

**SIEMENS**

*Ingenuity for life*



# SINAMICS G120X

Master the elements in water  
and wastewater applications

[siemens.com/sinamics-g120x](https://www.siemens.com/sinamics-g120x)

# Harness the forces of nature – for the benefit of all

Water and air are powerful natural forces. Master them – then you can tap on the power that they represent. For a higher quality of life. For a higher degree of sustainability. For a better future. Frequency converters play a significant role when it comes to harnessing the forces of nature for everyone's benefit. The SINAMICS G120X series is the new addition to the SINAMICS family of frequency converters. The series specializes in controlling motors which pump water or propel air – and is extremely impressive thanks to its outstanding simplicity, reliability and efficiency. With SINAMICS G120X, you master the elements. How do you utilize their power?



Protection class IP20

Protection class IP21  
with roof top kit

## Water

Potable water treatment, water transport (pipelines), potable water networks/potable water supplies, irrigation/sprinkling systems, desalination plants

## Wastewater

Wastewater pumping stations, wastewater treatment

## Air

Air injection in wastewater treatment plants and industrial processes







## Optimized for infrastructure applications – masters every challenge

Every sector and every application has its own specific requirements. SINAMICS G120X is optimized for pump and fan applications in the infrastructure sector. With a power range extending from 0.75 kW up to 630 kW, this new series can master each and every challenge. Another plus: SINAMICS G120X can be operated with any motor – but most effectively with synchronous-reluctance motors from Siemens.

# Attractive from every perspective – and fit for the future

The SINAMICS G120X series offers precisely the features that are required when addressing infrastructure applications. You get everything that you need to harness the power of nature – for everyone’s benefit.

## SINAMICS G120X – convincingly simple



- **Simple selection and ordering:** only one order number has to be entered in the Siemens Drive Technology Configurator
- **Simple handling** “out of the box” and ready to switch on
- **Simple integration** into your existing application
- **Simple connectivity** with Modbus RTU<sup>1</sup>, USS<sup>1</sup>, PROFINET, EtherNet/IP, PROFIBUS<sup>1</sup>
- **Simple setup** using the Smart Access Module or the IOP-2 colored, graphical operator panel
- **Simple connection to the cloud** via SINAMICS CONNECT 300
- **Simple maintenance**

## SINAMICS G120X – convincingly reliable and rugged



- **Stable under all network conditions** thanks to an integrated DC link choke
- Complies with **EMC category C2** and C1 optional
- Has an **operating temperature range from -20°C up to +60°C**
- Is **rugged and complies with IP20**. Optional IP21 in UL open type protection against dripping water is available
- Includes **coated circuit boards as standard**, 3C3 resistance to pollutants is available as an optional add-on

All devices in the series are standard and seamless when it comes to supply voltages and networks – and are designed for cost-optimized and resource-friendly operation. The compact design saves space in the electrical cabinet. SINAMICS G120X frequency converters allow for motor cable lengths of up to 150 m (with EMC C2) without requiring an additional output reactor. The integrated STO safety function is certified according to SIL 3.

SINAMICS G120X is also ready for digitalization: Connect to the Cloud using SINAMICS CONNECT 300 to visualize and analyze frequency converter and motor states. With the MindSphere application, Analyze MyDrives, you can also obtain valuable data to optimize your processes as well as your maintenance strategy. The setup is especially simple using the Smart Access Module via WI-FI or the IOP-2 Intelligent Operator Panel, which has been optimized for pump and fan applications.

# SINAMICS G120X – convincingly efficient



## Specific sector functions

- **Deragging** allows for the cleaning of deposits or clogs on the pump's impeller
- **Pipe filling mode** gently fills pipes at the beginning of the control process, to avoid the hammer effect before going into PID controlled operation
- **Cavitation detection** protects pumps and reduces maintenance costs
- **Keep running mode** maximizes operation time and availability without manual intervention
- **Multipump/staging operation** mode allows for the control of several pumps using just one frequency converter

## Energy efficiency

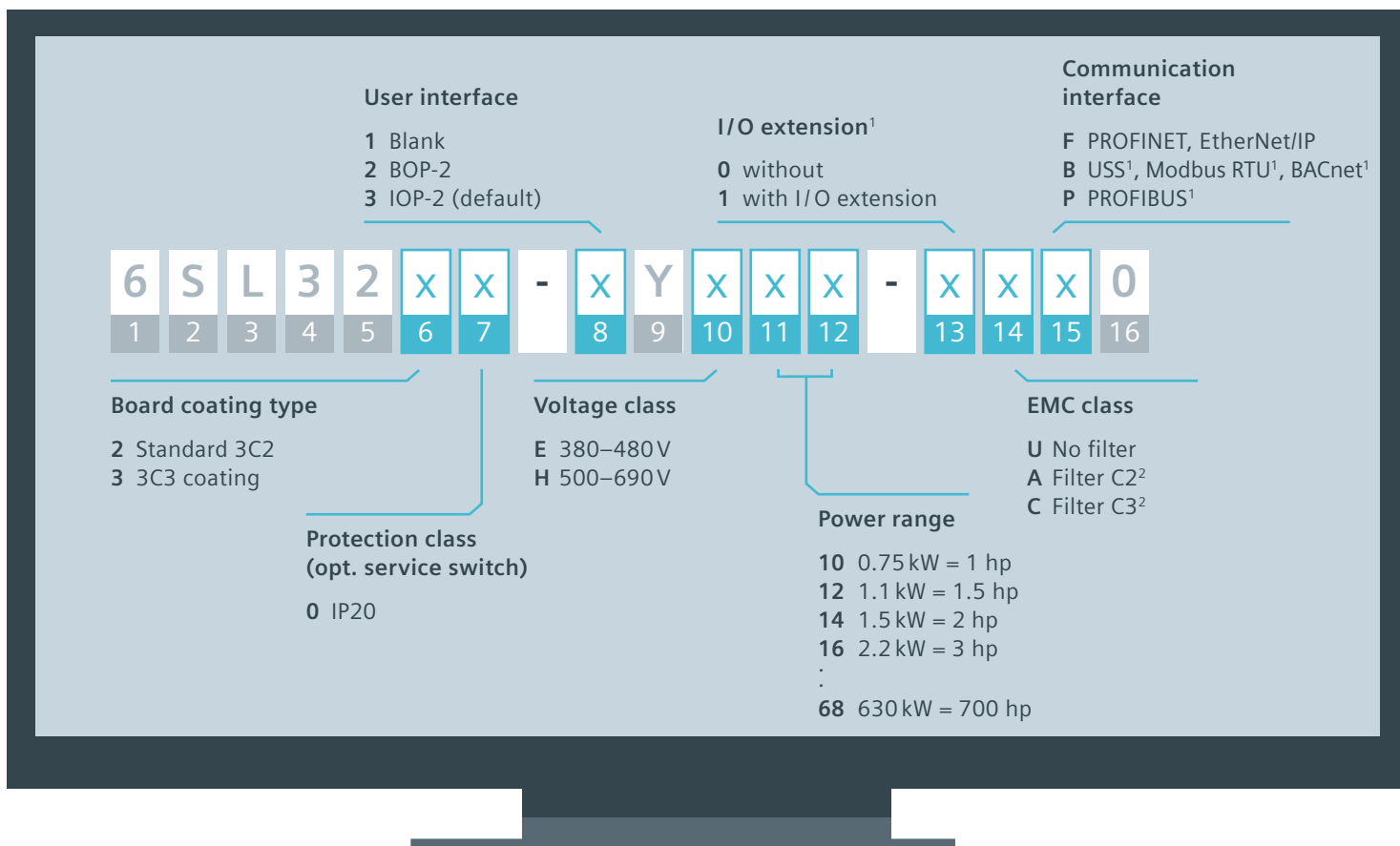
- Has an **efficiency >98%**
- **ECO mode** ensures the best possible performance and lowest losses at low dynamic loads – and optimizes the output power
- **Bypass function** switches the motor between frequency converter and line operation to reduce the energy consumption

- **Energy-saving mode** automatically switches the motor off and on to save energy and reduce wear
- **Flexibility when selecting a motor:** high-efficiency motors can be selected to achieve even more energy efficiency



# Ordering SINAMICS G120X – simpler than ever

You can easily configure and order the entire drive using just one order number with 16 digits. The following structure shows you how you can configure a SINAMICS G120X to specifically address your requirements. Your drive will be delivered pre-assembled and can be commissioned immediately.



## Technical data

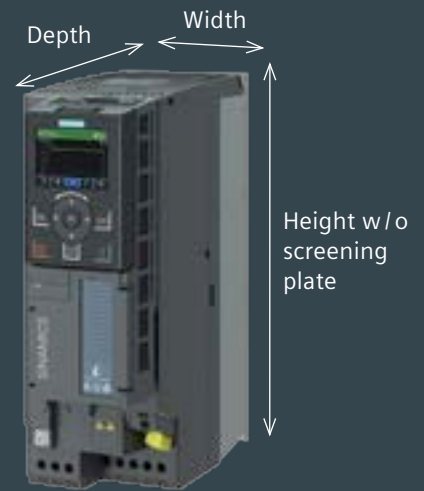
Voltage / power range / frequency	<ul style="list-style-type: none"> <li>· 3AC 380V–480 V, -20% / +10%, 0.75–560 kW / 1–700 hp</li> <li>· 3AC 500V–690 V, -20% / +10%, 3–630 kW / 4–700 hp</li> <li>· 47 / 63 Hz +/-5%</li> </ul>
Overload capability	110% / 60 s (+ power boost); HO <sup>1</sup> : 150% / 60 s
Degree of protection	IP20, UL open type, IP21 (roof top kit)
Ambient temperature	-20 °C to 45 °C (60 °C with derating <sup>2</sup> )
Cooling	Fan, IP20 push through (option)
EMC compliance	EN 61800-3 Category C2 / C3 (with integrated EMC filter), C1 optional <sup>3</sup>
Harmonics	Integrated DC link choke, FSA-G, IEC 61000-3-12
Motor cable length	EMC C2 (FSA-G): 150 m; C3 (FSH-J): 100 m; Unfiltered drive: up to 300 / 450 m
Signal inputs/outputs	<b>6DI</b> , <b>2DO</b> (relays), <b>2AI</b> [0 – 10 V; 0/4 – 20 mA], <b>1AO</b> [0–10 V, 0/4–20 mA], <b>1</b> input for PTC / KTY / Pt1000 motor sensor
I/O extension module <sup>3</sup>	2DI, 2AO, 4DO (relay), 1 x Pt1000, 1 x Ni1000
Control modes	V / f (linear, square law, FCC, ECO), sensorless vector control (SLVC)
Energy functions	ECO mode, hibernation mode, bypass, energy flow calculator
Functions	Fixed speed setpoint, PID controller, specialized P&F functions (deragging mode, pipe filling mode, fire mode, ...)
Safety function	STO SIL 3 HW via terminals
Braking	DC braking unit that can be connected
Communication	PROFINET, PROFIBUS <sup>3</sup> , EtherNet/IP, Modbus RTU <sup>3</sup> , USS <sup>3</sup> , BACnet MS / TP <sup>3</sup> , Wi-Fi via SINAMICS G120 Smart Access Module
Standards	CE, UL, cUL, EAC, KC <sup>4</sup> , C-Tick

<sup>1</sup> HO: High Overload for cyclic duty

<sup>2</sup> The max temperature is 55 °C for PN version drives

<sup>3</sup> In preparation (2019)

<sup>4</sup> Only available in the 400 V version



## Dimensions

Frame size	Power range kW 380–480 V	Width mm (inches)	Height mm (inches)		Depth incl. CU mm (inches)
			w/o screening plate	With screening plate	
FSA	0.75–3	73 (3)	238 (10)	316.5 (125)	209 (8)
FSB	4–7.5	100 (4)	292 (12)	382.5 (15)	209 (8)
FSC	11–15	140 (5)	312 (13)	408 (16)	209 (8)
FSD	18.5–37	200 (8)	472 (19)	707.5 (28)	237 (9)
FSE	45–55	275 (11)	551 (22)	850 (34)	237 (9)
FSF	75–132	305 (12)	709 (28)	966 (38)	357 (14)
FSG	160–250	305 (12)	1000 (40)	1257 (50)	357 (14)
FSH	315–400	548 (22)	1695 (67)	–	393 (16)
FSJ	450–560	801 (32)	1621 (64)	–	393 (16)

FS A–G	Side-by-side mounting is possible without any intermediate space
FS H, J	There should be a distance of 30 mm (1.18") between drives

Additional depth (inches)  
 BOP-2/IOP-2: 9 mm (0.35); SAM: 7 mm (0.28)





## Selection Tool Siemens Drive Technology Configurator

You can also order SINAMICS G120X frequency converters using the Siemens Drive Technology Configurator in the Internet. The configurator supports you when selecting the best product version for your application.

**The address of the Drive Technology Configurator:**

*[siemens.com/dt-configurator](https://www.siemens.com/dt-configurator)*



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