPE25-5AM0	£1,369	6SL3511-1PE25-5AM0	£1,429
7.5 kW / 19.0 A	C	6SL3511-OPE27-5AM0	£1,687	6SL3511-1PE27-5AM0	£1,742

Options	Description	List Price
6SL3255-0AA00-4HA0	IOP Handheld	£282
3RK1922-2BP00	RS232 Interface Cable	POA
6SL3555-0PA00-2AA0	USB Interface Cable	£123
6SL3254-0AM00-0AA0	Micro Memory Card (MMC)	£55
6SL3054-4AG00-2AA0	SINAMICS SD card 512 MB (requires Memory Card Holder)	£55
6SL3555-0PM00-0AA0	Micro Memory Card Holder	£32
6SL3555-0PL00-2AA0	Local / Auto Keyswitch	£95
3RK1922-2BP00	RS232 Interface Cable	POA

Connectors/Cables		List Price
3RK1901-1NR21	AS Interface Cable M12 Branch 1m	POA
3RK1901-1NR22	AS Interface Cable M12 Branch 2m	POA
3RK1902-4CA00-4AA0	M12 Socket (Angled)	POA
3RK1902-4BH15-5AA0	M12 Plug-in cable for Inputs/Outputs 1.5m	POA
3RK1902-4BH50-5AA0	M12 Plug-in cable for Inputs/Outputs 5m	POA
3RK1902-4HC01-5AA0	M12 Plug-in cable for Inputs/Outputs 10m	POA
3RK1902-4BA00-5AA0	M12 Connector (Straight)	POA
3RK1902-4DA00-5AA0	M12 Connector (Angled)	POA
3RK1911-0DB13	Connecting cable prefabricated at one end for Power Supply 1.5m	POA
3RK1911-0DB33	Connecting cable prefabricated at one end for Power Supply 5m	POA
3RK1911-2BE50	Connector Set for Power Supply 2.5mm <sup>2</sup>	POA
3RK1911-2BE10	Connector Set for Power Supply 4mm <sup>2</sup>	POA
3RK1911-2BE30	Connector Set for Power Supply 6mm <sup>2</sup>	POA

Motor cables available on request.

[www.binder-connector.co.uk](http://www.binder-connector.co.uk).

# SINAMICS G120D

PM250D Supply Voltage - 380 V ... 480 V 3 AC		Power Modules			
Rating	Frame Size	Filtered	List Price		
0.75 kW / 2.2 A	A	6SL3525-0PE17-5AA1	£461		
1.5 kW / 4.1 A	A	6SL3525-0PE21-5AA1	£623		
3 kW / 7.7 A	B	6SL3525-0PE23-0AA1	£925		
4 kW / 10.2 A	C	6SL3525-0PE24-0AA1	£1,126		
5.5 kW / 13.2 A	C	6SL3525-0PE25-5AA1	£1,409		
7.5 kW / 19.0 A	C	6SL3525-0PE27-5AA1	£1,737		
Control Units	Description	List Price			
6SL3544-0FB20-1PA0	CU240D-2 DP	£473			
6SL3544-0FB20-1FA0	CU240D-2 PN	£473			
6SL3544-0FB21-1PA0	CU240D-2 DP-F	£594			
6SL3544-0FB21-1FA0	CU240D-2 PN-F	£594			
6SL3544-0FB21-1FB0	CU240D-2 PN-F PP	£741			
6SL3546-0FB21-1PA0	CU250D-2 DP-F	£766			
6SL3546-0FB21-1FA0	CU250D-2 PN-F	£766			
6SL3546-0FB21-1FB0	CU250D-2 PN-F PP	£895			
Options	List Price				
6SL3255-0AA00-4HA0	IOP Handheld	£282			
3RK1922-2BP00	RS232 interface cable for communication with a PC	POA			
6SL3555-0PA00-2AA0	USB Interface Cable	£123			
6SL3254-0AM00-0AA0	Memory Card (MMC)	£55			
6SL3054-4AG00-2AA0	SINAMICS SD card 512 MB (requires Memory Card Holder)	£55			
Supplementary Components					
Profinet Connection Cables and Connectors M12		List Price	7/8" Control Unit Power Cables	List Price	
6XV1870-8AE30	Preassembled Profinet Cable 0.3m	POA	6XV1822-5BE30	Preassembled Cable 0.3m	POA
6XV1870-8AE50	Preassembled Profinet Cable 0.5m	POA	6XV1822-5BE50	Preassembled Cable 0.5m	POA
6XV1870-8AH10	Preassembled Profinet Cable 1.0m	POA	6XV1822-5BH10	Preassembled Cable 1.0m	POA
6XV1870-8AH15	Preassembled Profinet Cable 1.5m	POA	6XV1822-5BH15	Preassembled Cable 1.5m	POA
6XV1870-8AH20	Preassembled Profinet Cable 2m	POA	6XV1822-5BH20	Preassembled Cable 2m	POA
6XV1870-8AH30	Preassembled Profinet Cable 3m	POA	6XV1822-5BH30	Preassembled Cable 3m	POA
6XV1870-8AH50	Preassembled Profinet Cable 5m	POA	6XV1822-5BH50	Preassembled Cable 5m	POA
6XV1870-8AN10	Preassembled Profinet Cable 10m	POA	6XV1822-5BN10	Preassembled Cable 10m	POA
6XV1870-8AN15	Preassembled Profinet Cable 15m	POA	6XV1822-5BN15	Preassembled Cable 15m	POA
6GK1901-0DB20-6AA0	M12 Plug PRO Metal Enclosure - 1 unit	POA	6GK1905-0FA00	7/8" Plastic Enclosure with Pin insert (5 uniuts)unit	POA
6GK1901-0DB20-6AA8	M12 Plug PRO Metal Enclosure - 8 units	POA	6GK1905-0FB00	7/8" Plastic Enclosure with Socket insert (5 uniuts)units	POA
3RK1902-2DA00	M12 Plug PRO Metal Enclosure -1 unit (angled)	POA	6GK1907-0AB10-6AA0	Power Plug PRO for PP units (angled)	POA
6GK1901-1BB10-6AA0	RJ45 PLUG PRO connector	POA			
Profibus Connecting Cables and connectors M12		Conection cable for Digital Inputs and Outputs			
6XV1830-3DE30	Preassembled Profibus Cable 0.3m	POA	3RK1902-4HB15-5AA0	Preassembled Cable 1.5m	POA
6XV1830-3DE50	Preassembled Profibus Cable 0.5m	POA	3RK1902-4HB50-5AA0	Preassembled Cable 5m	POA
6XV1830-3DH10	Preassembled Profibus Cable 1.0m	POA	3RK1902-4HC01-5AA0	Preassembled Cable 10m	POA
6XV1830-3DH15	Preassembled Profibus Cable 1.5m	POA	3RK1902-4BA00-5AA0	M12 Connector Straight	POA
6XV1830-3DH20	Preassembled Profibus Cable 2m	POA	3RK1902-4DA00-5AA0	M12 Connector Angled	POA
6XV1830-3DH30	Preassembled Profibus Cable 3m	POA	Power Connecting Cable for Power Modules		
6XV1830-3DH50	Preassembled Profibus Cable 5m	POA	3RK1911-0DB13	Preassembled Cable 1.5m	POA
6XV1830-3DN10	Preassembled Profibus Cable 10m	POA	3RK1911-0DB33	Preassembled Cable 5m	POA
6XV1830-3DN15	Preassembled Profibus Cable 15m	POA	3RK1911-2BE50	Connector set 2.5mm <sup>2</sup>	POA
6GK1905-0EA00	Profibus M12 Metal Enclosure with Pin insert (5 units)	POA	3RK1911-2BE10	Connector set 4mm <sup>2</sup>	POA
6GK1905-0EA00	Profibus M12 Metal Enclosure with socket insert (5 units)	POA	3RK1911-2BE30	Connector set 6mm <sup>2</sup>	POA

Motor cables available on request.  
[www.binder-connector.co.uk](http://www.binder-connector.co.uk)

# SINAMICS S110

Supply Voltage - 200 V ... 240 V 1 AC		PM340	Power Modules	PM340	Additional Filter to use with Industrial PM340*		
Rating	Frame Size	Industrial	List Price	Filtered #	List Price	Additional Filter	List Price
0.12 kW / 0.9 A	A	6SL3210-1SB11-0UA0	£242	6SL3210-1SB11-0AA0	£278	-	-
0.37 kW / 2.3 A	A	6SL3210-1SB12-3UA0	£278	6SL3210-1SB12-3AA0	£320	-	-
0.75 kW / 3.9 A	A	6SL3210-1SB14-0UA0	£320	6SL3210-1SB14-0AA0	£373	-	-
Supply Voltage - 380 V ... 480 V 3 AC		PM340	Power Modules	PM340	Additional Filter to use with Industrial PM340*		
Rating	Frame Size	Industrial	List Price	Filtered #	List Price	Additional Filter	List Price
0.37 kW / 1.3 A	A	6SL3210-1SE11-3UA0	£263	-	-	6SE6400-2FA00-6AD0	£66
0.55 kW / 1.7 A	A	6SL3210-1SE11-7UA0	£284	-	-	6SE6400-2FA00-6AD0	£66
0.75 kW / 2.2 A	A	6SL3210-1SE12-2UA0	£305	-	-	6SE6400-2FA00-6AD0	£66
1.1 kW / 3.1 A	A	6SL3210-1SE13-1UA0	£347	-	-	6SE6400-2FA00-6AD0	£66
1.5 kW / 4.1 A	A	6SL3210-1SE14-1UA0	£410	-	-	6SE6400-2FA00-6AD0	£66
2.2 kW / 5.9 A	B	6SL3210-1SE16-0UA0	£515	6SL3210-1SE16-0AA0	£604	-	-
3 kW / 7.7 A	B	6SL3210-1SE17-7UA0	£620	6SL3210-1SE17-7AA0	£725	-	-
4 kW / 10.2 A	B	6SL3210-1SE21-0UA0	£725	6SL3210-1SE21-0AA0	£851	-	-
7.5 kW / 18 A	C	6SL3210-1SE21-8UA0	£946	6SL3210-1SE21-8AA0	£1,103	-	-
11 kW / 25 A	C	6SL3210-1SE22-5UA0	£1,261	6SL3210-1SE22-5AA0	£1,471	-	-
15 kW / 32 A	C	6SL3210-1SE23-2UA0	£1,681	6SL3210-1SE23-2AA0	£1,891	-	-
18.5 kW / 38 A	D	6SL3210-1SE23-8UA0	£2,101	6SL3210-1SE23-8AA0	£2,312	-	-
22 kW / 45 A	D	6SL3210-1SE24-5UA0	£2,417	6SL3210-1SE24-5AA0	£2,679	-	-
30 kW / 60 A	D	6SL3210-1SE26-0UA0	£3,047	6SL3210-1SE26-0AA0	£3,362	-	-
37 kW / 75 A	E	6SL3210-1SE27-5UA0	£3,730	6SL3210-1SE27-5AA0	£4,124	-	-
45 kW / 90 A	E	6SL3210-1SE31-0UA0	£4,518	6SL3210-1SE31-0AA0	£4,991	-	-
55 kW / 100 A	F	6SL3210-1SE31-1UA0	£5,201	6SL3210-1SE31-1AA0	£5,726	-	-
75 kW / 145 A	F	6SL3210-1SE31-5UA0	£6,252	6SL3210-1SE31-5AA0	£6,882	-	-
90 kW / 178 A	F	6SL3210-1SE31-8UA0	£7,302	6SL3210-1SE31-8AA0	£8,038	-	-

# EMC filtering generally suitable for 1st environment; additional filter options available on request.

\* Additional unit to be used with the industrial drive.

Control Units	Designation	List Price
6SL3040-0JA01-0AA0	CU305 PN	£535
6SL3040-0JA00-0AA0	CU305 DP	£535
6SL3040-0JA02-0AA0	CU305 CAN	£535

Options	List Price	
6SL3054-4AG00-0AA0	MMC Memory Card - Empty	£54
6SL3054-4EE00-0AA0	MMC Memory Card with Firmware V 4.4	£64
6SL3054-4EE00-0AA0-Z (Z=F01)	MMC Memory Card with Firmware V 4.4 and safety License with extended functions	£224
6SL3074-0AA10-0AA0	Safety License (for separate order)	£160
6SL3055-0AA00-4BA0	Basic Operator Panel 20	£32
6SL3252-0BB01-0AA0	Safe Brake Relay (including cable harness for connection to the power module)	£82

Shield Connection Kits	List Price	
6SL3262-1AA00-0BA0	Frame Size FSA	£34
6SL3262-1AB00-0DA0	Frame Size FSB	£38
6SL3262-1AC00-0DA0	Frame Size FSC	£41
6SL3262-1AD00-0DA0	Frame Size FSD and FSE	£70
6SL3262-1AF00-0DA0	Frame Size FSF	£92

# SINAMICS Accessories

## G120C

Supply Voltage - Three phase 380 ...480V

Rating	Frame Size	Line Reactor	List Price	Output Reactor	List Price	Brake Resistor	List Price
0.55 kW	A	6SL3203-OCE13-2AA0	£57	6SL3202-OAE16-1CA0	£94	6SL3201-OBE14-3AA0	£78
0.75 kW	A	6SL3203-OCE13-2AA0	£57	6SL3202-OAE16-1CA0	£94	6SL3201-OBE14-3AA0	£78
1.1 kW	A	6SL3203-OCE13-2AA0	£57	6SL3202-OAE16-1CA0	£94	6SL3201-OBE14-3AA0	£78
1.5 kW	A	6SL3203-OCE21-0AA0	£77	6SL3202-OAE16-1CA0	£94	6SL3201-OBE14-3AA0	£78
2.2 kW	A	6SL3203-OCE21-0AA0	£77	6SL3202-OAE16-1CA0	£94	6SL3201-OBE21-0AA0	£110
3 kW	A	6SL3203-OCE21-0AA0	£77	6SL3202-OAE18-8CA0	£110	6SL3201-OBE21-0AA0	£110
4 kW	A	6SL3203-OCE21-0AA0	£77	6SL3202-OAE18-8CA0	£110	6SL3201-OBE21-0AA0	£110
5.5 kW	B	6SL3203-OCE21-8AA0	£105	6SL3202-OAE21-8CA0	£150	6SL3201-OBE21-8AA0	£145
7.5 kW	B	6SL3203-OCE21-8AA0	£105	6SL3202-OAE21-8CA0	£150	6SL3201-OBE21-8AA0	£145
11 kW	C	6SL3203-OCE23-8AA0	£138	6SL3202-OAE23-8CA0	£205	6SL3201-OBE23-8AA0	£210
15 kW	C	6SL3203-OCE23-8AA0	£138	6SL3202-OAE23-8CA0	£205	6SL3201-OBE23-8AA0	£210
18.5 kW	C	6SL3203-OCE23-8AA0	£138	6SL3202-OAE23-8CA0	£205	6SL3201-OBE23-8AA0	£210

## G120 PM230 IP55/IP20 and IP20 Push Through #

Supply Voltage - Three phase 380 ...480V

Rating	Frame Size	Line Reactor	List Price	Output Reactor	List Price	Brake Resistor	List Price
0.37 kW	A	N/A	N/A	6SL3202-OAE16-1CA0	£94	N/A	N/A
0.55 kW	A	N/A	N/A	6SL3202-OAE16-1CA0	£94	N/A	N/A
0.75 kW	A	N/A	N/A	6SL3202-OAE16-1CA0	£94	N/A	N/A
1.1 kW	A	N/A	N/A	6SL3202-OAE16-1CA0	£94	N/A	N/A
1.5 kW	A	N/A	N/A	6SL3202-OAE16-1CA0	£94	N/A	N/A
2.2 kW	A	N/A	N/A	6SL3202-OAE16-1CA0	£94	N/A	N/A
3 kW #	A	N/A	N/A	6SL3202-OAE18-8CA0	£110	N/A	N/A
4 kW	B	N/A	N/A	6SL3202-OAE21-8CA0	£150	N/A	N/A
5.5 kW	B	N/A	N/A	6SL3202-OAE21-8CA0	£150	N/A	N/A
7.5 kW #	B	N/A	N/A	6SL3202-OAE21-8CA0	£150	N/A	N/A
11 kW	C	N/A	N/A	6SL3202-OAE23-8CA0	£205	N/A	N/A
15 kW	C	N/A	N/A	6SL3202-OAE23-8CA0	£205	N/A	N/A
18.5 kW #	C	N/A	N/A	6SL3202-OAE23-8CA0	£205	N/A	N/A
22 kW	D	N/A	N/A	6SE6400-3TC03-8DD0	£302	N/A	N/A
30 kW	D	N/A	N/A	6SE6400-3TC05-4DD0	£302	N/A	N/A
37 kW	E	N/A	N/A	6SE6400-3TC08-0ED0	£437	N/A	N/A
45 kW	E	N/A	N/A	6SE6400-3TC07-5ED0	£448	N/A	N/A
55 kW	F	N/A	N/A	6SE6400-3TC14-5FD0	£473	N/A	N/A
75 kW	F	N/A	N/A	6SE6400-3TC15-4FD0	£473	N/A	N/A
90 kW	F	N/A	N/A	6SE6400-3TC14-5FD0	£473	N/A	N/A

## G120 PM240-2 and PM240-2 Push Through #

Supply Voltage - Three phase 380 ...480V

Rating	Frame Size	Line Reactor	List Price	Output Reactor	List Price	Brake Resistor	List Price
0.55 kW	A	6SL3203-OCE13-2AA0	£57	6SL3202-OAE16-1CA0	£94	6SL3201-OBE14-3AA0	£78
0.75 kW	A	6SL3203-OCE13-2AA0	£57	6SL3202-OAE16-1CA0	£94	6SL3201-OBE14-3AA0	£78
1.1 kW	A	6SL3203-OCE13-2AA0	£57	6SL3202-OAE16-1CA0	£94	6SL3201-OBE14-3AA0	£78
1.5 kW	A	6SL3203-OCE21-0AA0	£77	6SL3202-OAE16-1CA0	£94	6SL3201-OBE14-3AA0	£78
2.2 kW	A	6SL3203-OCE21-0AA0	£77	6SL3202-OAE16-1CA0	£94	6SL3201-OBE21-0AA0	£110
3 kW	A	6SL3203-OCE21-0AA0	£77	6SL3202-OAE18-8CA0	£110	6SL3201-OBE21-0AA0	£110

NOTE: HO(CT) - Constant Torque Applications, LO(VT) - Variable Torque Applications. For overload ratings please refer to the catalogue.  
Sine Wave Filters for PM240 / PM250 available on request. \*Use these power ratings for G120 PM250 and S110 PM340.

# SINAMICS Accessories

## Supply Voltage - Single phase 200 ...240V

Rating	Frame Size	Line Reactor S110 PM340 only	List Price			Brake Resistor S110 PM340 only	List Price
0.12 ..0.37kW		6SE6400-3CC00-4AB3	£60	-	-	6SE6400-4BC05-0AA0	£104
0.75 kW		6SE6400-3CC01-0AB3	£60	-	-	6SE6400-4BC05-0AA0	£104

## Supply Voltage - Three phase 380 ...480V

Rating	Frame Size	Line Reactor PM240 & PM340 only	List Price	Output Reactor PM240, PM250, PM340	List Price	Brake Resistor PM240, PM340 only	List Price
0.37 kW	A	6SE6400-3CC00-2AD3	£73	6SE6400-3TC00-4AD2	£123	6SE6400-4BD11-0AA0	£134
0.55 kW	A	6SE6400-3CC00-2AD3	£73	6SE6400-3TC00-4AD2	£123	6SE6400-4BD11-0AA0	£134
0.75 kW	A	6SE6400-3CC00-4AD3	£91	6SE6400-3TC00-4AD2	£123	6SE6400-4BD11-0AA0	£134
1.1 kW	A	6SE6400-3CC00-4AD3	£91	6SE6400-3TC00-4AD2	£123	6SE6400-4BD11-0AA0	£134
1.5 kW	A	6SE6400-3CC00-6AD3	£93	6SE6400-3TC00-4AD2	£123	6SE6400-4BD11-0AA0	£134
2.2 kW	B	6SL3203-0CD21-0AA0	£111	6SL3202-0AE21-0CA0	£133	6SL3201-0BE12-0AA0	£191
3 kW	B	6SL3203-0CD21-0AA0	£111	6SL3202-0AE21-0CA0	£133	6SL3201-0BE12-0AA0	£191
4 kW	B	6SL3203-0CD21-4AA0	£111	6SL3202-0AE21-0CA0	£133	6SL3201-0BE12-0AA0	£191
7.5 kW	C	6SL3203-0CD22-2AA0	£129	6SL3202-0AJ23-2CA0	£153	6SE6400-4BD16-5CA0	£260
11 kW	C	6SL3203-0CD22-2AA0	£129	6SL3202-0AJ23-2CA0	£153	6SE6400-4BD16-5CA0	£260
15 kW	C	6SL3203-0CD23-5AA0	£130	6SL3202-0AJ23-2CA0	£153	6SE6400-4BD16-5CA0	£260
18.5 kW	D	6SL3203-0CJ24-5AA0	£206	6SE6400-3TC05-4DD0	£302	6SE6400-4BD21-2DA0	£326
22 kW	D	6SL3203-0CJ24-5AA0	£206	6SE6400-3TC03-8DD0	£302	6SE6400-4BD21-2DA0	£326
30 kW	D	6SL3203-0CD25-3AA0	£206	6SE6400-3TC05-4DD0	£302	6SE6400-4BD21-2DA0	£326
37 kW	E	6SL3203-0CJ28-6AA0	£291	6SE6400-3TC08-0ED0	£437	6SE6400-4BD22-2EA1	£433
45 kW	E	6SL3203-0CJ28-6AA0	£291	6SE6400-3TC07-5ED0	£448	6SE6400-4BD22-2EA1	£433
55 kW	F	6SE6400-3CC11-2FDO	£320	6SE6400-3TC14-5FDO	£473	6SE6400-4BD24-0FA0	£697
75 kW	F	6SE6400-3CC11-2FDO	£320	6SE6400-3TC15-4FDO	£473	6SE6400-4BD24-0FA0	£697
90 kW	F	6SE6400-3CC11-7FDO	£313	6SE6400-3TC14-5FDO	£473	6SE6400-4BD24-0FA0	£697
110kW	F	6SL3000-OCE32-3AA0	£604	6SL3000-2BE32-1AA0	£1,296	6SE6400-4BD26-0FA0	£874
132kW	F	6SL3000-OCE32-8AA0	£619	6SL3000-2BE32-6AA0	£1,543	6SE6400-4BD26-0FA0	£874
160 kW	GX	6SL3000-OCE33-3AA0	£687	6SL3000-2BE33-2AA0	£1,728	6SL3000-1BE31-3AA0	£1,223
200 kW	GX	6SL3000-OCE35-1AA0	£1,091	6SL3000-2BE33-8AA0	£2,037	6SL3000-1BE32-5AA0	£2,446
250 kW	GX	6SL3000-OCE35-1AA0	£1,091	6SL3000-2BE35-0AA0	£2,654	6SL3000-1BE32-5AA0	£2,446

# SINAMICS Software

6SL3070-0AA00-0AGO	Sizer Configuration Tool	£34
6SL3072-0AA00-0AGO	Starter Commissioning Tool	£28
6SL3072-4CA02-1XGO	StartDrive V12 SP1	£28
6SW1700-5JA00-4AA0	Drives ES Basic V5.5*	£471
Call for part number	Drives ES Simatic	POA
Call for part number	Drives ES PCS7	POA

\* Requires an installation of SIMATIC Step 7 V5.4 minimum.

# MICROMASTER 420

Supply Voltage - 200 V ... 240 V 1 AC		Power Modules			
Rating	Frame Size	Industrial	List Price	Filtered #	List Price
0.12 kW / 0.9 A	A	6SE6420-2UC11-2AA1	£140	6SE6420-2AB11-2AA1	£159
0.25 kW / 1.7 A	A	6SE6420-2UC12-5AA1	£153	6SE6420-2AB12-5AA1	£169
0.37 kW / 2.3 A	A	6SE6420-2UC13-7AA1	£162	6SE6420-2AB13-7AA1	£185
0.55 kW / 3.0 A	A	6SE6420-2UC15-5AA1	£177	6SE6420-2AB15-5AA1	£199
0.75 kW / 3.9 A	A	6SE6420-2UC17-5AA1	£195	6SE6420-2AB17-5AA1	£218
1.1 kW / 5.5 A	B	6SE6420-2UC21-1BA1	£221	6SE6420-2AB21-1BA1	£251
1.5 kW / 7.4 A	B	6SE6420-2UC21-5BA1	£253	6SE6420-2AB21-5BA1	£290
2.2 kW / 10.4 A	B	6SE6420-2UC22-2BA1	£301	6SE6420-2AB22-2BA1	£343
3 kW / 13.6 A	C	6SE6420-2UC23-0CA1	£346	6SE6420-2AB23-0CA1	£400

200 V ... 240 V 3 AC units available on request.

# EMC filtering generally suitable for 1st environment; additional filter options available on request.

Supply Voltage - 380 V... 480 V 3 AC		Power Modules			
Rating	Frame Size	Industrial	List Price	Filtered #	List Price
0.37 kW / 1.2 A	A	6SE6420-2UD13-7AA1	£347	6SE6420-2FA00-6AD0 <sup>1)</sup>	£66
0.55 kW / 1.6 A	A	6SE6420-2UD15-5AA1	£361	6SE6420-2FA00-6AD0 <sup>1)</sup>	£66
0.75 kW / 2.1 A	A	6SE6420-2UD17-5AA1	£377	6SE6420-2FA00-6AD0 <sup>1)</sup>	£66
1.1 kW / 4.0 A	A	6SE6420-2UD21-1AA1	£398	6SE6420-2FA00-6AD0 <sup>1)</sup>	£66
1.5 kW / 4.0 A	A	6SE6420-2UD21-5AA1	£421	6SE6420-2FA00-6AD0 <sup>1)</sup>	£66
2.2 kW / 5.9 A	B	6SE6420-2UD22-2BA1	£474	6SE6420-2AD22-2BA1	£530
3 kW / 7.7 A	B	6SE6420-2UD23-0BA1	£537	6SE6420-2AD23-0BA1	£602
4 kW / 10.2 A	B	6SE6420-2UD24-0BA1	£590	6SE6420-2AD24-0BA1	£662
5.5 kW / 13.6 A	C	6SE6420-2UD25-5CA1	£752	6SE6420-2AD25-5CA1	£843
7.5 kW / 19.0 A	C	6SE6420-2UD27-5CA1	£905	6SE6420-2AD27-5CA1	£1,014
11 kW / 26.0 A	C	6SE6420-2UD31-1CA1	£1,164	6SE6420-2AD31-1CA1	£1,308

<sup>1)</sup> Additional footprint module to be used with the industrial drive.

# EMC filtering generally suitable for 1st environment; additional filter options available on request.

Options		List Price
6SE6400-OBP00-OAA1	BOP - Basic Operator Panel	£33
6SE6400-OAP00-OAA1	AOP - Advanced Operator Panel	£126
6SE6400-1PC00-OAA0	PC - Micromaster Connection Kit	£29
6SE6400-OMD00-OAA0	Multidrop Panel Mounting Kit (for AOP)	£92
6SE6400-OPM00-OAA0	Standard Panel Mounting Kit (for BOP or AOP)	£85
6SE6400-1PB00-OAA0	Profibus Module	£114
6SE6400-1DN00-OAA0	Device Net Module	£114
6SE6400-1CB00-OAA0	Can Bus Module	£114
6SE6400-0GP00-OAA0	Frame Size A Gland Plate	£11
6SE6400-0GP00-OBA0	Frame Size B Gland Plate	£19
6SE6400-0GP00-OCA0	Frame Size C Gland Plate	£28
6SE3072-OAA00-OAGO	Starter Commissioning Tool on DVD	£28

# MICROMASTER 430

Supply Voltage - 380 V... 480 V 3 AC		Power Modules			
Rating	Frame Size	Industrial	List Price	Filtered #	List Price
7.5 kW / 19 A	C	6SE6430-2UD27-5CA0	<b>£984</b>	6SE6430-2AD27-5CA0	<b>£1,210</b>
11 kW / 26 A	C	6SE6430-2UD31-1CA0	<b>£1,174</b>	6SE6430-2AD31-1CA0	<b>£1,329</b>
15 kW / 32 A	C	6SE6430-2UD31-5CA0	<b>£1,473</b>	6SE6430-2AD31-5CA0	<b>£1,658</b>
18.5 kW / 38 A	D	6SE6430-2UD31-8DA0	<b>£1,864</b>	6SE6430-2AD31-8DA0	<b>£2,024</b>
22 kW / 45 A	D	6SE6430-2UD32-2DA0	<b>£2,117</b>	6SE6430-2AD32-2DA0	<b>£2,297</b>
30 kW / 62 A	D	6SE6430-2UD33-0DA0	<b>£2,457</b>	6SE6430-2AD33-0DA0	<b>£2,668</b>
37 kW / 75 A	E	6SE6430-2UD33-7EA0	<b>£3,142</b>	6SE6430-2AD33-7EA0	<b>£3,399</b>
45 kW / 90 A	E	6SE6430-2UD34-5EA0	<b>£3,631</b>	6SE6430-2AD34-5EA0	<b>£3,935</b>
55 kW / 110 A	F	6SE6430-2UD35-5FA0	<b>£4,177</b>	6SE6430-2AD35-5FA0	<b>£4,522</b>
75 kW / 145 A	F	6SE6430-2UD37-5FA0	<b>£4,717</b>	6SE6430-2AD37-5FA0	<b>£5,104</b>
90 kW / 178 A	F	6SE6430-2UD38-8FA0	<b>£5,552</b>	6SE6430-2AD38-8FA0	<b>£6,000</b>
110 kW / 205 A	FX	6SE6430-2UD41-1FA0	<b>£7,148</b>	6SL3000-0BE32-5AA0 <sup>1)</sup>	<b>£1,050</b>
132 kW / 250 A	FX	6SE6430-2UD41-3FA0	<b>£8,266</b>	6SL3000-0BE34-4AA0 <sup>1)</sup>	<b>£1,727</b>
160 kW / 302 A	GX	6SE6430-2UD41-6GA0	<b>£9,291</b>	6SL3000-0BE34-4AA0 <sup>1)</sup>	<b>£1,727</b>
200 kW / 370 A	GX	6SE6430-2UD42-0GA0	<b>£10,496</b>	6SL3000-0BE34-4AA0 <sup>1)</sup>	<b>£1,727</b>
250 kW / 477 A	GX	6SE6430-2UD42-5GA0	<b>£12,314</b>	6SL3000-0BE36-0AA0 <sup>1)</sup>	<b>£1,989</b>

# EMC filtering generally suitable for 1st environment; additional filter options available on request.

<sup>1)</sup> Block mounted module to be used in conjunction with the standard industrial drive.

Options	List Price
6SE6400-0BE00-0AA1	BOP 2 - Basic Operator Panel <b>£33</b>
6SE6400-1PC00-0AA0	PC - Micromaster Connection Kit <b>£29</b>
6SE6400-0PM00-0AA0	Standard Panel Mounting Kit (for BOP or AOP) <b>£85</b>
6SE6400-1PB00-0AA0	Profibus Module <b>£114</b>
6SE6400-1DN00-0AA0	Device Net Module <b>£114</b>
6SE6400-1CB00-0AA0	Can Bus Module <b>£114</b>
6SE3072-0AA00-0AGO	Starter Commissioning Tool on DVD <b>£28</b>

# MICROMASTER 440

Supply Voltage - 200 V... 240 V 1 AC		Power Modules			
Rating	Frame Size	Industrial	List Price	Filtered #	List Price
0.12 kW / 0.9 A	A	6SE6440-2UC11-2AA1	£200	6SE6440-2AB11-2AA1	£224
0.25 kW / 1.7 A	A	6SE6440-2UC12-5AA1	£209	6SE6440-2AB12-5AA1	£238
0.37 kW / 2.3 A	A	6SE6440-2UC13-7AA1	£228	6SE6440-2AB13-7AA1	£260
0.55 kW / 3.0 A	A	6SE6440-2UC15-5AA1	£247	6SE6440-2AB15-5AA1	£281
0.75 kW / 3.9 A	A	6SE6440-2UC17-5AA1	£261	6SE6440-2AB17-5AA1	£296
1.1 kW / 5.5 A	B	6SE6440-2UC21-1BA1	£300	6SE6440-2AB21-1BA1	£339
1.5 kW / 7.4 A	B	6SE6440-2UC21-5BA1	£342	6SE6440-2AB21-5BA1	£385
2.2 kW / 10.4 A	B	6SE6440-2UC22-2BA1	£404	6SE6440-2AB22-2BA1	£453
3 kW / 13.6 A	C	6SE6440-2UC23-0CA1	£470	6SE6440-2AB23-0CA1	£529

200 ...240V 3 AC units on request.

# EMC filtering generally suitable for 1st environment; additional filter options available on request.

Supply Voltage - 380 V... 480 V 3 AC		Power Modules				
Rating	Frame Size	Industrial	List Price	Filtered #	List Price	
0.37 kW / 1.2 A	A	6SE6440-2UD13-7AA1	£427	6SE6400-2FA00-6AD0*	£66	
0.55 kW / 1.7 A	A	6SE6440-2UD15-5AA1	£448	6SE6400-2FA00-6AD0*	£66	
0.75 kW / 2.2 A	A	6SE6440-2UD17-5AA1	£464	6SE6400-2FA00-6AD0*	£66	
1.1 kW / 3.1 A	A	6SE6440-2UD21-1AA1	£494	6SE6400-2FA00-6AD0*	£66	
1.5 kW / 4.4 A	A	6SE6440-2UD21-5AA1	£554	6SE6400-2FA00-6AD0*	£66	
2.2 kW / 5.9 A	B	6SE6440-2UD22-2BA1	£643	6SE6440-2AD22-2BA1	£722	
3 kW / 7.7 A	B	6SE6440-2UD23-0BA1	£722	6SE6440-2AD23-0BA1	£811	
4 kW / 10.2 A	B	6SE6440-2UD24-0BA1	£812	6SE6440-2AD24-0BA1	£913	
LO (VT)	HO (CT)					
7.5 kW / 19 A	5.5 kW / 13.2 A	C	6SE6440-2UD25-5CA1	£996	6SE6440-2AD25-5CA1	£1,118
11 kW / 26 A	7.5 kW / 19.0 A	C	6SE6440-2UD27-5CA1	£1,215	6SE6440-2AD27-5CA1	£1,370
15 kW / 32 A	11 kW / 26.0 A	C	6SE6440-2UD31-1CA1	£1,571	6SE6440-2AD31-1CA1	£1,761
18.5 kW / 38 A	15 kW / 32 A	D	6SE6440-2UD31-5DA1	£1,988	6SE6440-2AD31-5DA1	£2,148
22 kW / 45 A	18.5 kW / 38 A	D	6SE6440-2UD31-8DA1	£2,276	6SE6440-2AD31-8DA1	£2,467
30 kW / 62 A	22 kW / 45 A	D	6SE6440-2UD32-2DA1	£2,652	6SE6440-2AD32-2DA1	£2,863
37 kW / 75 A	30 kW / 62 A	E	6SE6440-2UD33-0EA1	£3,409	6SE6440-2AD33-0EA1	£3,682
45 kW / 90 A	37 kW / 75 A	E	6SE6440-2UD33-7EA1	£3,940	6SE6440-2AD33-7EA1	£4,249
55 kW / 110 A	45 kW / 90 A	F	6SE6440-2UD34-5FA1	£4,553	6SE6440-2AD34-5FA1	£4,918
75 kW / 145 A	55 kW / 110 A	F	6SE6440-2UD35-5FA1	£5,165	6SE6440-2AD35-5FA1	£5,577
90 kW / 278 A	75 kW / 145 A	F	6SE6440-2UD37-5FA1	£6,082	6SE6440-2AD37-5FA1	£6,566
110 kW / 205 A	90 kW / 178 A	FX	6SE6440-2UD38-8FA1	£7,571	6SL3000-0BE32-5AA0*	£1,050
132 kW / 250 A	110 kW / 205 A	FX	6SE6440-2UD41-1FA1	£8,745	6SL3000-0BE34-4AA0*	£1,727
160 kW / 302 A	132 kW / 250 A	GX	6SE6440-2UD41-3GA1	£9,826	6SL3000-0BE34-4AA0*	£1,727
200 kW / 370 A	160 kW / 302 A	GX	6SE6440-2UD41-6GA1	£11,098	6SL3000-0BE34-4AA0*	£1,727
250 kW / 477 A	200 kW / 370 A	GX	6SE6440-2UD42-0GA1	£12,968	6SL3000-0BE36-0AA0*	£1,989

Options	List Price	Options	List Price		
6SE6400-0BP00-0AA1	BOP - Basic Operator Panel	£32	6SE6400-1DN00-0AA0	Device Net Module	£110
6SE6400-0AP00-0AA1	AOP - Advanced Operator Panel	£122	6SE6400-1CB00-0AA0	Can Bus Module	£110
6SE6400-1PC00-0AA0	PC - Micromaster Connection Kit	£28	6SE6400-0GP00-0AA0	Frame Size A Gland Plate	£11
6SE6400-0MD00-0AA0	Multidrop Panel Mounting Kit (for AOP)	£90	6SE6400-0GP00-0BA0	Frame Size B Gland Plate	£18
6SE6400-0PM00-0AA0	Standard Panel Mounting Kit (for BOP or AOP)	£82	6SE6400-0GP00-0CA0	Frame Size C Gland Plate	£27
6SE6400-1PB00-0AA0	Profibus Module	£110	6SL3072-0AA00-0AG0	Starter Commissioning Tool on DVD	£28

# EMC filtering generally suitable for 1st environment; additional filter options available on request.

1\* Additional module to be used in conjunction with the standard industrial drive 2). Block mounted module.

CT = Constant Torque Duty, eg conveyors VT = Variable Torque Duty, fans and centrifugal pumps.

# MICROMASTER Accessories

Supply Voltage - 200 V ... 240 V 1 AC								
Rating	Frame Size	Line Reactor	List Price	Output Reactor	List Price	Brake Resistor (MM440 only)	List Price	
0.12 kW	A	6SE6400-3CC00-4AB3	£60	6SE6400-3TC00-4AD3	£92	6SE6400-4BC05-0AA0	£104	
0.25 kW	A	6SE6400-3CC00-4AB3	£60	6SE6400-3TC00-4AD3	£92	6SE6400-4BC05-0AA0	£104	
0.37 kW	A	6SE6400-3CC01-0AB3	£60	6SE6400-3TC00-4AD3	£92	6SE6400-4BC05-0AA0	£104	
0.55 kW	A	6SE6400-3CC01-0AB3	£60	6SE6400-3TC00-4AD3	£92	6SE6400-4BC05-0AA0	£104	
0.75 kW	A	6SE6400-3CC01-0AB3	£60	6SE6400-3TC00-4AD3	£92	6SE6400-4BC05-0AA0	£104	
1.1 kW	B	6SE6400-3CC02-6BB3	£85	6SE6400-3TC01-0BD3	£129	6SE6400-4BC11-2BA0	£156	
1.5 kW	B	6SE6400-3CC02-6BB3	£85	6SE6400-3TC01-0BD3	£129	6SE6400-4BC11-2BA0	£156	
2.2 kW	B	6SE6400-3CC02-6BB3	£85	6SE6400-3TC01-0BD3	£129	6SE6400-4BC11-2BA0	£156	
3 kW	C	6SE6400-3CC03-5CB3	£86	6SE6400-3TC03-2CD3	£130	6SE6400-4BC12-5CA0	£177	
Supply Voltage - 380 V... 480 V 3 AC								
Rating	Frame Size	Line Reactor	List Price	Output Reactor	List Price	Brake Resistor (MM440 only)	List Price	
0.37 kW	A	6SE6400-3CC00-2AD3	£73	6SE6400-3TC00-4AD2	£123	6SE6400-4BD11-0AA0	£134	
0.55 kW	A	6SE6400-3CC00-2AD3	£73	6SE6400-3TC00-4AD2	£123	6SE6400-4BD11-0AA0	£134	
0.75 kW	A	6SE6400-3CC00-4AD3	£91	6SE6400-3TC00-4AD2	£123	6SE6400-4BD11-0AA0	£134	
1.1 kW	A	6SE6400-3CC00-4AD3	£91	6SE6400-3TC00-4AD2	£123	6SE6400-4BD11-0AA0	£134	
1.5 kW	A	6SE6400-3CC00-6AD3	£93	6SE6400-3TC00-4AD2	£123	6SE6400-4BD11-0AA0	£134	
2.2 kW	B	6SE6400-3CC01-0BD3	£115	6SE6400-3TC01-0BD3	£129	6SE6400-4BD12-0BA0	£189	
3 kW	B	6SE6400-3CC01-0BD3	£115	6SE6400-3TC01-0BD3	£129	6SE6400-4BD12-0BA0	£189	
4 kW	B	6SE6400-3CC01-4BD3	£115	6SE6400-3TC01-0BD3	£129	6SE6400-4BD12-0BA0	£189	
LO (VT)	HO (CT)							
7.5 kW	5.5 kW	C	6SE6400-3CC02-2CD3	£134	6SE6400-3TC03-2CD3	£130	6SE6400-4BD16-5CA0 <sup>1)</sup>	£260
11 kW	7.5 kW	C	6SE6400-3CC02-2CD3	£134	6SE6400-3TC03-2CD3	£130	6SE6400-4BD16-5CA0 <sup>1)</sup>	£260
15 kW	11 kW	C	6SE6400-3CC03-5CD3	£135	6SE6400-3TC03-2CD3	£130	6SE6400-4BD16-5CA0 <sup>1)</sup>	£260
18.5 kW	15 kW	D	6SE6400-3CC04-4DD0	£214	6SE6400-3TC05-4DD0 <sup>1)</sup>	£302	6SE6400-4BD21-2DA0 <sup>1)</sup>	£326
22 kW	18.5 kW	D	6SE6400-3CC04-4DD0	£214	6SE6400-3TC03-8DD0 <sup>1)</sup>	£302	6SE6400-4BD21-2DA0 <sup>1)</sup>	£326
30 kW	22 kW	D	6SE6400-3CC05-2DD0	£214	6SE6400-3TC05-4DD0 <sup>1)</sup>	£302	6SE6400-4BD21-2DA0 <sup>1)</sup>	£326
37 kW	30 kW	E	6SE6400-3CC08-3ED0	£303	6SE6400-3TC08-0ED0 <sup>1)</sup>	£437	6SE6400-4BD22-2EA1 <sup>1)</sup>	£433
45 kW	37 kW	E	6SE6400-3CC08-3ED0	£303	6SE6400-3TC07-5ED0 <sup>1)</sup>	£448	6SE6400-4BD22-2EA1 <sup>1)</sup>	£433
55 kW	45 kW	F	6SE6400-3CC11-2FDO <sup>1)</sup>	£320	6SE6400-3TC14-5FDO <sup>1)</sup>	£473	6SE6400-4BD24-0FA0 <sup>1)</sup>	£697
75 kW	55 kW	F	6SE6400-3CC11-2FDO <sup>1)</sup>	£320	6SE6400-3TC15-4FDO <sup>1)</sup>	£473	6SE6400-4BD24-0FA0 <sup>1)</sup>	£697
90 kW	75 kW	F	6SE6400-3CC11-7FDO <sup>1)</sup>	£313	6SE6400-3TC14-5FDO <sup>1)</sup>	£473	6SE6400-4BD24-0FA0 <sup>1)</sup>	£697
110 kW	90 kW	FX	6SL3000-OCE32-3AA0 <sup>1)</sup>	£604	6SL3000-2BE32-1AA0 <sup>1)</sup>	£1,296	ON APPLICATION	
132 kW	110 kW	FX	6SL3000-OCE32-8AA0 <sup>1)</sup>	£619	6SL3000-3BE32-6AA0 <sup>1)</sup>	£1,543	ON APPLICATION	
160 kW	132 kW	GX	6SL3000-OCE33-3AA0 <sup>1)</sup>	£687	6SL3000-3BE33-2AA0 <sup>1)</sup>	£1,728	ON APPLICATION	
200 kW	160 kW	GX	6SL3000-OCE35-1AA0 <sup>1)</sup>	£1,091	6SL3000-2BE35-8AA0 <sup>1)</sup>	£2,037	ON APPLICATION	
250 kW	200 kW	GX	6SL3000-OCE35-1AA0 <sup>1)</sup>	£1,091	6SL3000-2BE35-0AA0 <sup>1)</sup>	£2,654	ON APPLICATION	

NOTE: HO(CT) - Constant Torque Applications, LO(VT) - Variable Torque Applications. For overload ratings please refer to the catalogue.

<sup>1)</sup> Block mounted.