SIEMENS
Ingenuity for life

The perfect fit.

The SINAMICS PERFECT HARMONY GH180 air-cooled drive

siemens.com/sinamics-perfect-harmony-gh180

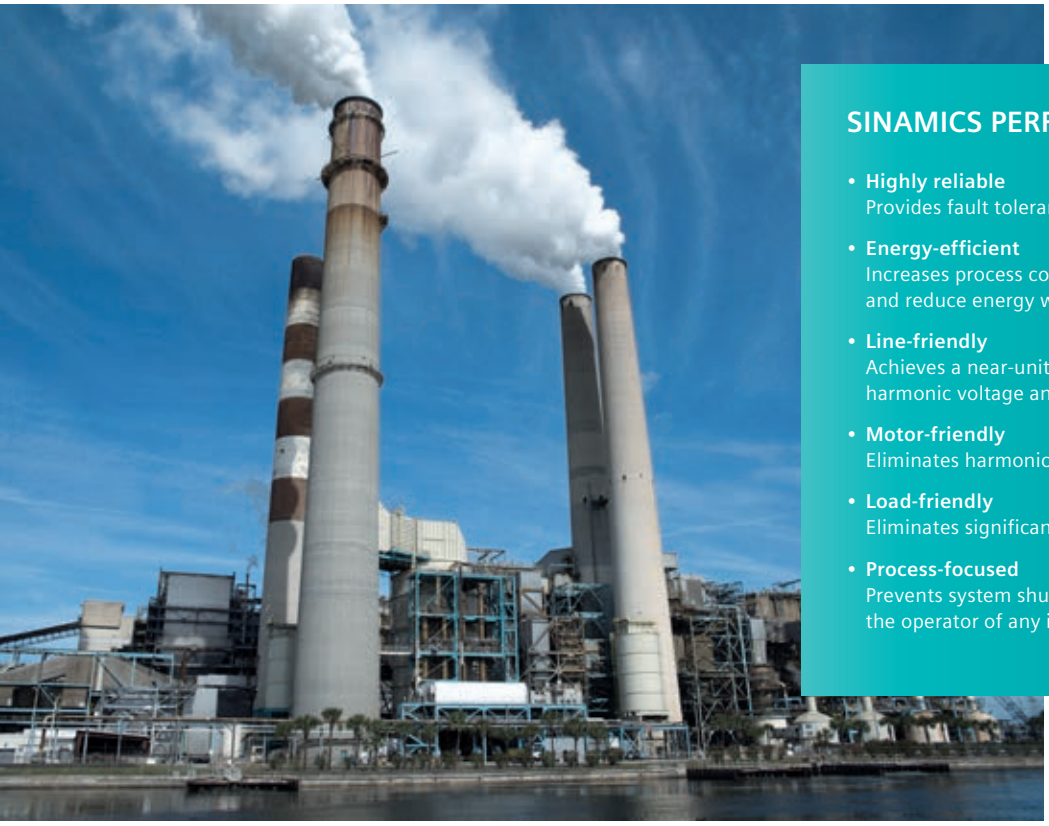
No space left, but still room for reliability.

Operating conditions will never be perfect. Your drives can be.

Improving throughput, increasing efficiency and standardizing solutions is never easy – but essential to be on top of competitive markets and challenging environments. Whether square footage is at a premium or downtime is not an option, reliability is something you just can't do without. And you won't have to. Because Siemens developed a drive to fit perfectly – virtually anywhere.

Highly efficient:
The go-to solution for low power applications.
The new SINAMICS PERFECT HARMONY GH180 air-cooled drive delivers optimal power and protection in a simpler, more compact package than ever.

The unique power cell design reduces maintenance effort and improves availability at the same time. Combined with up to 90% savings on cable costs, you benefit from a significantly lower total cost of ownership over the drive's entire lifecycle. There is no other drive available that offers savings and reliability like the SINAMICS PERFECT HARMONY GH180, making it the ideal solution for low power applications – especially when cable lengths over 200 feet are required. So when you are looking for a retrofit that improves efficiency and process control of you medium-voltage soft starter systems, the SINAMICS PERFECT HARMONY GH180 is your solution of choice.



SINAMICS PERFECT HARMONY GH180 is:

- **Highly reliable**
  Provides fault tolerance via Advanced Cell Bypass
- **Energy-efficient**
  Increases process control to improve throughput and reduce energy waste
- **Line-friendly**
  Achieves a near-unity power factor by eliminating harmonic voltage and current distortion
- **Motor-friendly**
  Eliminates harmonic heating and insulation stress
- **Load-friendly**
  Eliminates significant torque pulsations
- **Process-focused**
  Prevents system shutdown by proactively warning the operator of any issues

Imperfect conditions need perfect solutions.

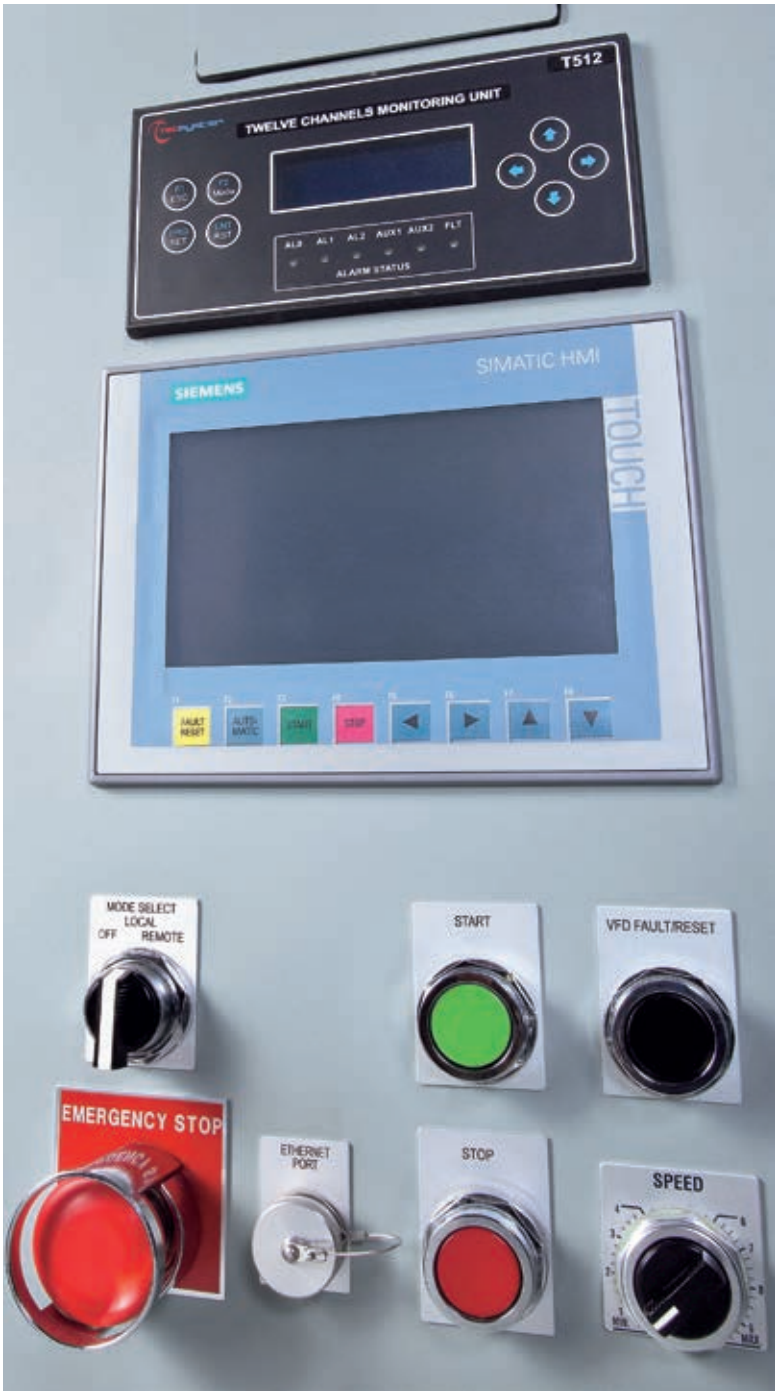
Harsh environments and plants on remote locations have one thing in common: they have to be up and running all of the time. No matter what field of business you're working in, downtime is never an option. Because the competition never sleeps. So even if operation conditions are not perfect, you can make sure that your processes are – with SINAMICS PERFECT HARMONY GH180.

The new SINAMICS PERFECT HARMONY GH180 drive is engineered to maximize productivity and protect your process in a way that other drives can't. The next generation Perfect Harmony drives are designed in compact air-cooled configurations and ready to deliver superior versatility, efficiency and process availability – even for the most demanding of your applications.

The SINAMICS PERFECT HARMONY GH180 drive has been built with reliability in mind thanks to 50+ patented technologies proven to increase the dependability of critical processes. A series cell configuration even allows the drive to withstand failures that would overwhelm conventional drives and shut down the plant process. Moreover, the drive's modularity provides a scalable solution that achieves reliability near 100 percent and 99.99 percent availability. The result: A significant reduction of total cost of ownership over the drive's entire lifecycle.

Reliable, economic, flexible. Your benefits:

- Impressive potential three year pay back on fan and pump applications
- Up to 4% improved efficiency on low power applications when compared to high-low-high solutions
- Incredible flexibility to suit virtually any application
- Fast lead time to meet even the most demanding schedules



Smaller is better. Because size matters.

Compact footprint
Ugrading your drive does not mean giving up critical space. The SINAMICS PERFECT HARMONY GH180 drive fits easily into retrofits and other applications – and makes it the perfect choice whenever space is at a premium.

Fast & simple commissioning
The SINAMICS PERFECT HARMONY GH180 drive is designed to keep things simple with enhanced serviceability and reduced commissioning. In some instances commissioning time is as little as 1–2 days!

Low voltage compatibility
Supporting both 480 V or 600 V input voltages up to 400 A, the SINAMICS PERFECT HARMONY GH180 drive is ideal for new or retrofit applications.

Significant savings
Tremendous savings on cables and conduits make the SINAMICS PERFECT HARMONY GH180 a valuable choice. Even more so, because thanks to infrequent maintenance needs, you will realize noticeable savings on installation and lifetime operating costs.

Ease of use
Simplify your drive: SIMATICS HMI, low weight power cells, front access blowers and new louver design provide unparalleled ease of use.

Energy efficiency
With up to 96.5% energy efficiency through the entire speed range the SINAMICS PERFECT HARMONY GH180 offers exactly the performance you are looking for.

Compatible with any motor type
A perfect match: SINAMICS PERFECT HARMONY GH180 drives are compatible with any motor type including induction, synchronous, permanent magnet, and round rotor motors.

Superior reliability. Perfected for small spaces.

Small power package: SINAMICS PERFECT HARMONY GH180 doesn't need much space. But it delivers a lot: power, reliability, and savings.

Advanced cell bypass

In less than a quarter of a second, the SINAMICS PERFECT HARMONY GH180 drive can bypass multiple failed cells to maintain a balanced output voltage. And even with one cell in bypass, the drive still produces sufficient voltage to allow the process to continue uninterrupted – with virtually unchanged quality of the voltage and waveform.

Clean power input

Easily fulfilled: SINAMICS PERFECT HARMONY drives meet the most stringent IEEE 519-2014 requirements for voltage and current harmonic distortion. An integrated sinusoidal converter not only eliminates the need for harmonic filters, power factor correction capacitors or extra bus capacity, but also protects other online equipment from harmonic disturbances.

High-quality output

Unparalleled performance: No other drive offers a higher-quality waveform output than SINAMICS PERFECT HARMONY. With 21 levels of non-harmonic output voltage, it accommodates any standard motor without requiring additional output or dv/dt filters and provides lowest peak voltage to the motor windings. The result: Extended motor life and not a single compromise when it comes to efficiency and reliability.

Environmental tolerance

Engineered to resist: SINAMICS PERFECT HARMONY are the only drives designed to operate reliably in environments with ambient temperatures ranging from –40° C to +50° C. No other drive can tolerate such a broad range of extreme conditions. An optional PDC allows the drive to withstand even the harshest outdoor conditions, from tropical environments to frozen tundras. To cut a long story short: SINAMICS PERFECT HARMONY GH180 is the ideal drive – no matter where your operations are.

Keep your drive up and running with Lifecycle Services.

Wear and aging processes as a challenge

Even with high-quality products and the industry-leading design of our systems, the probability of failure for industrial equipment that utilizes electronic components increases with age. Furthermore, the combination of demanding operating conditions and taxing environmental conditions (high ambient temperature, dust, dirt, high humidity, etc.) work together to significantly reduce a component's lifetime.

Drive component malfunctions may inflict collateral damage to other parts of the drive and cause failure. This can lead to mission critical process shutdowns that may severely impact on your production, revenues, safety, and the environment.

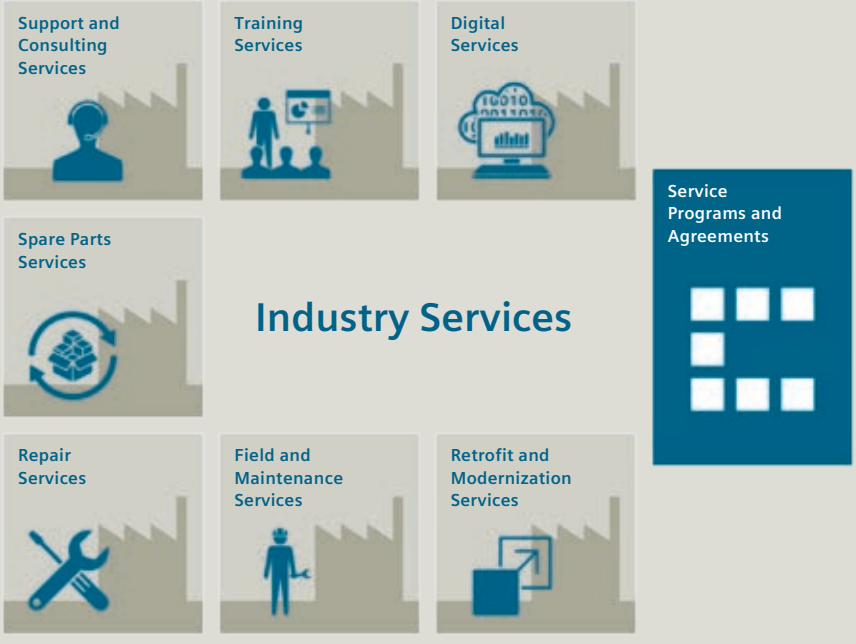
SINAMICS PERFECT HARMONY GH180 Lifecycle Services

With SINAMICS PERFECT HARMONY GH180 Lifecycle Services, Siemens is offering a specially assembled service program to address the requirements of your drive. From tailored spare parts services and preventive maintenance measures to our new digital services, our service experts support you with choosing the right services just when you need them.

All the services can be incorporated into a long-term service contract and are thus optimally tailored to meet your requirements during the lifecycle of your plant.

With SINAMICS PERFECT HARMONY GH180 Lifecycle Services you can benefit from:

- Reduced cost of ownership
- Enhanced equipment reliability
- Optimized maintenance costs
- Reduced downtime
- Improved control over maintenance costs
- Extended equipment lifetime
- Increased safety



The right services, at the right time.

Spare parts packages
Siemens offers not only individual spare parts but also complete spare parts packages which are individually matched to your drive. The scope and contents of the packages are based on our long-term know how and service expertise, and they are put together on the basis of device-specific parameters. If a fault occurs, spare parts do not have to be ordered – they are already on site.

- Increased availability of the drive
- Minimized downtime for repairs

Preventive maintenance
Preventive maintenance agreements are optimally tailored to your SINAMICS PERFECT HARMONY GH180 drive and all maintenance intervals are adapted to your specific operating conditions. This ensures that your drive is inspected, maintained and if necessary refurbished at the right time.

- Maximized availability due to scheduled downtime
- Optimized maintenance costs

Overvoltage protection upgrade
If your system does not have an adequate overvoltage protection – which is required by IEC standards, Siemens provides the opportunity to upgrade your drive with an RC-Snubber filter to limit overvoltage peaks, coming along with switching events and external overvoltages.

- Enhanced protection against overvoltage peaks
- Minimized risk of unscheduled downtimes

Arc detection system upgrade
To limit the consequences of short-circuits caused by arcing faults, Siemens provides the possibility to install an arc detection system in your drive. As soon as an arc occurs, the system automatically initiates the opening of the circuit breaker.

- Minimized risk of a drive damage
- Enhanced response time due to faster detection of arcs

Drive Train Analytics and Managed Diagnostics
With Drive Train Analytics from Siemens, you can collect relevant drive data and analyze/detect faults for your PH drive system, allowing you to react in a timely manner and plan and implement suitable service measures.
By expanding the diagnostic and condition monitoring features with our Managed Diagnostics Services you can also benefit from the long-term expertise of our certified Siemens service experts and thus you can focus on your own business.

- Enhanced transparency due to continuous data collection
- Improved reliability through condition monitoring

More information about SINAMICS PERFECT HARMONY GH180 Lifecycle Services at:

www.siemens.com/industryservices

Technical data at a glance

Efficiency
- Typical power converter: 99%
- Typical total drive system: 96.5%

Input transformer
- Aluminum or copper windings, forced-air cooling

Line supply connection
- Input voltage and voltage tolerance: 380 V to 7.2 kV, ±10%
- Input frequency: 50 or 60 Hz, ±5%
- Input power factor: ≥ 0.95 above 10% load

Motor-side inverter
- Multilevel drive PWM topology
- IGBT power modules

Motor control
- Induction motors
- Synchronous motors
- Permanent magnet motors
- Wound rotor motors

Motor insulation requirement
- All standard motor insulations with no filters

Output torque
- Rated torque (2Q) available from 10 to 167 Hz

Control
- Vector control

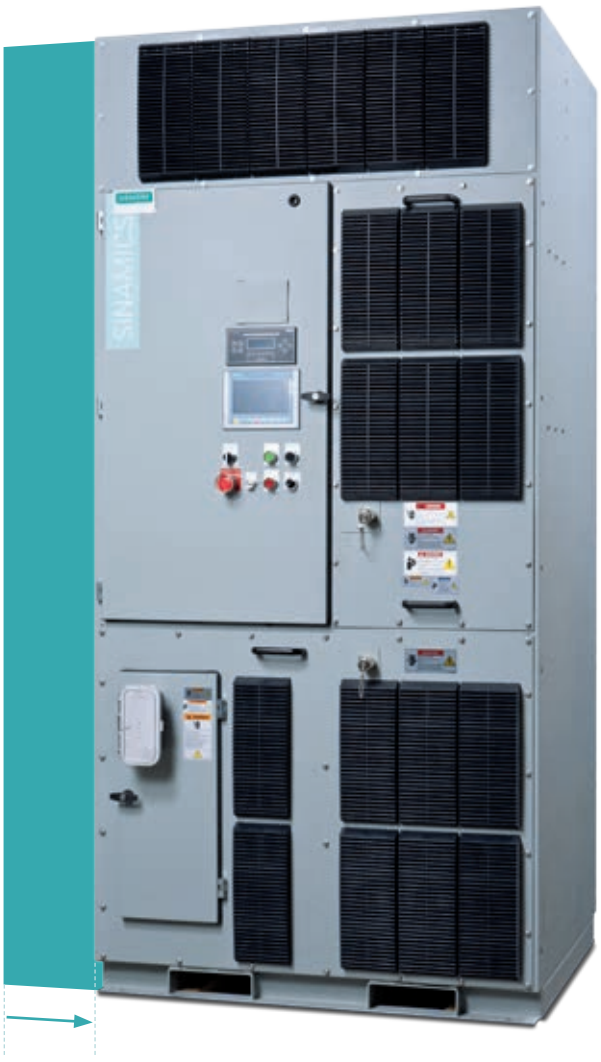
Input current harmonics
- ≤ 5% TDD (total demand distortion)
- Meets or exceeds IEEE-519-2014

Ride-through
- Minimum of five cycles after loss of input medium voltage
- MV without tripping

Output frequency and drift
- 0.5 to 330 Hz, ± 0.5%

Output voltage harmonics (THDi)
- 2.0 to 2.5%

Enclosure
- NEMA 1; IP42 standard



SINAMICS PERFECT HARMONY GH180 air-cooled drive is 20% less than the best competitor

SINAMICS PERFECT HARMONY GH180 air-cooled drive specifications

Cell Current	No. of Cells	Shaft Output**		Height*		Width*		Depth*		Order Number (MLFB)***
A		kW	Hp	in.	mm	in.	mm	in.	mm	
Motor Voltage: 4 kV										
40	9	112	150	102	2590	48	1219	40	1016	6SR5202-0_A31-5__0
40	9	149	200	102	2590	48	1219	40	1016	6SR5202-0_A32-0__0
40	9	224	300	102	2590	48	1219	40	1016	6SR5202-0_A33-0__0
70	9	298	400	102	2590	48	1219	40	1016	6SR5202-0_B34-0__0
70	9	336	450	102	2590	48	1219	40	1016	6SR5202-0_B34-5__0
70	9	373	500	102	2590	48	1219	40	1016	6SR5202-0_B35-0__0
70	9	401	538	102	2590	48	1219	40	1016	6SR5202-0_B36-0__0
Motor Voltage: 3.3 kV										
40	9	112	150	102	2590	48	1219	40	1016	6SR5202-0_A31-5__0
40	9	149	200	102	2590	48	1219	40	1016	6SR5202-0_A32-0__0
40	9	189	254	102	2590	48	1219	40	1016	6SR5202-0_A35-0__0
70	9	224	300	102	2590	48	1219	40	1016	6SR5202-0_B33-0__0
70	9	298	400	102	2590	48	1219	40	1016	6SR5202-0_B34-0__0
70	9	331	444	102	2590	48	1219	40	1016	6SR5202-0_B35-0__0
Motor Voltage: 2.4 kV										
40	9	112	150	102	2590	48	1219	40	1016	6SR5202-6_A31-5__0
40	9	138	184	102	2590	48	1219	40	1016	6SR5202-6_A32-0__0
70	9	149	200	102	2590	48	1219	40	1016	6SR5202-6_B32-0__0
70	9	224	300	102	2590	48	1219	40	1016	6SR5202-6_B33-0__0
70	9	241	323	102	2590	48	1219	40	1016	6SR5202-6_B34-0__0

* Reflects typical output power; motor type or size may affect actual output power.

** Typical output value provided; output power may change based on the type or size of motor.

*** Brackets denote additional digits to be determined based on order detail.

The compact high performance package.

SINAMICS PERFECT HARMONY GH180 air-cooled drive

Compact footprint

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Fast & simple commissioning

A simplified system with enhanced serviceability and reduced commissioning – in some instances commissioning time is as little as 1–2 days!

Low voltage compatibility

Ideal for new or retrofit applications thanks to supported 480 V or 600 V input voltages up to 400 A.

Significant savings

Benefit from tremendous savings are realized on cables and conduit, installation and lifetime operating costs.

Ease of use

Enhancements like SIMATICS HMI, low weight power cells, front access blowers and new louver design to provide unparalleled ease of use.

Energy efficiency

Up to 96.5% energy efficiency through the speed range.

Compatible with any motor type

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