SIEMENS 5¹¹¹



Variable Speed Drive for pumps and fans

SINAMICS G120P

- Power range: 0.37 kW to 75 kW (IP20) / 90 kW (IP55)
- Voltage range: 3AC 380...480 V
- Standard with RS485: /USS, Modbus/RTU, BACnetMS/TP, P1
- Optional control units with PROFIBUS DP, CANopen
- 4 internal PID controllers
- High degree of protection IP55/UL Type 12, and for control cabinet IP20
- With EMC filter class A (C2) or class B (C1)
- Modular design of power and control electronics

Use

Variable speed drive for energy-optimized speed control of pumps and fan motors in building control applications:

- Speed control of supply and extract air fans in air handling units based on demand
- · Speed control of circulating pumps in HVAC plants based on demand
- Increased pressure and control of pump levels

Specially designed functions for pumps and fans are already implemented:

- · Automatic restart
 - application resumes start up after a power outage or error
- · Flying restart
 - switch on drive while motor is running
- ECO mode

Energy savings by automatically adapting the motor current to prevailing load conditions, for uses with less dynamics and a constant speed setpoint

Motor staging

One VSD is used to control up to 4 motors depending on the flow rate, for example, for strongly varying volumetric flows

- Hibernation
 - automatic sleep mode to optimize control and energy use
- 4 integrated PID controllers
 - to control drive speed based on pressure, temperature, flow rates, levels, air quality, or other process variables
- Essential Service Mode (ESM) for emergency operation special inverter operating mode that increase availability of the drive system in the event of fire
- · Multi-zone controller
 - Controls a zone for pressure or temperature with up to 3 sensors, or
 - Control of two independent zones with one sensor each
- Bypass mode
 - automatic switchover to mains operation upon reaching the setpoint
- Freely programmable 7-day digital time switches (3)
- · Real-time clock
 - for process control based on time, e.g. temperature setpoint at night for heating control
- Freely programmable logical function blocks
 - for mapping simple PLC-like functionality
- Motor temperature monitoring with either temperature sensor or contact via PTC, KTY and ThermoClick Sensor)
 - Overcurrent protection
 - Load torque monitoring
 - Overvoltage protection (Vdc_max controller)
- Braking function using DC braking

Types

Basic design

SINAMICS G120P refers to the combination of the SINAMICS Control Unit CU230P-2 BT with the SINAMICS Power Module PM230 matched to the specific pumps and fans as well as operator panel or blanking cover. The Operator panel or blanking cover is not part of delivery and must be ordered separately.

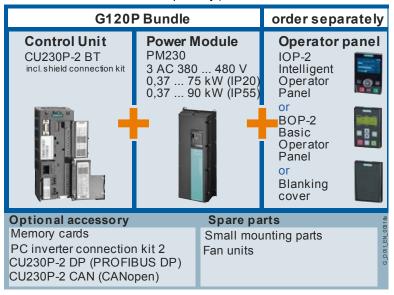
The CU230P-2 is available in the following versions:

- CU230P-2 BT with RS485 interface for USS, Modbus RTU and BACnet MS/TP.
 Included in the delivery of the G120P bundle.
- CU230P-2 CAN with CANopen interface. Order separately.
- CU230P-2 DP with PROFIBUS DP interface. Order separately.

The Power Module PM230 is available in the following versions:

- IP55 with integrated EMC filter A (C2) or integrated EMC filter B (C1)
- IP20 with integrated EMC filter A (C2) or unfiltered with external EMC filter B (C1)

• IP20 with integrated filter A, or unfiltered, in Push-Through version (not available as a bundle. Must be ordered seperately.)



Note

Type key G120P bundle IP55 IP20 versions with frame size A-C contain a screening kit for the Power Module PM230. For frame size D-F the screening kit must be ordered separately, if necessary.

| Order no. / MLFB | Туре | Filter | Protection IP55 | Size | Power (kW) |
|--------------------|----------------|--------|--------------------|------|------------|
| 6SL3200-6AM11-3AH0 | G120P-0.37/35A | A | IP55 | Α | 0.37 |
| 6SL3200-6AM11-7AH0 | G120P-0.55/35A | Α | IP55 | A | 0.55 |
| 6SL3200-6AM12-2AH0 | G120P-0.75/35A | A | IP55 | A | 0.75 |
| 6SL3200-6AM13-1AH0 | G120P-1.1/35A | A | IP55 | A | 1.1 |
| 6SL3200-6AM14-1AH0 | G120P-1.5/35A | Α | IP55 | Α | 1.5 |
| 6SL3200-6AM15-8AH0 | G120P-2.2/35A | А | IP55 | Α | 2.2 |
| 6SL3200-6AM17-7AH0 | G120P-3/35A | А | IP55 | Α | 3 |
| 6SL3200-6AM21-0AH0 | G120P-4/35A | А | IP55 | В | 4 |
| 6SL3200-6AM21-3AH0 | G120P-5.5/35A | Α | IP55 | В | 5.5 |
| 6SL3200-6AM21-8AH0 | G120P-7.5/35A | Α | IP55 | В | 7.5 |
| 6SL3200-6AM22-6AH0 | G120P-11/35A | Α | IP55 | С | 11 |
| 6SL3200-6AM23-2AH0 | G120P-15/35A | Α | IP55 | С | 15 |
| 6SL3200-6AM23-8AH0 | G120P-18.5/35A | Α | IP55 | С | 18.5 |
| 6SL3200-6AM24-5AH0 | G120P-22/35A | Α | IP55 | D | 22 |
| 6SL3200-6AM26-0AH0 | G120P-30/35A | Α | IP55 | D | 30 |
| 6SL3200-6AM27-5AH0 | G120P-37/35A | Α | IP55 | Е | 37 |
| 6SL3200-6AM28-8AH0 | G120P-45/35A | Α | IP55 | Е | 45 |
| 6SL3200-6AM31-1AH0 | G120P-55/35A | Α | IP55 | F | 55 |
| 6SL3200-6AM31-4AH0 | G120P-75/35A | Α | IP55 | F | 75 |
| 6SL3200-6AM31-7AH0 | G120P-90/35A | Α | IP55 | F | 90 |
| 6SL3200-6AM11-3BH0 | G120P-0.37/35B | В | IP55 | Α | 0.37 |
| 6SL3200-6AM11-7BH0 | G120P-0.55/35B | В | IP55 | Α | 0.55 |
| 6SL3200-6AM12-2BH0 | G120P-0.75/35B | В | IP55 | Α | 0.75 |
| 6SL3200-6AM13-1BH0 | G120P-1.1/35B | В | IP55 | Α | 1.1 |
| 6SL3200-6AM14-1BH0 | G120P-1.5/35B | В | IP55 | Α | 1.5 |
| 6SL3200-6AM15-8BH0 | G120P-2.2/35B | В | IP55 | Α | 2.2 |
| 6SL3200-6AM17-7BH0 | G120P-3/35B | В | IP55 | Α | 3 |
| 6SL3200-6AM21-0BH0 | G120P-4/35B | В | IP55 | В | 4 |
| 6SL3200-6AM21-3BH0 | G120P-5.5/35B | В | IP55 | В | 5.5 |

| 6SL3200-6AM21-8BH0 | G120P-7.5/35B | В | IP55 | В | 7.5 |
|--------------------|----------------|---|------|---|------|
| 6SL3200-6AM22-6BH0 | G120P-11/35B | В | IP55 | С | 11 |
| 6SL3200-6AM23-2BH0 | G120P-15/35B | В | IP55 | С | 15 |
| 6SL3200-6AM23-8BH0 | G120P-18.5/35B | В | IP55 | D | 18.5 |
| 6SL3200-6AM24-5BH0 | G120P-22/35B | В | IP55 | D | 22 |
| 6SL3200-6AM26-0BH0 | G120P-30/35B | В | IP55 | D | 30 |
| 6SL3200-6AM27-5BH0 | G120P-37/35B | В | IP55 | Е | 37 |
| 6SL3200-6AM28-8BH0 | G120P-45/35B | В | IP55 | Е | 45 |
| 6SL3200-6AM31-1BH0 | G120P-55/35B | В | IP55 | F | 55 |
| 6SL3200-6AM31-4BH0 | G120P-75/35B | В | IP55 | F | 75 |
| 6SL3200-6AM31-7BH0 | G120P-90/35B | В | IP55 | F | 90 |

Type key G120P bundle IP20

| | | Filter | Protection | | |
|--------------------|----------------|--------|------------|------|------------|
| Order no. / MLFB | Туре | class | IP20 | Size | Power (kW) |
| 6SL3200-6AE11-3AH0 | G120P-0.37/32A | A | IP20 | Α | 0,37 |
| 6SL3200-6AE11-7AH0 | G120P-0.55/32A | Α | IP20 | Α | 0,55 |
| 6SL3200-6AE12-2AH0 | G120P-0.75/32A | Α | IP20 | Α | 0,75 |
| 6SL3200-6AE13-1AH0 | G120P-1.1/32A | Α | IP20 | Α | 1,1 |
| 6SL3200-6AE14-1AH0 | G120P-1.5/32A | Α | IP20 | Α | 1,5 |
| 6SL3200-6AE15-8AH0 | G120P-2.2/32A | Α | IP20 | Α | 2,2 |
| 6SL3200-6AE17-7AH0 | G120P-3/32A | Α | IP20 | Α | 3 |
| 6SL3200-6AE21-0AH0 | G120P-4/32A | Α | IP20 | В | 4 |
| 6SL3200-6AE21-3AH0 | G120P-5.5/32A | Α | IP20 | В | 5,5 |
| 6SL3200-6AE21-8AH0 | G120P-7.5/32A | Α | IP20 | В | 7,5 |
| 6SL3200-6AE22-6AH0 | G120P-11/32A | Α | IP20 | С | 11 |
| 6SL3200-6AE23-2AH0 | G120P-15/32A | Α | IP20 | С | 15 |
| 6SL3200-6AE23-8AH0 | G120P-18.5/32A | Α | IP20 | С | 18,5 |
| 6SL3200-6AE24-5AH0 | G120P-22/32A | Α | IP20 | D | 22 |
| 6SL3200-6AE26-0AH0 | G120P-30/32A | Α | IP20 | D | 30 |
| 6SL3200-6AE27-5AH0 | G120P-37/32A | Α | IP20 | E | 37 |
| 6SL3200-6AE28-8AH0 | G120P-45/32A | Α | IP20 | Е | 45 |
| 6SL3200-6AE31-1AH0 | G120P-55/32A | Α | IP20 | F | 55 |
| 6SL3200-6AE31-4AH0 | G120P-75/32A | Α | IP20 | F | 75 |
| 6SL3200-6AE11-3BH0 | G120P-0.37/32B | В | IP20 | Α | 0,37 |
| 6SL3200-6AE11-7BH0 | G120P-0.55/32B | В | IP20 | Α | 0,55 |
| 6SL3200-6AE12-2BH0 | G120P-0.75/32B | В | IP20 | Α | 0,75 |
| 6SL3200-6AE13-1BH0 | G120P-1.1/32B | В | IP20 | Α | 1,1 |
| 6SL3200-6AE14-1BH0 | G120P-1.5/32B | В | IP20 | Α | 1,5 |
| 6SL3200-6AE15-8BH0 | G120P-2.2/32B | В | IP20 | Α | 2,2 |
| 6SL3200-6AE17-7BH0 | G120P-3/32B | В | IP20 | Α | 3 |
| 6SL3200-6AE21-0BH0 | G120P-4/32B | В | IP20 | В | 4 |
| 6SL3200-6AE21-3BH0 | G120P-5.5/32B | В | IP20 | В | 5,5 |
| 6SL3200-6AE21-8BH0 | G120P-7.5/32B | В | IP20 | В | 7,5 |
| 6SL3200-6AE22-6BH0 | G120P-11/32B | В | IP20 | С | 11 |
| 6SL3200-6AE23-2BH0 | G120P-15/32B | В | IP20 | С | 15 |
| 6SL3200-6AE23-8BH0 | G120P-18.5/32B | В | IP20 | С | 18,5 |
| 6SL3200-6AE24-5BH0 | G120P-22/32B | В | IP20 | D | 22 |
| 6SL3200-6AE26-0BH0 | G120P-30/32B | В | IP20 | D | 30 |
| 6SL3200-6AE27-5BH0 | G120P-37/32B | В | IP20 | E | 37 |
| 6SL3200-6AE28-8BH0 | G120P-45/32B | В | IP20 | E | 45 |
| 6SL3200-6AE31-1BH0 | G120P-55/32B | В | IP20 | F | 55 |
| 6SL3200-6AE31-4BH0 | G120P-75/32B | В | IP20 | F | 75 |

| Description | Order no. / MLFB | Type (ASN) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|
| SINAMICS G120P IP20 / IP55, Basic Operator Panel (BOP-2) | 6SL3255-6AA00-4CA0 | G120P-BOP-2 |
| SINAMICS G120P IP20 / IP54, Intelligent Operator Panel (IOP-2) | 6SL3255-6AA00-4JA1 | G120P-IOP-2 |
| SINAMICS G120P blanking cover for POWER MODULE PM230 class IP55 / UL Type12 | 6SL3256-6BA00-0AA0 | G120P-BCover |
| SINAMICS G120P Door kit (IP54) / BOP-2 (IP55), KIT UL TYP12 for Intelligent Operator Panel IOP-2 and Basic Operator Panel BOP-2 consisting of: Seals, mounting materials, and connection cable (5M) | 6SL3256-6AP00-0JA0 | G120P-Door-Kit |
| SINAMICS G120 PC-inverter connection kit-2 includes start-up software on DVD and 3M USB cable for CONTROL UNITS CU230P-2 | 6SL3255-0AA00-2CA0 | G120P-PC-Kit |
| SINAMICS G120P MMC Parameter memory card | 6SL3254-0AM00-0AA0 | G120P-MMC-Card |
| STARTER Parameter Software for Sinamics and Micromaster Drives. VERSION V4.3.2 DVD for Windows 2000 SP4, Windows Server 2003 SP2, Windows XP Prof SP3, Windows 7 Prof. (32 BIT) and Windows 7 Ultimate (32 BIT). German, English, French, Italian and Spanish. Free updates for license holders available online. | 6SL3072-0AA00-0AG0 | G120P-Starter |
| TX OPEN module for Desigo Integration | S55661-J100 | TXI1.OPEN |
| Control Unit CU230P-2 DP with PROFIBUS DP. I/O: 6 DI, 3 DO, 4 AI, 2 AO, 1 Motor Temperature Sensor Input, 2 PSU-OUT(10V DC, 24V DC), 1 PSU-IN (24V DC), USB- and MMC-interface | 6SL3243-0BB30-1PA2 | CU230P-2 DP |
| Control Unit CU230P-2 CAN with CANOPEN. I/O: 6 DI, 3 DO, 4 AI, 2 AO, 1 Motor Temperature Sensor Input, 2 PSU-OUT(10V DC, 24V DC), 1 PSU-IN (24V DC), USB-and MMC-interface | 6SL3243-0BB30-1CA2 | CU230P-2 CAN |
| SINAMICS G120P PM230, IP20 Screening Termination KIT for FSD and FSE. Includes: Screening plate and fixing elements | 6SL3262-1AD00-0DA0 | G120P-Screen- FSDE |
| SINAMICS G120P PM230, IP20 Screening Termination KIT for FSF. Includes: Screening plate and fixing elements | 6SL3262-1AF00-0DA0 | G120P-Screen-FSF |
| Air guide sheet PM230 IP55 FSA | 6SL3266-7SA00-0MA0 | G120P-AirSheet- FSA |
| Air guide sheet PM230 IP55 FSB | 6SL3266-7SB00-0MA0 | G120P-AirSheet- FSB |
| Air guide sheet PM230 IP55 FSC | 6SL3266-7SC00-0MA0 | G120P-AirSheet- FSC |
| Installation kit PM230 IP55 FSA | 6SL3266-7LA00-0MA0 | G120P-Ins-Kit-FSA |
| Installation kit PM230 IP55 FSB | 6SL3266-7LB00-0MA0 | G120P-Ins-Kit-FSB |
| Installation kit PM230 IP55 FSC | 6SL3266-7LC00-0MA0 | G120P-Ins-Kit-FSC |
| Installation kit PM230 IP55 FSD | 6SL3266-7LD00-0MA0 | G120P-Ins-Kit-FSD |
| Installation kit PM230 IP55 FSE | 6SL3266-7LE00-0MA0 | G120P-Ins-Kit-FSE |
| Installation kit PM230 IP55 FSF | 6SL3266-7LF00-0MA0 | G120P-Ins-Kit-FSF |

Rear panels for IP55 installation of frame sizes FSA-FSC

To ensure the cooling capacity you must install IP55 devices of frame sizes FSA-FSC directly on a flat wall. If this is not possible, for instance in the case of suspended installation on a busbar system, you need to attach an air guide sheet that can be ordered separately.

This sheet is cut to the correct size and has the corresponding bore holes to enable you to screw it directly onto the rear of the Power Module.

Please refer to the table above for information on ordering this part.

Installation sets for IP55 devices

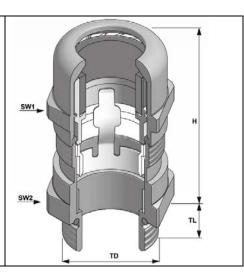
You can order a matching installation kit for every frame size FSA-FSF. With this kit you can be sure that you have the appropriate installation hardware for correct cabling. The kits comprise polyamide cable glands with separate rubber seals for a large clamping range for the power cable and the control cables, as well as a high-quality EMC cable gland for the motor cable that enables the shield to be fed through into the enclosure. This is necessary in order to satisfy the EMV C1 standard. Cable lugs for attaching the equipotential bonding, and end sleeves or cable lugs (from FSD and higher) are also included for the motor and power cables.

The kits comprise the following elements:

| | FSA | FSB | FSC | FSD | FSE | FSF |
|-----------------------|-----------------------------|-----------------------------|----------------------------|----------------------------|---------------------------------|----------------------------|
| EMC cable glands | 1 unit M20x1.5 | 1 unit M25x1.5 | 1 unit M32x1.5 | 1 unit M40x1.5 | 1 unit M50x1.5 | 1 unit M63x1.5 |
| Brass motor cable | | | | | | |
| incl. EMC locknut | | | | | | |
| Cable gland | 1 unit M20x1.5 | 1 unit M25x1.5 | 1 unit M32x1.5 | 1 unit M40x1.5 | 1unit M50x1.5 | 1 unit M63x1.5 |
| Polyamide power | Clamping range | Clamping range | Clamping range | Clamping range | Clamping range | Clamping range |
| cable incl. locknut | 5-12mm | 8-17mm | 11-21mm | 16-8mm | 21-38mm | 27-44mm |
| Cable gland | 3 units M20x1.5 | 3 units M20x1.5 | 3 units M20x1.5 | 4 units M20x1.5 | 4 units M20x1.5 | 4 units M20x1.5 |
| Polyamide control | Clamping range | Clamping range | Clamping range | Clamping range | Clamping range | Clamping range |
| cables incl. locknut | 5-12mm | 5-12mm | 5-12mm | 5-12mm | 5-12mm | 5-12mm |
| Cable lug for | 1 unit Ø10mm ² | 1 unit Ø10mm ² | 1 unit Ø10mm ² | 1 unit | 1 unit | 1 unit |
| equipotential bonding | 1 unit Ø16mm ² | 1 unit Ø16mm ² | 1 unit Ø16mm ² | Ø16mm ² | \varnothing 16mm ² | Ø16mm ² |
| End sleeves | 8 units Ø1mm ² | 8 units Ø2.5mm ² | 8 units Ø6mm² | 1 | 1 | 1 |
| Power & motor cable | 8 units Ø1.5mm ² | 8 units Ø4mm ² | 8 units Ø10mm ² | | | |
| acc. to DIN 46228 T 1 | 8 units Ø2.5mm ² | 8 units Ø6mm ² | 8 units Ø16mm ² | | | |
| Cable lugs | 1 | 1 | 1 | 8 units Ø10mm ² | 8 units Ø25mm ² | 8 units Ø70mm ² |
| Power & motor cable | | | | 8 units Ø16mm ² | 8 units Ø35mm² | 8 units Ø95mm ² |
| | | | | 8 units Ø25mm ² | 8 units Ø50mm ² | 8 units |
| | | | | 8 units Ø35mm ² | 8 units Ø16mm ² | Ø120mm ² |

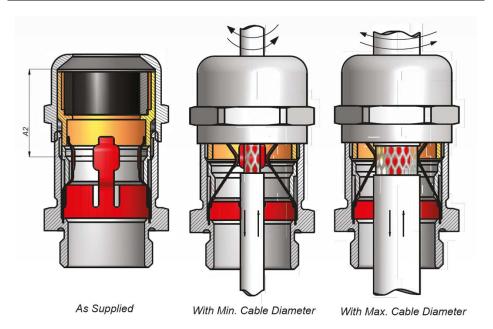
EMC cable gland

The EMC cable gland of the fourth generation enables simple cable infeed on both sides as well as good (radial and axial) alignment of the cable without damaging the braid.



| Size | TL | Clamping range | Shield diam. | Н | Width A/F 1 (SW 1) | Width A/F 2 (SW 2) |
|-----------|------|----------------|--------------|------|-----------------------|-----------------------|
| | (mm) | min/max (mm) | min/max (mm) | (mm) | (mm) | (mm) |
| M20 x 1.5 | 8.0 | 7.5 - 14 | 5.5 - 11.5 | 38 | 24 | 24 |
| M25 x 1.5 | 8.0 | 10 - 18 | 7 - 14 | 42 | 30 | 30 |
| M32 x 1.5 | 9.0 | 16 - 25 | 12 - 20 | 50 | 40 | 40 |
| M40 x 1.5 | 9.0 | 22 - 32 | 18 - 27 | 57 | 50 | 50 |

| M50 x 1.5 | 9.0 | 30 - 38 | 26 - 34 | 67 | 58 | 60 |
|-----------|------|---------|---------|----|----|----|
| M63 x 1.5 | 10.0 | 37 - 53 | 33 - 49 | 72 | 75 | 75 |



| Description | Order no. / MLFB | Type (ASN) |
|-----------------------------------------------------------------------------------------|--------------------|-------------------------|
| Control Unit CU230P-2 BT with USS, MODBUS RTU, | 6SL3243-6BB30-1HA3 | CU230P-2 BT |
| BACNET MS/TP. I/O: 6 DI, 3 DO, 4 AI, 2 A0, 1 Motor | | |
| Temperature Sensor Input, 2 PSU-OUT(10V DC, 24V | | |
| DC), 1 PSU-IN (24V DC), USB- and MMC interface. | | |
| SINAMICS G120 CU screening termination KIT 1 | 6SL3264-1EA00-0FA0 | G120P-CUScreen |
| includes screening plate and fixing elements for | | |
| CONTROL UNITS CU230P-2 | | |
| SINAMICS G120P PM230, IP20 Screening Termination | 6SL3266-1EA00-0KA0 | G120P-Screen-FSA |
| KIT for FSA. Includes: Screening plate and fixing | | |
| elements | | |
| SINAMICS G120P PM230, IP20 Screening Termination | 6SL3266-1EB00-0KA0 | G120P-Screen-FSB |
| KIT for FSB. Includes: Screening plate and fixing | | |
| elements | | |
| SINAMICS G120P PM230, IP20 Screening Termination | 6SL3266-1EC00-0KA0 | G120P-Screen-FSC |
| KIT for FSC. Includes: Screening plate and fixing | | |
| elements | | |
| SINAMICS G120P Small mounting parts for POWER | 6SL3200-0SK02-0AA0 | G120P-MSetFSA- |
| MODUL PM230 IP55 / UL Type12 FSA | | IP55 |
| SINAMICS G120P Small mounting parts for POWER | 6SL3200-0SK03-0AA0 | G120P-MSetFSB- |
| MODUL PM230 IP55 / UL Type12 FSB G120P | | IP55 |
| SINAMICS G120P Small mounting parts for POWER | 6SL3200-0SK04-0AA0 | G120P-MSetFSC- |
| MODUL PM230 IP55 / UL Type12 FSC G120P | | IP55 |
| SINAMICS G120P Small mounting parts for POWER | 6SL3200-0SK05-0AA0 | G120P-MSetFSD- |
| MODUL PM230 IP55 / UL Type12 FSD G120P | | IP55 |
| SINAMICS G120P Small mounting parts for POWER | 6SL3200-0SK06-0AA0 | G120P-MSetFSE- |
| MODUL PM230 IP55 / UL Type12 FSE G120P | | IP55 |
| SINAMICS G120P Small mounting parts for POWER | 6SL3200-0SK07-0AA0 | G120P-MSetFSF- |
| MODUL PM230 IP55 / UL Type12 FSF G120P | | IP55 |
| External fan unit for PM230 IP20 and IP55/UL Type12 FSA and PM2x0-2 Push-Through FSA | 6SL3200-0SF21-0AA0 | G120P-FExtFSA |
| External fan unit for PM230 IP20 and IP55/UL Type12 FSA and PM2x0-2 Push-Through FSB | 6SL3200-0SF22-0AA0 | G120P-FExtFSB |
| External fan unit for PM230 IP20 and IP55/UL Type12 FSA and PM2x0-2 Push-Through FSC | 6SL3200-0SF23-0AA0 | G120P-FExtFSC |
| External fan unit for PM230 IP20 FSD and FSE | 6SL3200-0SF05-0AA0 | G120P-FExtFSDE- IP20 |
| External fan unit for PM230 IP20 FSF | 6SL3200-0SF08-0AA0 | G120P-FExtFSF- IP20 |
| Internal fan unit for PM230 IP55/UL Type12 FSA, FSB and FSC | 6SL3200-0SF31-0AA0 | G120P-FIntFSAC- IP55 |
| External fan unit for PM230 IP55/UL Type12 FSD and FSE | 6SL3200-0SF24-0AA0 | G120P-FExtFSDE- IP55 |
| External fan unit for PM230 IP55/UL Type12 FSF | 6SL3200-0SF26-0AA0 | G120P-FExtFSF- IP55 |
| Internal fan unit for PM230 IP55/UL Type12 FSD, FSE and FSF | 6SL3200-0SF32-0AA0 | G120P-FIntFSDF- IP55 |

Software

A Licence for the use of the commissioning software STARTER is part of every G120P BT Bundle. You can find the most recent version here www.siemens.com/starter. STARTER is also included in the SINAMCIS G120P PC-inverter connection KIT-2, or can be ordered separately. See Accessories.

Technical design

Connections and interfaces

- Field bus interfaces for Control Unit CU230P-2 supporting
 - RS485/USS, Modbus/RTU, BACnetMS/TP, P1 (standard delivery)
 - PROFIBUS DP
 - CANopen
- 2 x LG-Ni1000-/Pt1000 direct connection of temperature sensors
- · 230-V relay for direct control of auxiliary equipment
- Isolated digital inputs with separate voltage classification to prevent erroneous voltage
- Isolated analog inputs for EMC-compliant design without the need for additional components

Energy efficiency

- · Optimized inverter topology
 - Limits for harmonic currents and THD compliant as per IEC/EN 61000-3-12 without the need for additional measures (Rsce ≥ 120)
 - Reduced line harmonic distortions
 - No reactors → less weight and small installation space requirements
 - Lower apparent power → smaller cable cross-sections
- Implemented energy-savings functions. See Functions.

User friendly

The following functions and tools ensure a high-level of user-friendliness:

- Simply "integrated" application-specific wizards for the IOP-2 (Intelligent Operator Panel)
- Clear-text scripts for integration with the STARTER commissioning tool for more complex applications
- Operator unit with clear-text display and comprehensive diagnostics (IOP-2)
- SINAMICS Micro Memory Card (MMC)/SIMATIC Memory Card (SD card) for saving parameter settings, cloning, and on-site commissioning
- Plug-in terminal block mains and motor lines for frame sizes A C

Desigo integration

G120P is compatible with Desigo systems as of version 4.1 and can be integrated via Modbus and USS.

Product documentation

Getting Started

Design, installation, commissioning and troubleshooting the SINIAMICS G120P

Variable speed drive.

Document no: A5E03653438A AB

Getting Started Guide Hardware IP55 Quick guide with dimensions and design and installation notes.

Document no: A5E02923634A

Getting Started Guide Hardware IP20

Quick guide with dimensions and design and installation notes.

Document no: A5E03460238A

Hardware Installation Manual IP55

Guide with all the information needed to install, mount, connect, and service SINAMICS

G120P systems.

Document no: A5E02923635A AB

Hardware Installation Manual IP20 Guide with all the information needed to install, mount, connect, and service SINAMICS

G120P systems.

Document no: A5E03448282B AA

Application examples

Application examples and useful tips for using the Variable speed drive are available at:

http://support.automation.siemens.com/WW/view/en/20208582/136000

General product information

Detailed information and support tools for the Variable speed drive are available at:

http://www.siemens.com/g120p

Operating Instructions Control-Unit Guide for installers, commissioners, and operators on control unit CU230P-2

Document no: A5E02430659B AD

Parameter manual

control unit

Guide with list information including parameters and error codes.

Document no: A5E02297932B AE

Desigo Information on commissioning and integrating into Desigo systems including parameter

ettings

Document no: CM110576

PICS SINAMICS BACnet Protocol Implementation Conformance Statement

Document no: CM2Y5111

Data sheet: system components

Data sheet with general information on the supplemental system components IOP-2,

BOP-2, and the blanking cover Document no.: CM1N5116en

Notes

Engineering

The SIZER software supports users during engineering with comprehensive physical and technical background information.

www.siemens.com/sizer

Installation

- · For use without control cabinet, i.e. wall mounting
 - IP55 for use with blanking cover or BOP-2
 - IP54 for use with IOP-2
- IP20 when used with a control cabinet

Commissioning

The following tools allow for quick commissioning without expert knowledge:

- STARTER software tool with graphical masks for standard applications www.siemens.com/starter
- Application-specific wizards (IOP-2)
- User-defined parameter lists, with reduced, self-selected number of parameters
- · Simple, on-site commissioning using handheld variants
- Commissioning in series using the cloning function with the IOP-2 or MMC card
- Commissioning without documentation thanks to the integrated help function (IOP-2)

Operation

The control unit has two LEDs, RDY (Ready) and BE (bus error) to indicate inverter status with continuous red or green or flashing LEDs.

Maintenance

With the G120P variable speed drive the power module can be replaced without recommissioning the unit. The modular design means that only defective, individual components need to be replaced during a repair and not the whole drive.

G120P is maintenance friendly. The fans are checked and replaced as needed every approx. 40,000 hours of operation.

Technical data

| Power rating (low overload LO) | 0.37 90 kW |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 3 AC 380 480 V ±10 % |
| | 4763 Hz |
| Overload capability Frame Size A - C | 1.5x rated output current (150 %) for 3 s every 300 s |
| (* * * * * * * * * * * * * * * * * * * | 1.1x rated output current (110 %) for 57 s every 300 s |
| Overload capability Frame Size D - F (low overload LO) | 1.1x rated output current (110 %) for 60 s every 300 s |
| | 1.3166 A (IP55) |
| · | 1.3135 A (IP20) |
| Rated output current | 1.3178 A (IP55) 1.3145 A (IP20) |
| Operating temperature | 0 °C to 60 °C at reduced power (see Factors that reduce power) |
| Relative humidity | < 95 % RH, non-condensing |
| | 0650 Hz |
| | |
| Pulse frequency | 4 kHz (Default) up to 16 kHz The pulse frequency can be changed manually in 2 |
| 011. 6 | kHz steps- |
| | 4, parameterizable |
| | 15, programmable |
| Digital inputs and outputs | • 6 DI, 3 DO, 4 AI, 2 AO |
| | 1 x KTY/PTC/ThermoClick sensor |
| | 2 x PSU-out (DC 10 V, DC 24 V)1 x PSU-in (DC 24 V) |
| | · |
| Vibration stress | |
| Transport ¹⁾ to EN 60721-3-2 | Class 2M3 |
| Operation Test value to EN 60068-2-6 | class 3M2 |
| Shock stress Transport 1) to EN 60721 3 2 | Class 2M3 |
| All devices and componentsOperation | Class 3M2 |
| Test values as per EN 60068-2-27 sizes A to F | |
| Drata etian algae | Class I (with protective conductor eveters) and |
| | Class I (with protective conductor system) and Class III (PELV) |
| Protection from physical contact to EN 61800-5-1 | When properly used |
| Permissible ambient or coolant temperature (air) during operation for network-side power components and power modules | |
| | 0 40 °C (32 104 °F) without |
| | Derating |
| (low overload 20) | > 40 60 °C with derating (see Factors that |
| | reduce power) |
| High overload | • • |
| • | 0 50 °C (32 122 °F) without derating |
| (iligii overload (10) | > 50 60 °C with derating (see Factors that reduce power) |
| Permissible ambient or coolant temperature (air) | with CU230P-2: 0 60 °C (32 140 °F) |
| • • • • | with IOP-2: 0 50 °C (32 140 °F) |
| 5 1 | · · · · · · · · · · · · · · · · · · · |
| supplemental system components | with BOP-2: 0 50 °C (32 122 °F) with Blanking cover: 0 60 °C (32 140 °F) |
| | (low overload LO) Line supply voltage Line frequency Overload capability Frame Size A - C (low overload LO) Overload capability Frame Size D - F (low overload LO) Rated input current (LO: at 40 °C) Rated output current (LO: at 40 °C) Operating temperature Relative humidity Output frequency Pulse frequency Skip frequency range Fixed frequencies Digital inputs and outputs Vibration stress Transport 1) to EN 60721-3-2 Operation Test value to EN 60068-2-6 Shock stress Transport 1) to EN 60721-3-2 All devices and components Operation Test values as per EN 60068-2-27 sizes A to F Protection class to EN 61800-5-1 Protection from physical contact to EN 61800-5-1 Permissible ambient or coolant temperature (air) |

| Climatic ambient conditions: | |
|------------------------------------------------------------------|---------------------------------------------------|
| Storage ¹⁾ to EN 60721-3-1 | Class 1K3 |
| • | Temperature -25 to +55 °C. |
| Transport ¹⁾ to EN 60721-3-2 | Class 2K4 |
| | Temperature -40 +70 °C, max. |
| | Air humidity 95 % at 40 °C |
| Operation to EN 60721-3-3 | Class 3K3 |
| | Condensing, spray water, and ice formation |
| | are not permitted |
| | (EN 60204, part 1) |
| Environmental class/chemical contaminants: | |
| Storage ¹⁾ to EN 60721-3-1 | Class 1C2 |
| Transport ¹⁾ to EN 60721-3-2 | Class 2C2 |
| Operation to EN 60721-3-3 | Class 3C2 |
| | |
| Organic/biological influences: | |
| • Storage ¹⁾ to EN 60721-3-1 | Class 1B1 |
| Transport ¹⁾ to EN 60721-3-2 | Class 2B1 |
| Operation to EN 60721-3-3 | Class 3B1 |
| | |
| Degree of contamination | 2 |
| to EN 61800-5-1 | |
| | 111 2) 05 111 |
| Compliance with standards | UL ²⁾ , CE, c-tick |
| CE labeling | as per low-voltage directive |
| | 2006/95/EC |
| EMC directive | |
| to EN 61800-3: 2004 | |
| Frame sizes FSA to FSF with integrated mains | Category C2 3) (meets class A as per EN 55011) |
| filter, class A | (este siace / tae per 211 ese : 1) |
| Sizes FSA to FSF with integrated or external | Category C1 3) (meets class B as per EN 55011 for |
| mains filter, class B | interference transmitted through lines) |
| Variable speed electrical drives – Part 3: | EN 61800-3: 2004 |
| EMC product standard including | LIT 0 1000 0. 2007 |
| special test procedures | |
| | EN 61000 2 12: 2011 (Page > 250) |
| Electromagnetic compatibility, part 3-12: | EN 61000-3-12: 2011 (Rsce > 250) |

Norms and standards

Limit values for harmonic currents Packages for transport
 UL approval soon for frame sizes FSD to FSF
 Using shielded motor cable up to 25 m

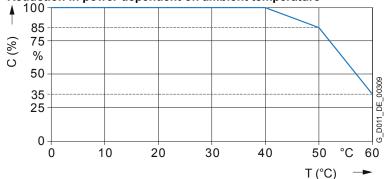
Derating table

| Rate po | wer | Measure | ed output c | urrent in A | | | | |
|---------|-------------|---------|-------------|-------------|--------|--------|--------|--------|
| consum | | | se frequenc | | | | | |
| at 3 AC | 50 Hz 400 V | | | | | | | |
| kW | hp | 4 kHz | 6 kHz | 8 kHz | 10 kHz | 12 kHz | 14 kHz | 16 kHz |
| 0.37 | 0.5 | 1.3 | 1.11 | 0.91 | 0.78 | 0.65 | 0.59 | 0.52 |
| 0.55 | 0.75 | 1.7 | 1.45 | 1.19 | 1.02 | 0.85 | 0.77 | 0.68 |
| 0.75 | 1.0 | 2.2 | 1.87 | 1.54 | 1.32 | 1.10 | 0.99 | 0.88 |
| 1.1 | 1.5 | 3.1 | 2.64 | 2.17 | 1.86 | 1.55 | 1.40 | 1.24 |
| 1.5 | 2.0 | 4.1 | 3.49 | 2.87 | 2.46 | 2.05 | 1.85 | 1.64 |
| 2.2 | 3.0 | 5.9 | 5.02 | 4.13 | 3.54 | 2.95 | 2.66 | 2.36 |
| 3.0 | 4.0 | 7.7 | 6.55 | 5.39 | 4.62 | 3.85 | 3.47 | 3.08 |
| 4.0 | 5.0 | 10.2 | 8.67 | 7.14 | 6.12 | 5.1 | 4.59 | 4.08 |
| 5.5 | 7.5 | 13.2 | 11.22 | 9.24 | 7.92 | 6.6 | 5.94 | 5.28 |
| 7.5 | 10 | 18.0 | 15.3 | 12.6 | 10.8 | 9.0 | 8.1 | 7.2 |
| 11.0 | 15 | 26.0 | 22.1 | 18.2 | 15.6 | 13.0 | 11.7 | 10.4 |
| 15.0 | 20 | 32.0 | 27.2 | 22.4 | 19.2 | 16.0 | 14.4 | 12.8 |
| 18.5 | 25 | 38.0 | 32.3 | 26.6 | 22.8 | 19.0 | 17.1 | 15.2 |
| 22 | 30 | 45.0 | 38.25 | 31.5 | 27.0 | 22.5 | 20.25 | 18.0 |
| 30 | 40 | 60.0 | 52.7 | 43.4 | 37.2 | 31.0 | 27.9 | 24.8 |
| 37 | 50 | 75.0 | 63.75 | 52.5 | 45.0 | 37.5 | 33.75 | 30.0 |
| 45 | 60 | 90.0 | 76.5 | 63.0 | 54.0 | 45.0 | 40.5 | 36.0 |
| 55 | 75 | 110 | 93.5 | 77.0 | _ | _ | _ | _ |
| 75 | 100 | 145 | 123.3 | 101.5 | _ | _ | _ | _ |
| 90 | 125 | 178 | 151.3 | 124.6 | | | | |

¹⁾ Rated power based on measured output current /N. The play for low overload (LO) forms the basis for measured output current /N.

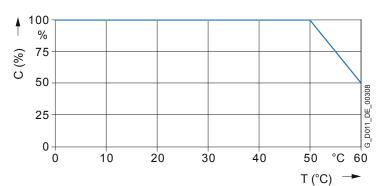
Low overload(LO) for power modules PM230 frame sizes A to F





T (°C) = ambient temperature C (%) = permissible output current

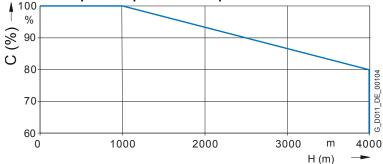
High overload (HO) for power modules PM230 frame sizes A to F



T (°C) = ambient temperature C (%) = permissible output current

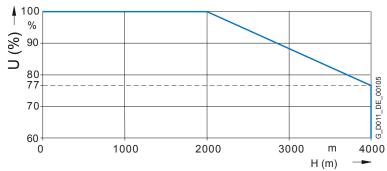
Permissible output current based on installation altitude





H (m) = installation altitude in meters above sea level C (%) = permissible output current

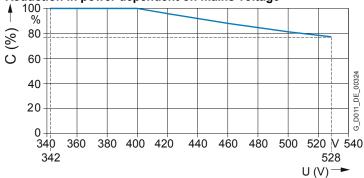
Permissible input voltage based on installation altitude



H (m) = Installation altitude in meters above sea level U (%) = permissible input voltage

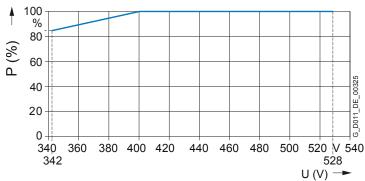
Permissible output current dependent on mains voltage

Reduction in power dependent on mains voltage

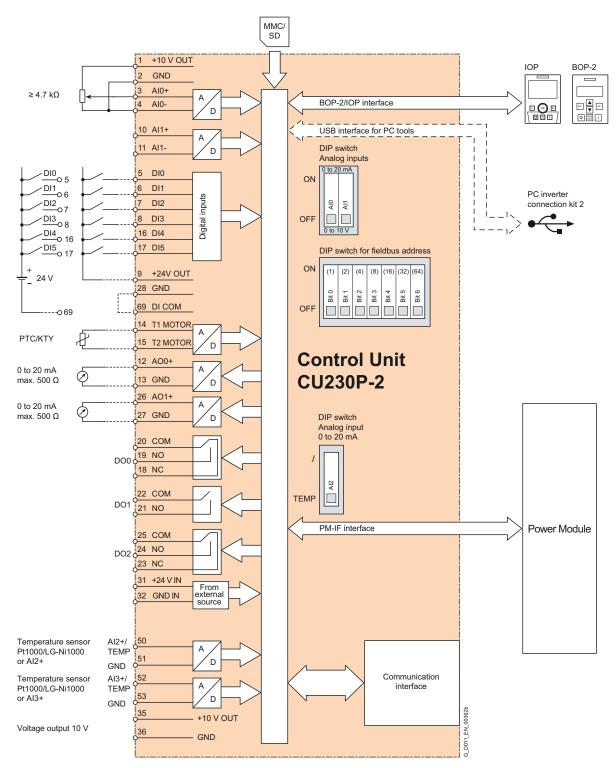


U (V) = mains voltage C (%) = permissible output current

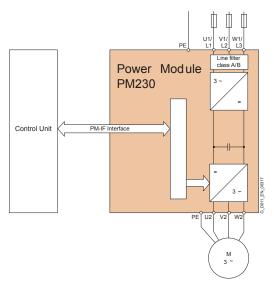
Permissible rated power dependent on mains voltage



U (V) = mains voltage P (%) = permissible rated power

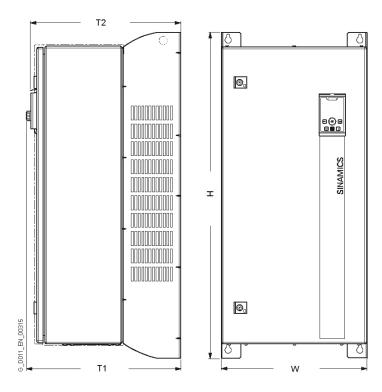


Connection diagram for Control Unit CU230P-2 BT



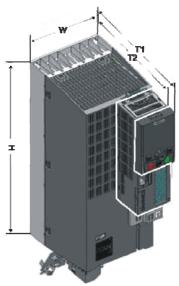
Connection diagram for power module PM230 with integrated mains filter, class A or B

Dimensions for power module PM230, IP55 with integrated mains filter A/B



| | Dimensions in mm | | | | | |
|------------|------------------|-----|------------------|--------------------------------------|---------------------|--|
| Frame size | W | Н | T1 with IOP-2 | T1 with blanking cover / BOP-2 | T2 without cover | |
| Α | 154 | 460 | 264 | 259 | 249 | |
| В | 180 | 540 | 264 | 259 | 249 | |
| С | 230 | 620 | 264 | 259 | 249 | |
| D | 320 | 640 | 344 | 339 | 329 | |
| E | 320 | 751 | 344 | 339 | 329 | |
| F | 410 | 915 | 431 | 426 | 416 | |

Dimensions for power module PM230, IP20



Power Module PM230, IP20 with integrated filter A

| Frame | Dime | nsion | s (mm) | Distances (mm) ²⁾ | | | |
|-------|------|-------|---------------------|--------------------------------------|------------------------|--------------------|----------------------|
| Size | H 1) | w | T1 with IOP-2 | T1 with blanking cover / BOP-2 | T2 without cover | Wasteheat (top) | Cooling air (bottom) |
| FSA | 196 | 73 | 243 | 233 | 223 | 80 | 100 |
| FSB | 292 | 100 | 243 | 233 | 223 | 80 | 100 |
| FSC | 355 | 140 | 243 | 233 | 223 | 80 | 100 |
| FSD | 512 | 275 | 282 | 272 | 262 | 300 | 300 |
| FSE | 635 | 275 | 282 | 272 | 262 | 300 | 300 |
| FSF | 934 | 350 | 394 | 384 | 374 | 350 | 350 |

Power Module PM230, IP20 with external filter B

| Frame | Dime | nsion | s (mm) | Distances (mm) ²⁾ | | | |
|-------|------|-------|---------------------|--------------------------------------|------------------------|-----------------|----------------------|
| Size | H 1) | w | T1 with IOP-2 | T1 with blanking cover / BOP-2 | T2 without cover | Wasteheat (top) | Cooling air (bottom) |
| FSA | 202 | 73 | 308 | 298 | 288 | 80 | 100 |
| FSB | 297 | 100 | 328 | 318 | 308 | 80 | 100 |
| FSC | 359 | 140 | 338 | 328 | 318 | 80 | 100 |
| FSD | 512 | 375 | 282 | 272 | 262 | 300 | 300 |
| FSE | 635 | 385 | 282 | 272 | 262 | 300 | 300 |
| FSF | 934 | 500 | 394 | 384 | 374 | 350 | 350 |

¹⁾ Using a screening termination kit: FSA: + 80 mm; FSB: + 78 mm; FSC: + 77 mm; FSD, FSE, FSF: + 123 mm
²⁾ The Power Modules can be mounted side-by-side. Due to tolerance reasons, we recommend a lateral distance of about 1 mm

For the frame sizes FSA...FSC the external filter B is premounted on the back. For the frame sizes FSD...FSF the filter is mounted separately on the side. The dimensions above represent the entire space required.