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# SINAMICS S120 Chassis-2 & Cabinet Modules-2

An Introduction

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## **Important information in regards to the product life cycle of SIMOVERT Masterdrive**

**MASTERDRIVES to be discontinued on 30.09.2020**  
**Buy back option supporting MASTERDRIVES retrofit –**  
**The success story is being continued by the SINAMICS drive family**

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Single service enquiry:  
 Tel: 1300 369 515  
 Email: [industryservice.au@siemens.com](mailto:industryservice.au@siemens.com)

**Challenge** 

- MASTERDRIVES to be discontinued on 30.09.2020
- Spare part availability is not ensured to the same extent as before and the pricing is increasing every year

**Solution** 

- Replace MASTERDRIVES in new SINAMICS drive family or have critical spares available
- Siemens service team can help provide end to end service and support for the whole retrofit project

**Customer benefit** 

- Drive SINAMICS is a new series, which provide spare parts to be available
- Buy back option is available to support your MASTERDRIVES retrofit

Or contact your **Siemens Account Manager**. Please advise the quantity and type of MASTERDRIVES.

# Agenda

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# SINAMICS S120 Brief system overview

AC/AC Converter  
for single-  
axis applications

0,55 – 132 kW,  
1AC 240V, 3AC 400V/500-690V  
Blocksize Design



110 – 250 kW  
3AC 400V  
Chassis Design

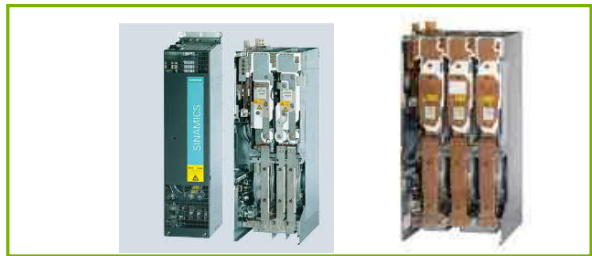


DC/AC Inverter  
(with infeed)  
for multi-axis  
applications

0,9 – 107 kW,  
3AC 400V  
Booksize/Booksize compact



75 – 1200 kW,  
3AC 400V/500 - 690V  
Chassis Design



# SINAMICS S120 – modular drive solution

- All functional units have been implemented as separate components:

Control Units  
CU320-2/  
CU310-2



Infeed units  
BLM/SLM/ALM



Inverter (Motor module)  
Converter (Power module)



Encoder evaluation  
SMC10/20/30



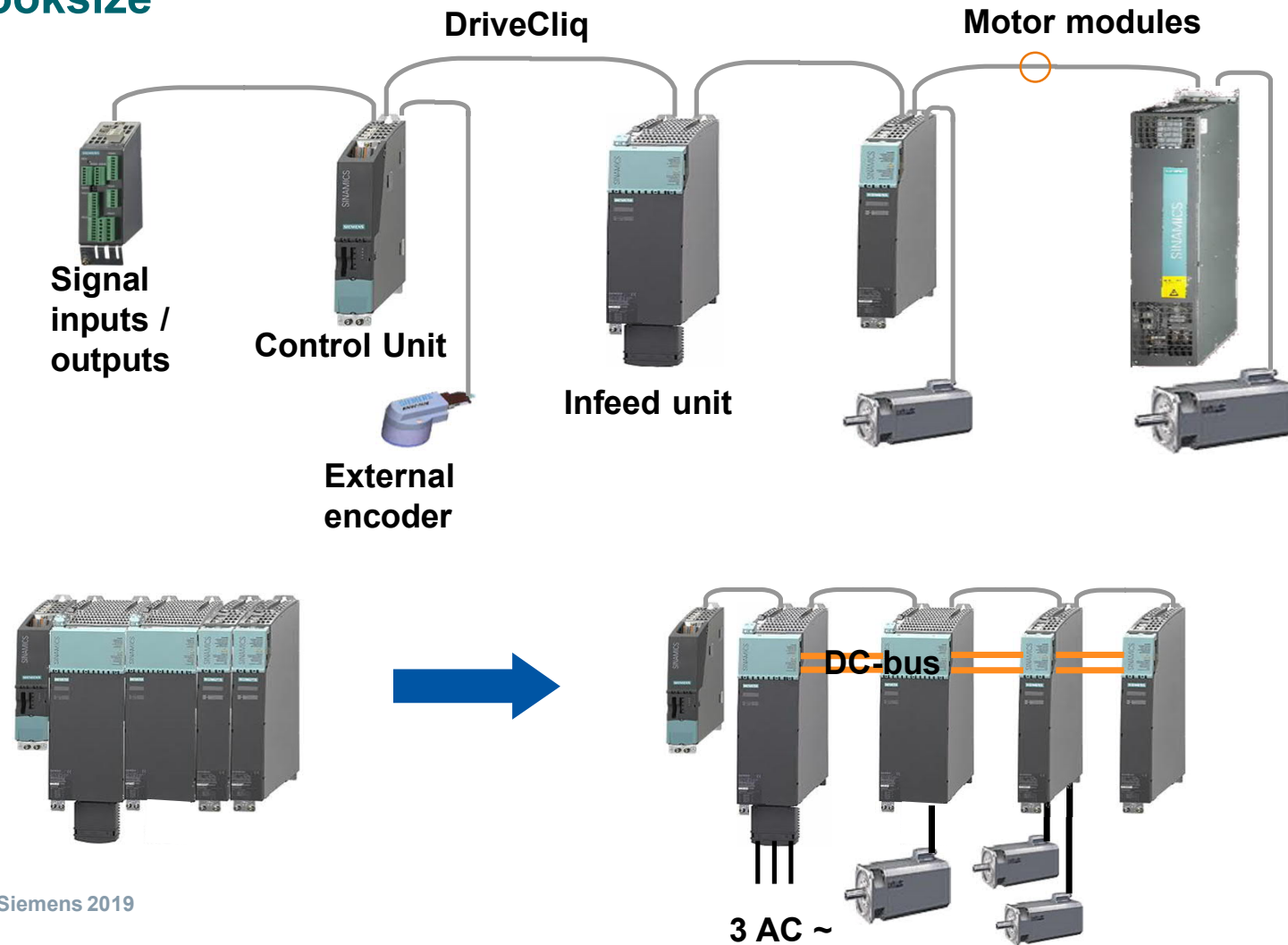
Signal inputs / outputs  
TM31/TM15/TM150



- Different models are available for each component, e.g. different design, performance, interfaces, ...
- The components can be combined flexibly and at any number

# SINAMICS S120 – Common DC-bus and DriveCliq communications with Booksize

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# SINAMICS S120 – Common DC-bus and DriveCliqu communications with chassis

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Infeed unit or Motor module (Inverter)



**Control Unit  
CU320-2**

**Frame size HX  
315kW up to 450kW**

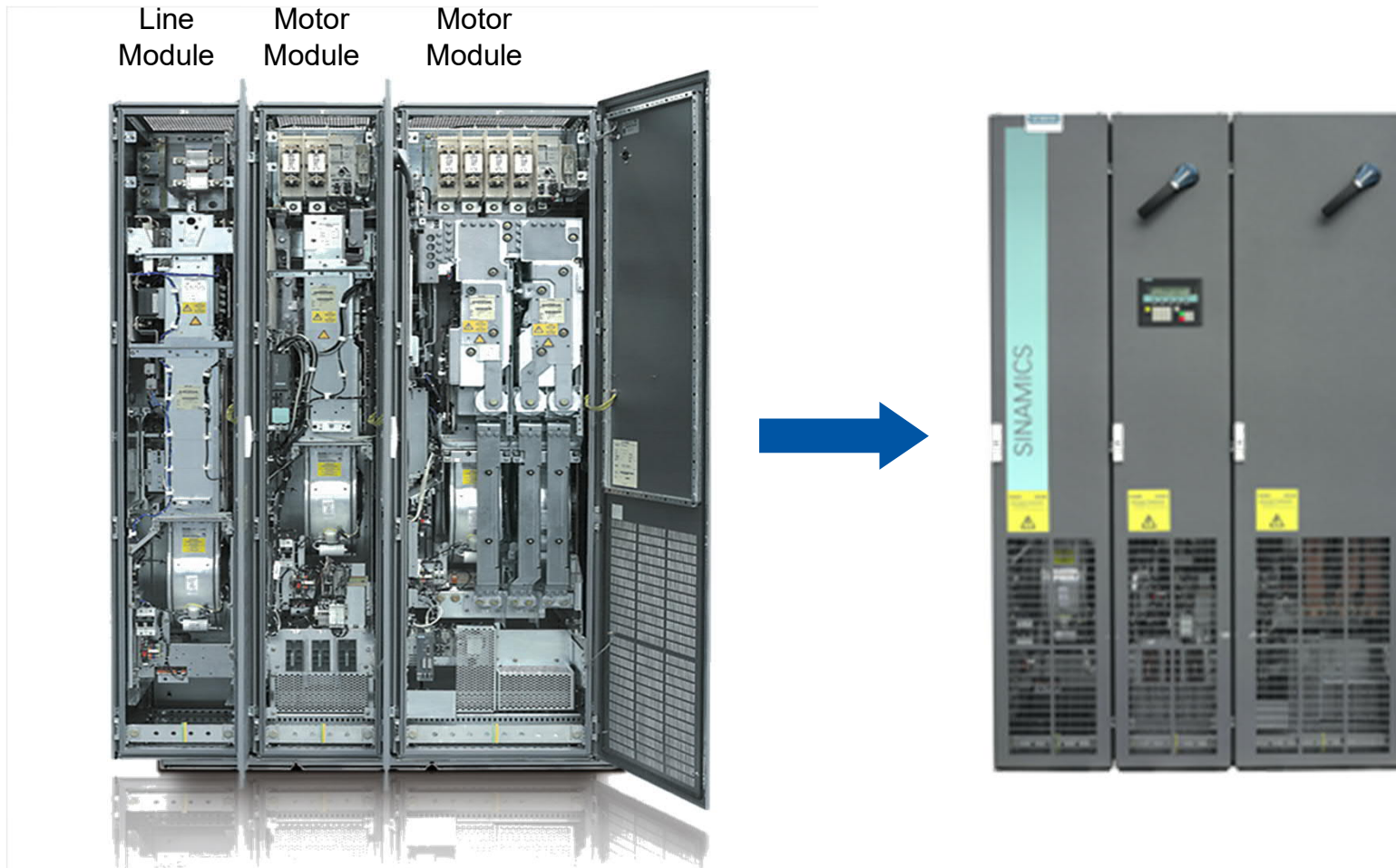
**Frame size FX & GX  
110kW up to 250kW**

**Frame size JX  
560kW up to 800kW**



# SINAMICS S120 – Common DC-bus and DriveCliqu communications with cabinet

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# SINAMICS S120 – Common DC-bus and DriveCliqu communications with chassis-2



Active Infeed unit or Motor module



**Control Unit  
CU320-2**

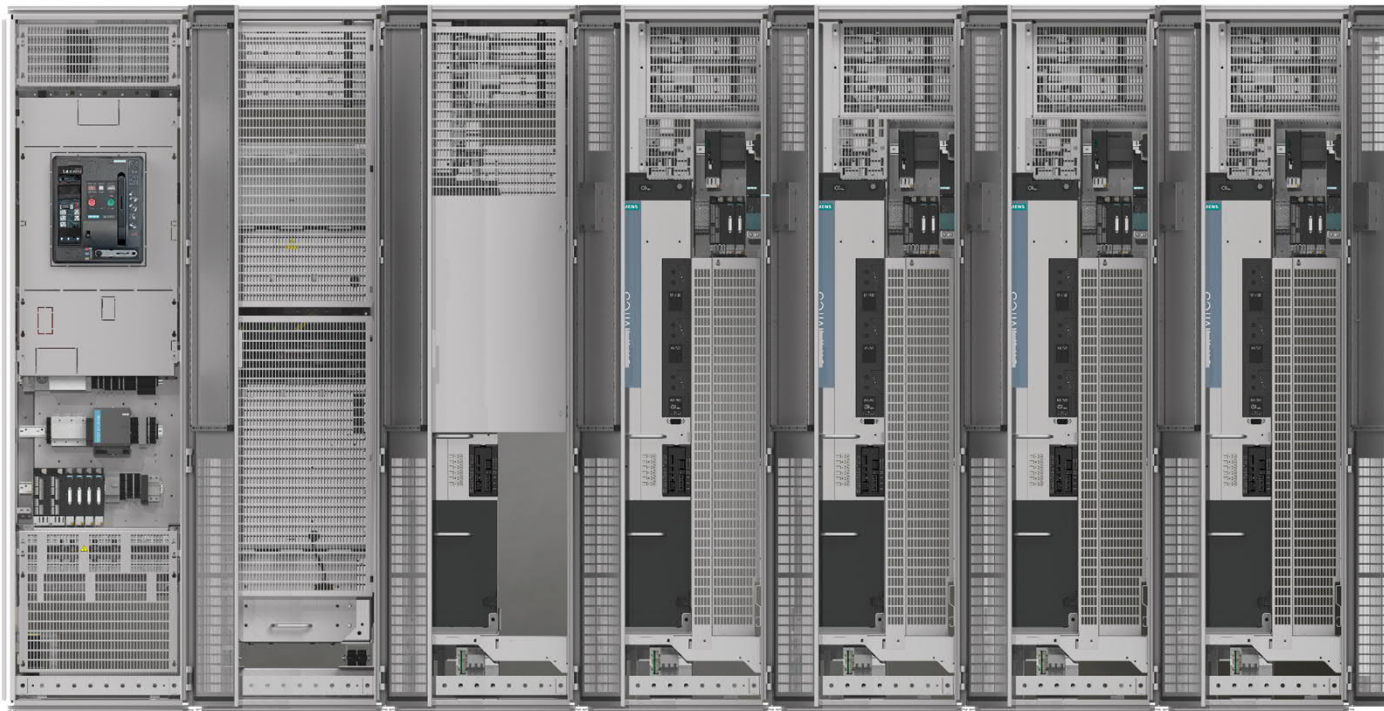
**Frame size 2  
315kW up to 450kW**

**Frame size FX & GX  
110kW up to 250kW**

**Frame size 4  
560kW up to 800kW**

# SINAMICS S120 – Common DC-bus and DriveCliqu communications with Cabinet Module-2

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Line  
Connection  
Module

Active Infeed =  
(Active Interface Module +  
Active Line Module)

Motor Modules (up to 6 in parallel)

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# SINAMICS S120 Chassis-2 & Cabinet Modules-2

Available product range (3AC 380...480V only)

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+



## Chassis: Active Infeed

**Active Interface Module  
+ Active Line Module:  
355 – 630 kW  
(900kW by 12/20)**

## Chassis: Motor Modules

**Self-commutated  
converter with IGBTs  
315 – 630 kW  
(800kW by 12/20)**

## Cabinet Modules

**Typ-tested, ready-to-connect  
standard device, as Active  
Line Connection- / and Motor  
Module:  
315 – 630 kW  
800kW by 12/20)**

# SINAMICS S120 Chassis-2 & Cabinet Modules-2

## System overview



### SINAMICS Chassis-2 Active Infeed (consisting of AIM+ALM)

- **Line voltage: 3AC 380-480V**
- Type of protection: IP00
- **Operating temperature: -10...+45° C ≤ 1000m without derating**
- Up to 6x parallel connection possible
- **Efficiency : >97,5%**

### SINAMICS Chassis-2 Motor Module

- **Line voltage: 3AC 380-480V**
- Type of protection: IP00
- **Operating temperature: -10...+45° C ≤ 1000m without derating**
- Standard pulse frequency of **2.5kHz**
- **Up to 6x parallel connection possible**
- Output frequency: 0...550 Hz
- **Efficiency factor: >98,5%**
- **Safety Integrity Level 2 (SIL2)**

### SINAMICS Cabinet Modules-2

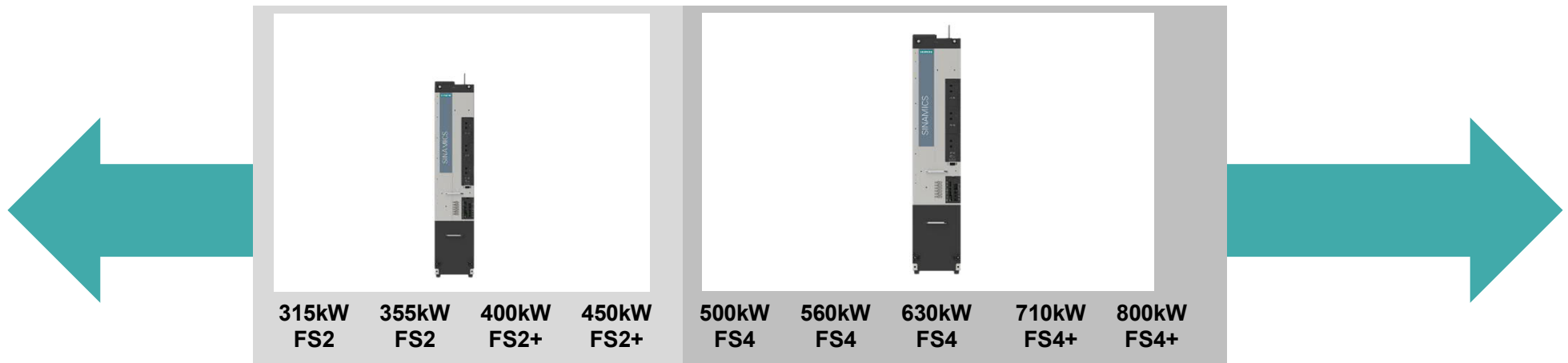
- **Active Line Connection Module ( LCM+AIM+ALM)**
- **Motor Module**

- **Line voltage: 3AC 380-480V**
- Degree of protection: IP20/21/43/54
- **Operating temperature: 0...+40° C ≤ 1000m without derating**
- Standard pulse frequency of **2.5kHz**
- **Up to 6x parallel connection of Active Line Connection Module/Motor Modules**

# SINAMICS S120 Chassis-2 portfolio

## Active Line Modules & Motor Modules

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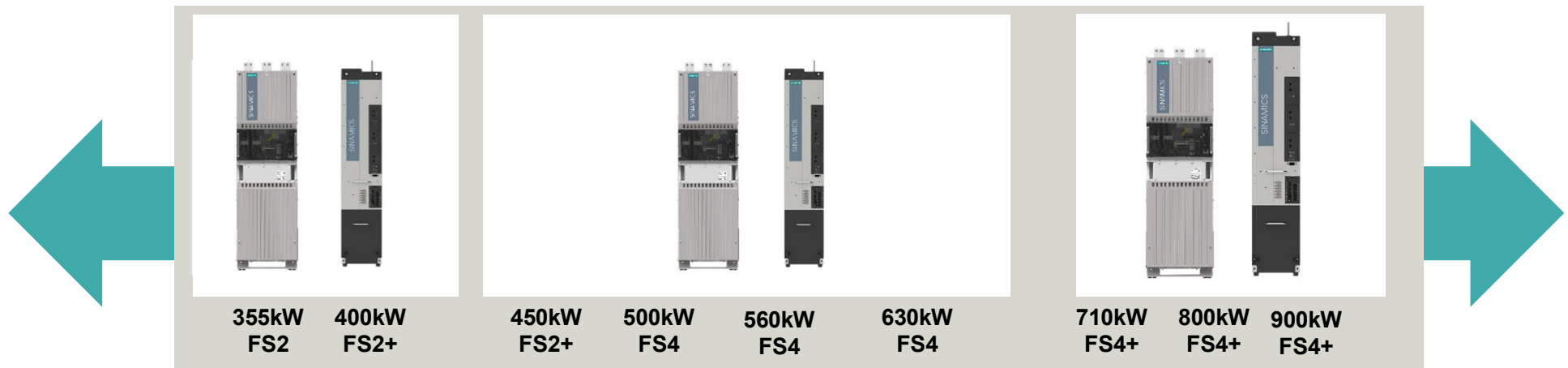
Only two different frame sizes to minimize the variance and to improve the flexibility



The mechanical design and the function are standardized to minimize the required effort for integration, installation etc.

# SINAMICS S120 Chassis-2 portfolio Active Infeed (Bundle consisting of AIM/ALM-Module)

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Sold as bundle, that means AIM and ALM fit perfectly (no overdimensioning necessary)



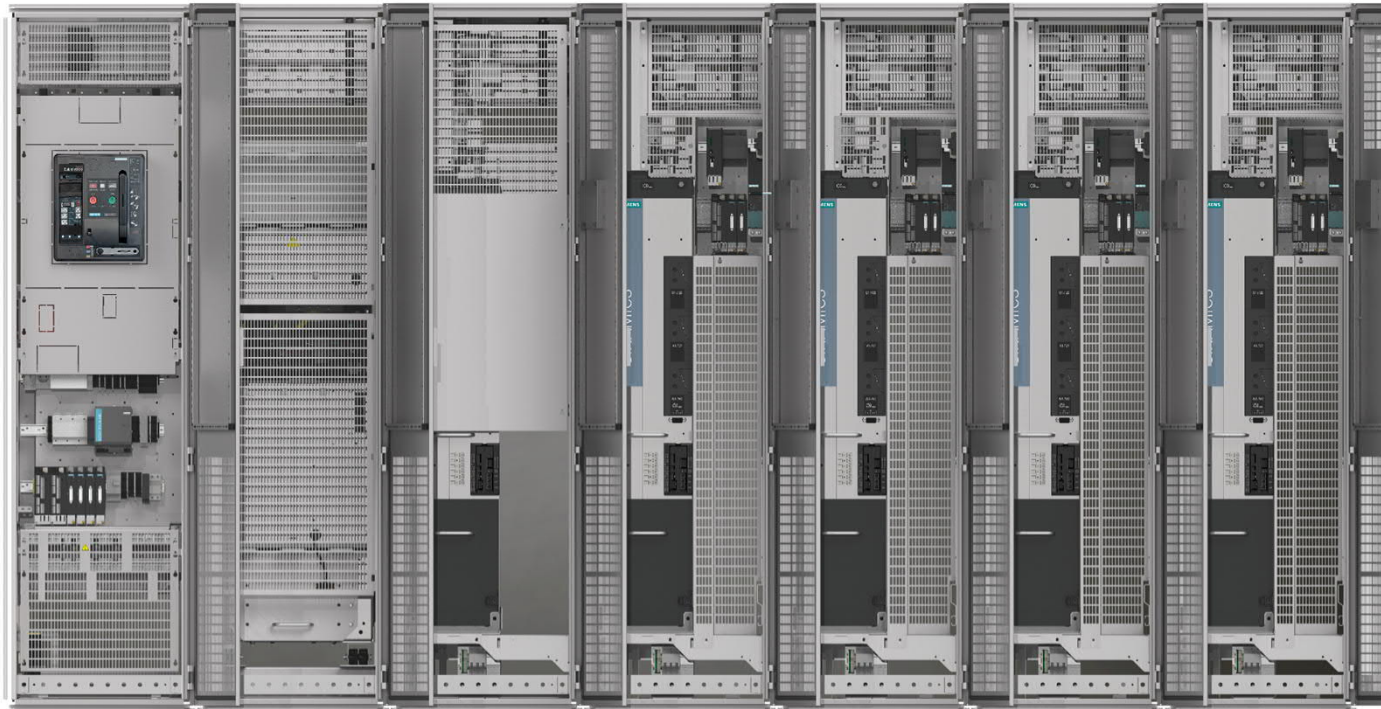
The mechanical design and the function are standardized to minimize the required effort for integration, installation etc.



# SINAMICS S120 Cabinet Modules-2 portfolio

## Active Line Connection Modules & Motor Modules

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Line  
Connection  
Module

**Active Line Connection Module**

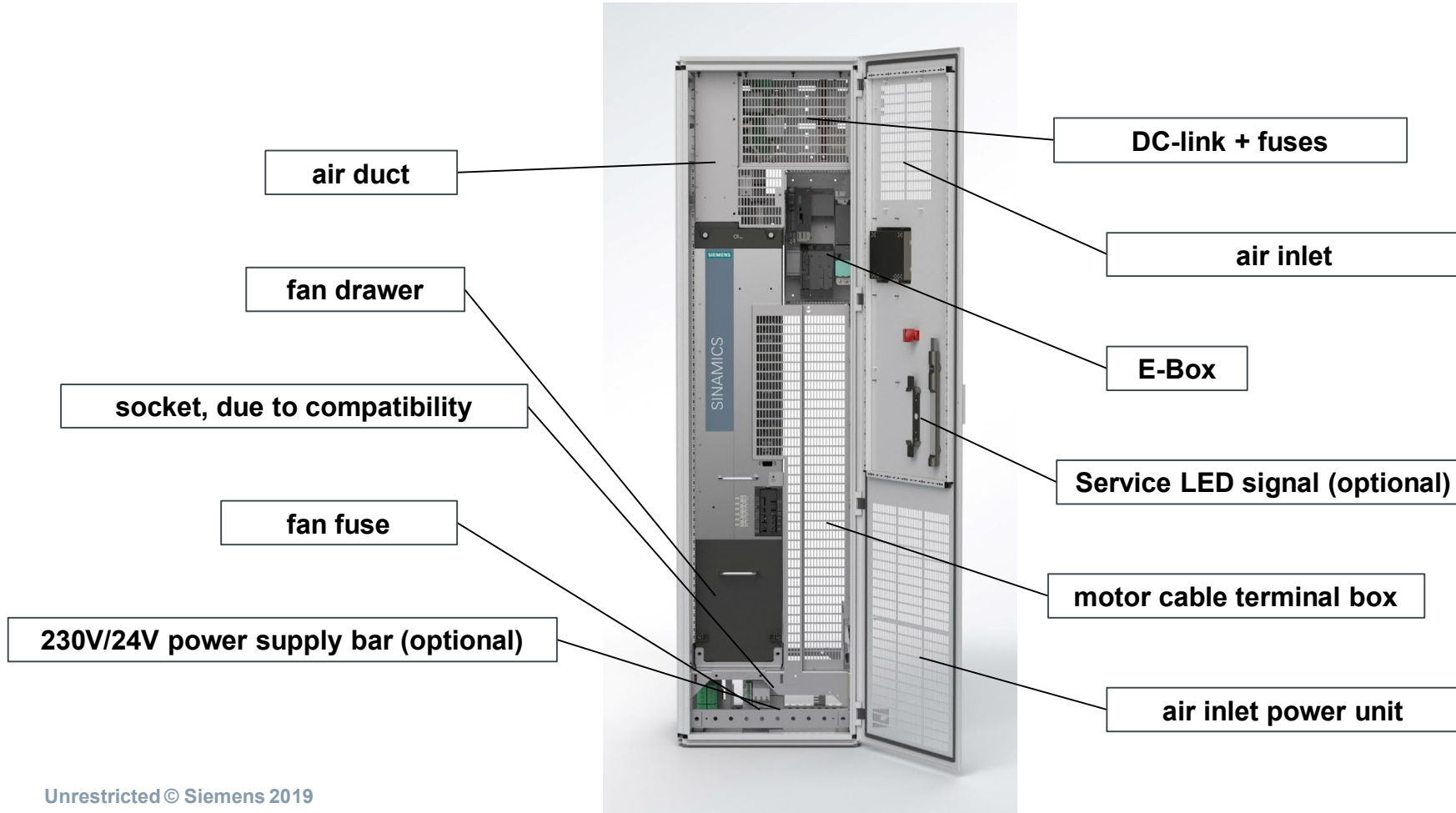
Active Infeed =  
(Active Interface Module +  
Active Line Module

Motor Modules (up to 6 x)

Cabinets available from 1.6 kW up to 4.5 MW  
New cabinet system fully compatible to existing line

# SINAMICS S120 Cabinet Modules-2 (Motor Module)

## New Design – standardized and compatible to existing system



## Better power gradation of the Active Line-/Motor Modules minimizes overdimensioning!

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available power (kW) SINAMICS S120 (ALM/MoMo 400V)	available power (kW) SINAMICS S120-2 (ALM/MoMo 400V)
315	315
---	<b>355</b>
400	400
450	450
---	<b>500</b>
560	560
---	<b>630</b>
710	710
800	800



# Agenda



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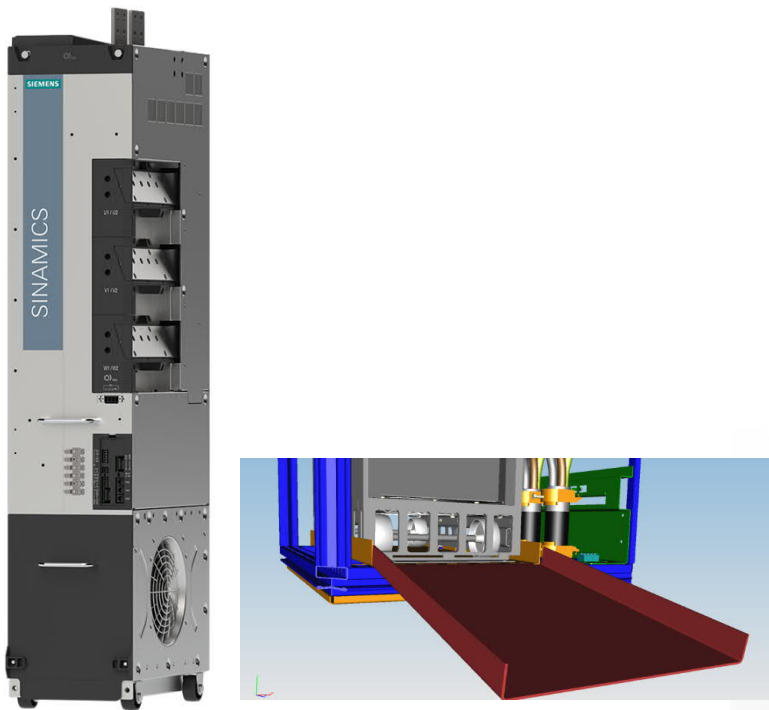
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# Easy Installation

## 630kW Motor Module



## Description

- No longer required to suspend the full weight of the chassis in the cabinet.
- Chassis-2 can stand on its own feet
- Chassis-2 are equipped with 4 rollers to allow easy transportation and simpler cabinet integration.

## Benefit

Simplification for cabinet builders.

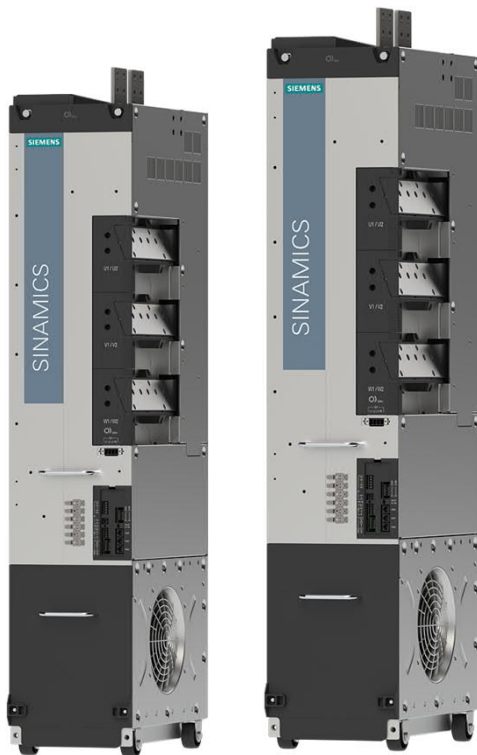
- Reduction of the required strength of the cabinet
- Tests e.g. vibration are easier
- Easy mounting in the cabinet

Improved serviceability

- Easy to remove
- Easy to exchange

# Standardized Footprint

## Framesize 2 and 4



## Description

- Same footprint over the power range from 315-800kW. Depth and width are kept identical, only the height is changing.

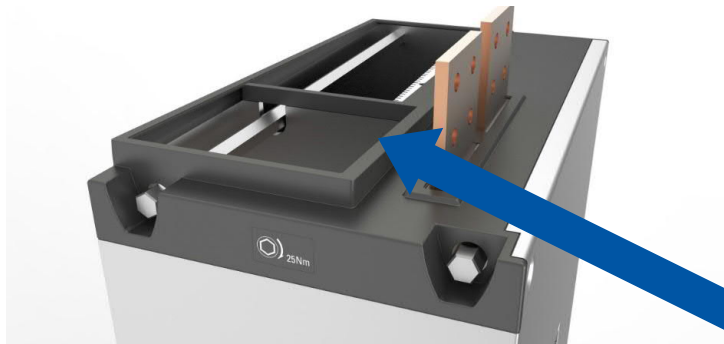
### Details:

280mm wide x 542mm depth x 1248 mm height (Frame size 2)

280mm wide x 542mm depth x 1491 mm height (Frame size 4)

# Improved cooling system

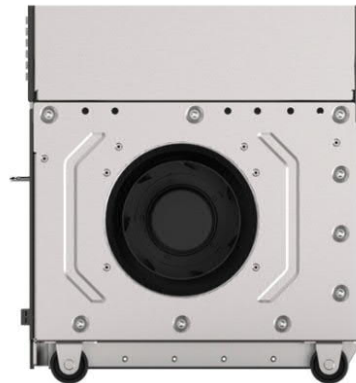
Air outlet on the top side



Description

“Closed” housing. **The cooling duct is separated against the electronic.** There is only one air duct and fan for each chassis required.

Image section



Air inlet on the right bottom



## Speed controlled fan with condition monitoring

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FS 4 with schematically air flow

### Description

- Speed controlled fan.
- The speed is adapted to the actual load through the temperature.
- The fan comes also with condition monitoring.
- The fan is designed to run at full load at 60° environment temperature, i.e. under normal condition (30°...) the fan will last longer and run quieter.

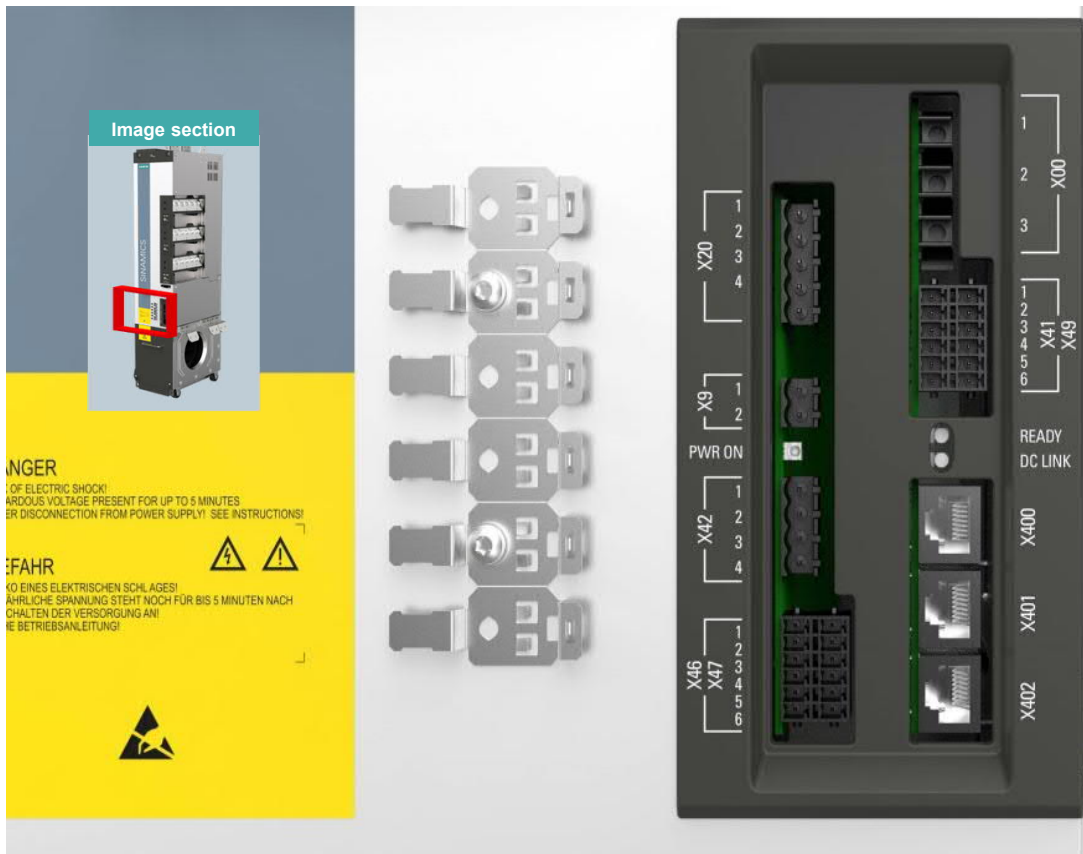
### Benefit

- Reduced noise
- Enhanced lifetime
- Improved energy efficiency

### Data

- Design life time = 50.000h@50°C  
(*Actual life time will be determined via condition monitoring, could be 3 times higher*)
- Required airflow = 0,64m<sup>3</sup>/s (today: 1,3 m<sup>3</sup>/s)
- Sound pressure level = 72,5 dB

# Standardized Terminals - Control Terminals

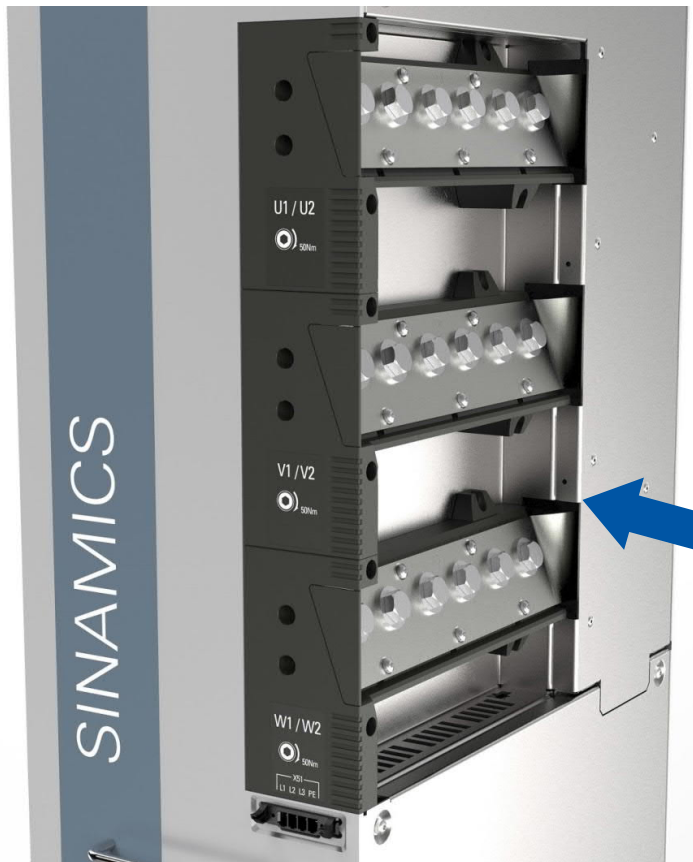


### Description

- Identical design for all frame sizes
- All terminals are located at the front, lockable, with identical dimensions and orientation.
- With the terminals also the status LEDs are moved to the front.

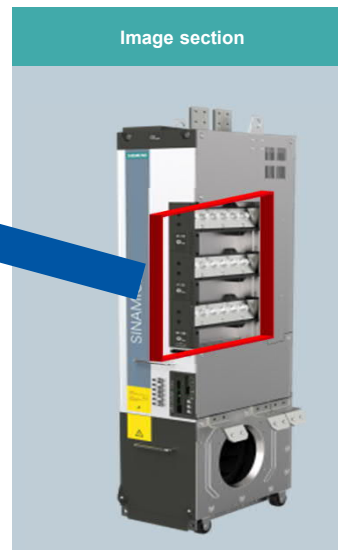
## Standardized Terminals - Power Terminals

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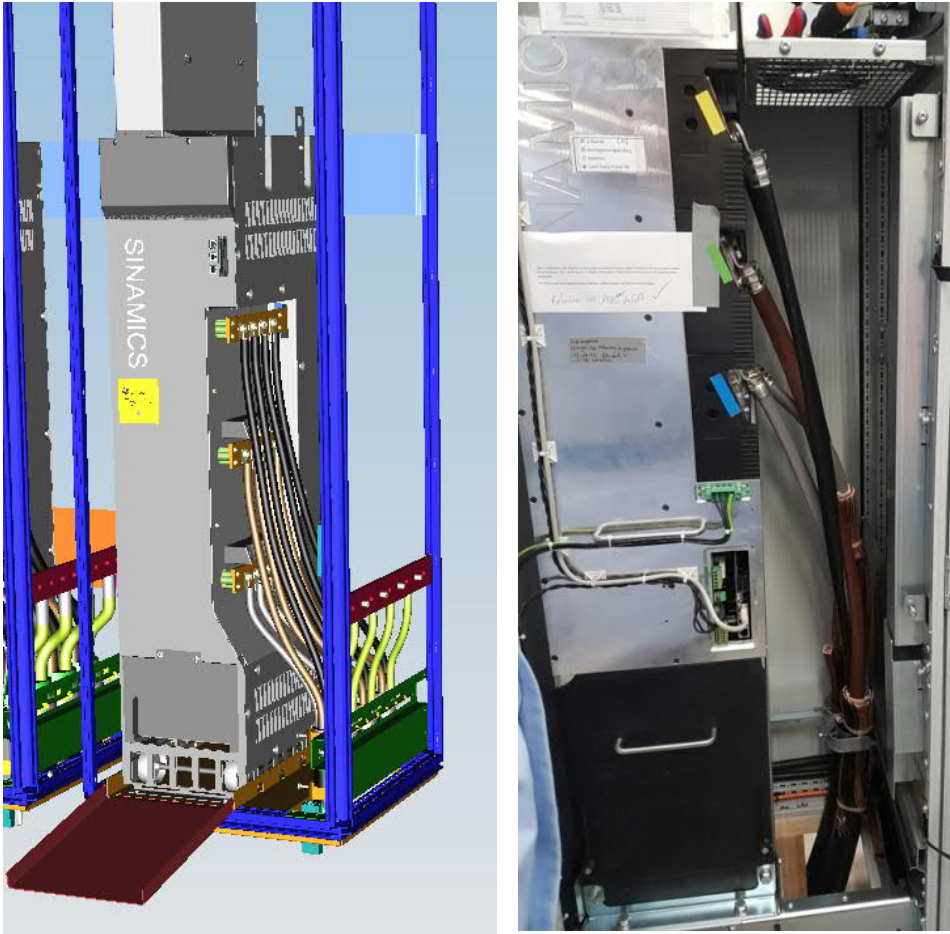
### Description

- motor connection terminals on the right side.
- design is standardized through all frame sizes in design, screw size, material, orientation.



## SINAMICS S120 Cabinet Modules-2 Motor cable terminal

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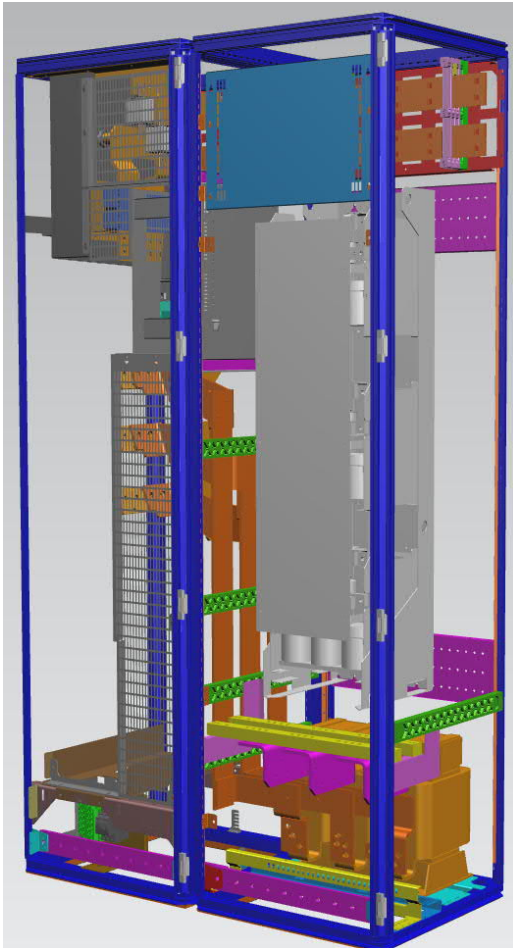


### Description

- In a 600mm Cabinet - approx. 220mm space for the motor cable connection.
- nearly the full height of the power module can be used for the cable connection. (Max. 6x 240mm<sup>2</sup> connectable.)

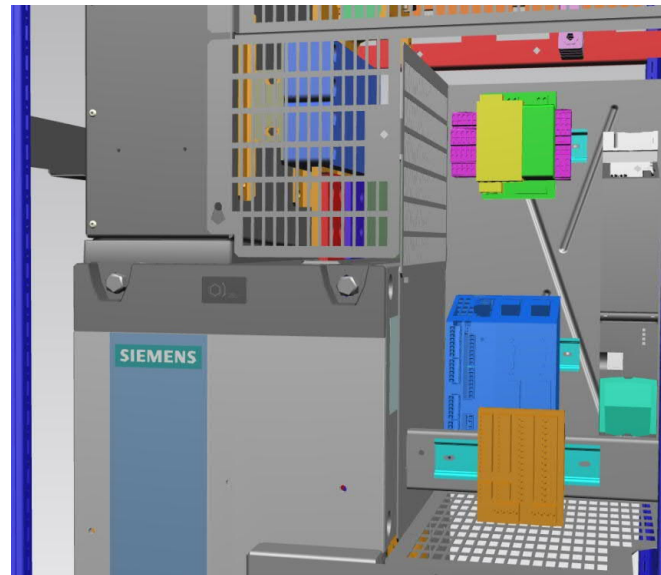
## SINAMICS S120 Cabinet Modules-2 Standard Options

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### Description

- All our today's standard cabinet options will be available with the redesigned cabinet.
- All Options like, CU320-2, auxiliaries, terminals are located in the right upper corner in the cabinet.
- Options like dv/dt filters, which need additional space are located in an additional standardized cabinet.



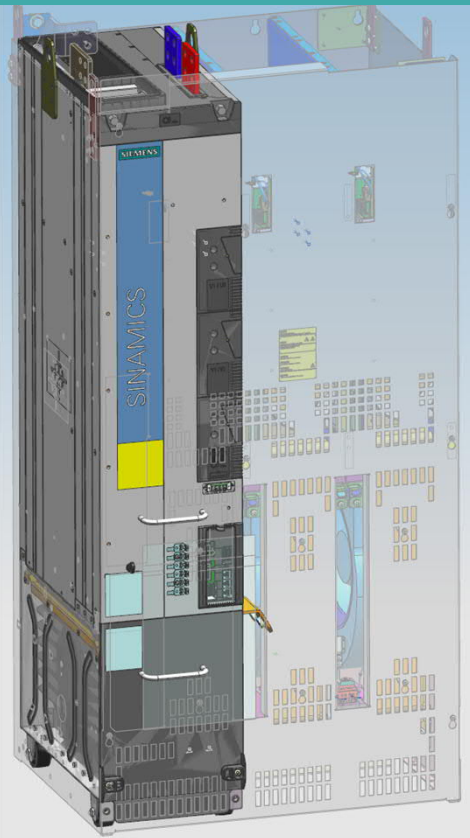
### Benefit

- Easy to order
- No additional engineering effort
- Reduced complexity through standardized design

## New Mechanical Design - Minimized Footprint

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FS 4 vs FS J

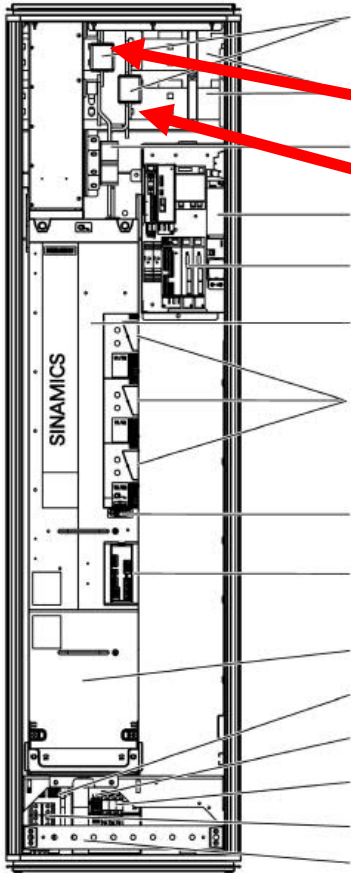


### Description

- the footprint of chassis-2 is reduced by around 60% (FS4) and 30% (FS2) vs. old chassis
- Weight no more than 160kg ( over 60% reduction)

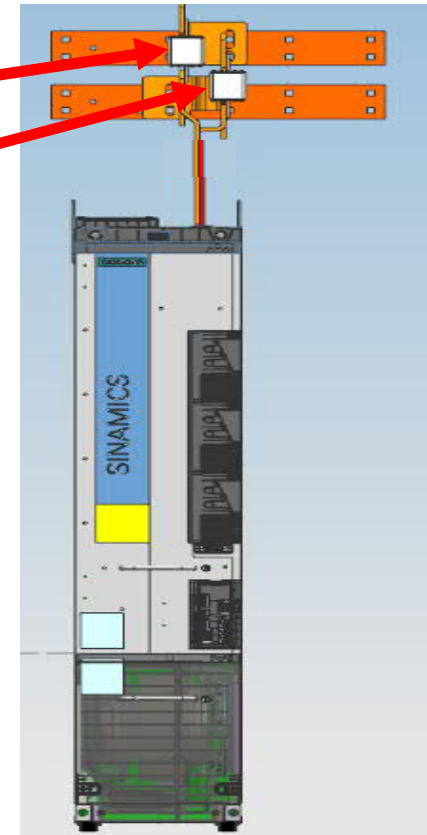
## DC fuses

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### Description

- The fuses are located outside of the chassis



# Agenda

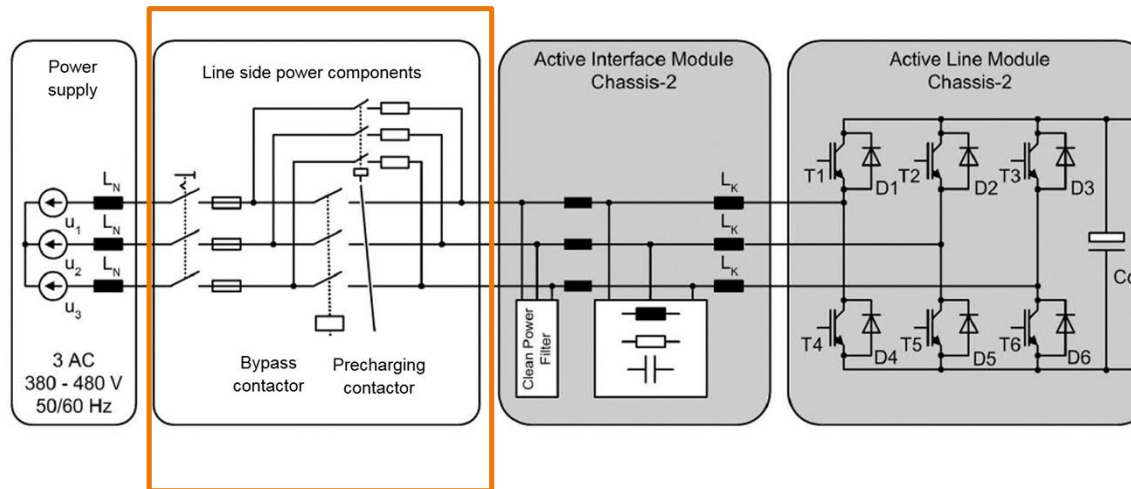
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## Pre-charging SINAMICS S120 Active Infeeds Chassis-2



### Additional parts Active Infeed Chassis-2

**A separate pre-charging circuit** is required for the operation of the Active Line Modules.

The components for the precharging circuit (precharging contactor, precharging resistors, bypass contactor) must be ordered separately and mounted next to the infeed, e. g. in the Line Connection Module.

For details please see: ["Equipment manual – SINAMICS S120-air cooled chassis power units"](#)

**!! Now flexible, not longer restricting the maximum dc capacity !!**

# Active Infeeds/Motor Modules Chassis-2

## Technical data



	Active Line/Motor Modules		
Line voltage/ DC link voltage	3 AC380 – 480V (+/- 10%) / DC 510 ... 720 V		
Protection class	IP00		
Efficiency	> 97,5% (Al) // > 98,5% (MoMo)		
Ambient temperature	Storage -25 ... + 55 °C	Transport -40 ... + 70 °C	Operation -10 ... + 45 °C (with Derating: +60 °C)
Installation altitude	0 ... 1000 m above sea level and < 50 °C without derating other values see catalogue		
Cable length (shielded/unshielded)	300 m / 450 m		
Pulse frequency <ul style="list-style-type: none"> <li>• Factory setting</li> <li>• Pulse frequency Motor Modules               <ul style="list-style-type: none"> <li>- without current derating</li> <li>- with current derating</li> </ul> </li> </ul>	4 kHz (ALM) // 2,5 kHz (MoMo)  2,5 kHz 8 kHz		

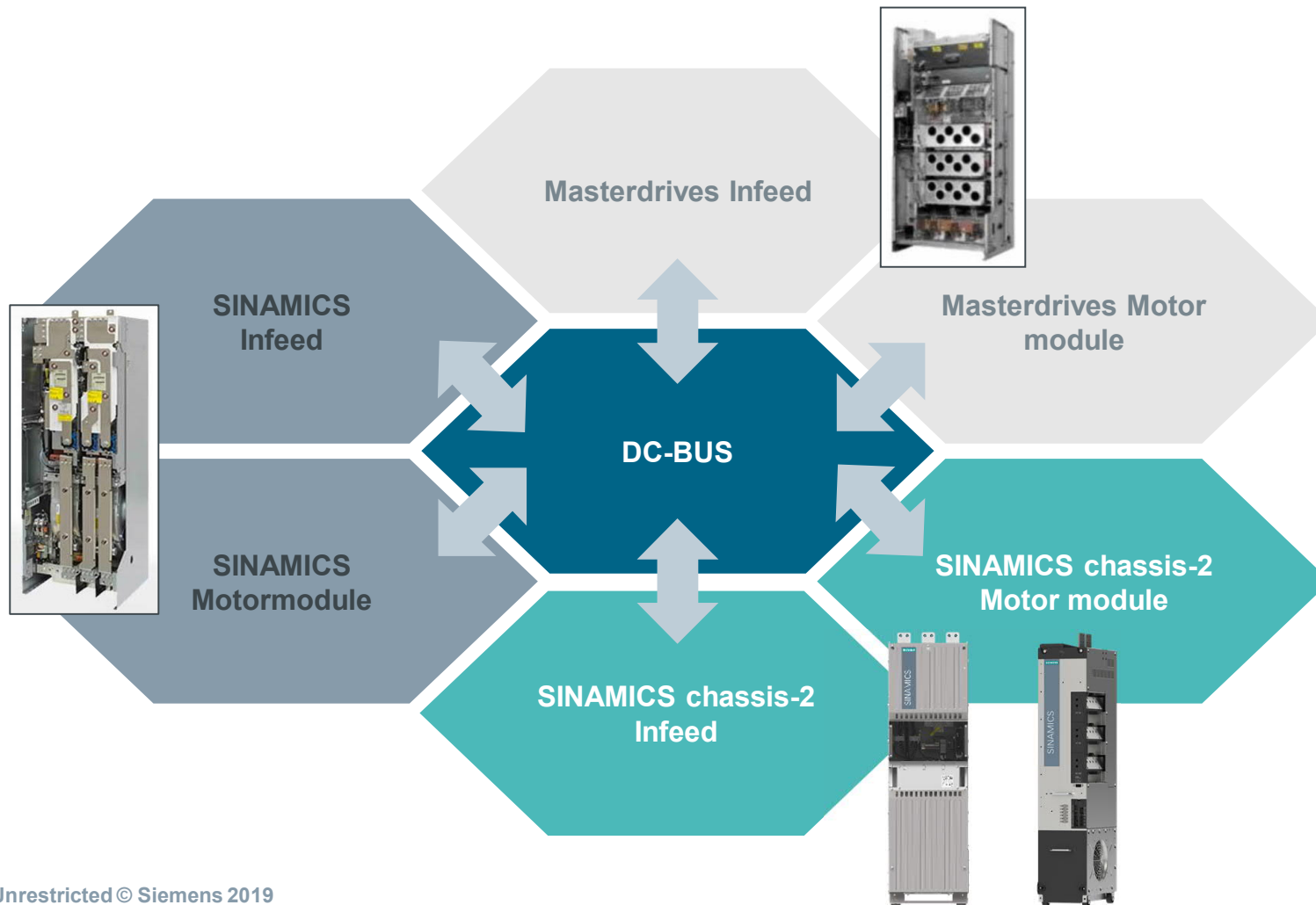
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# Mixed System



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- ✓ The SINAMICS Chassis-2 can work together with MASTERDRIVES and SINAMICS at one DC-Link.
- ✓ Parallel configuration for one axis is only possible with **identical** modules from the same design.

## Components as today

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The new generation will work full compatible with the existing components

# Agenda

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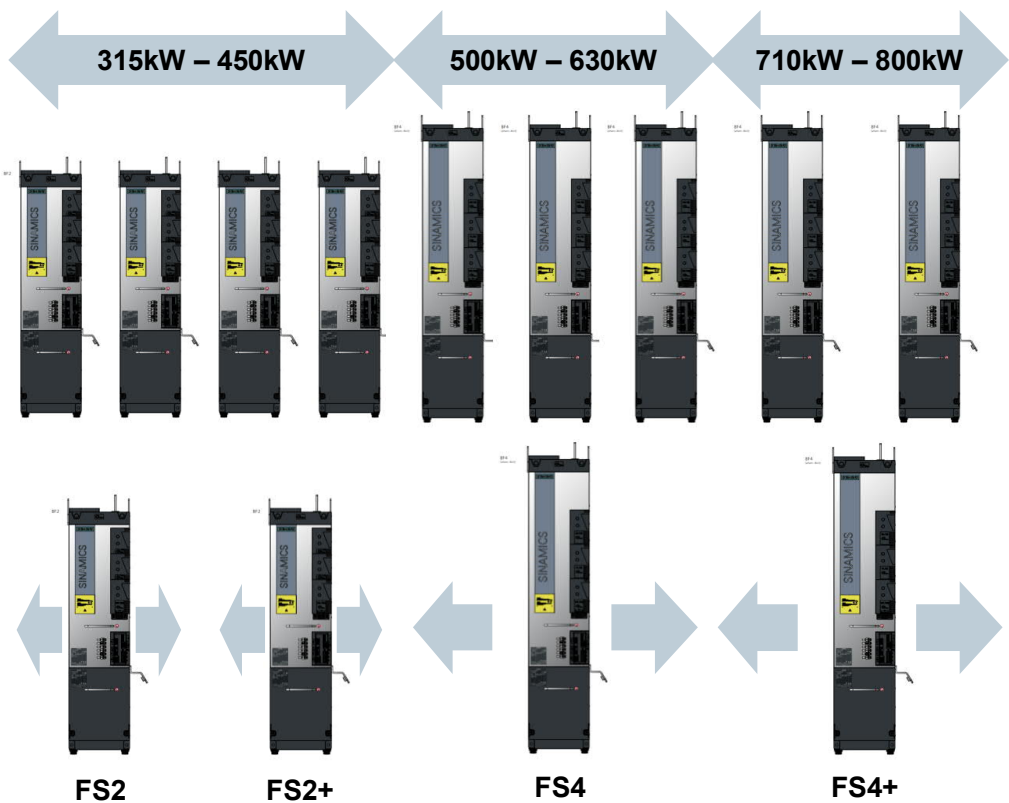


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# SINAMICS S120 Chassis-2

## New spare parts concept - Motor Modules

### Motor Modules



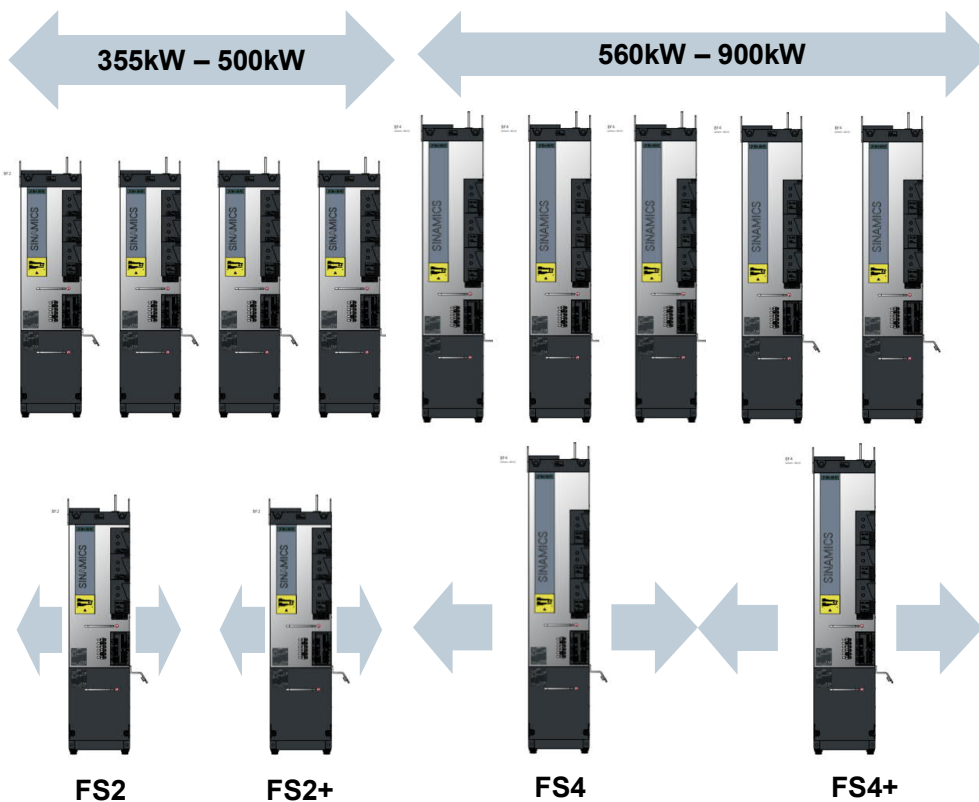
### Description

- For one Frame size e.g. 500kW - 630kW there is one spare part chassis.
- Spare parts chassis are identical to the new part chassis for every frame size except the IPD (Inverter Power Data-module)

# SINAMICS S120 Chassis-2

## New spare part concept – Active Line Modules

### Active Line Modules



### Description

- For one Frame size e.g. 500kW - 630kW there is only one spare part chassis.
- Spare parts chassis are identical to the new part chassis for every frame size except the IPD (Inverter Power Data-module).



## Other spare parts

### Chassis FS4



### Description

- Spare part chassis (560kW – 630kW)
- CIM (315kW - 800kW) (Communication Interface Module)
- IPD (630kW) (Inverter Power Data)
- Fan + Drawer (315kW – 800kW)
- Electronic Fan (315kW – 800kW)
- Accessory Kit (315kW – 800kW)

### Benefit

- Spare parts can be easily replaced by customer
- Spare parts can be identified via Spares on Web (SoW)
- Replacement described in the manual

## Spare Part concept – e.g. easy accessible fan

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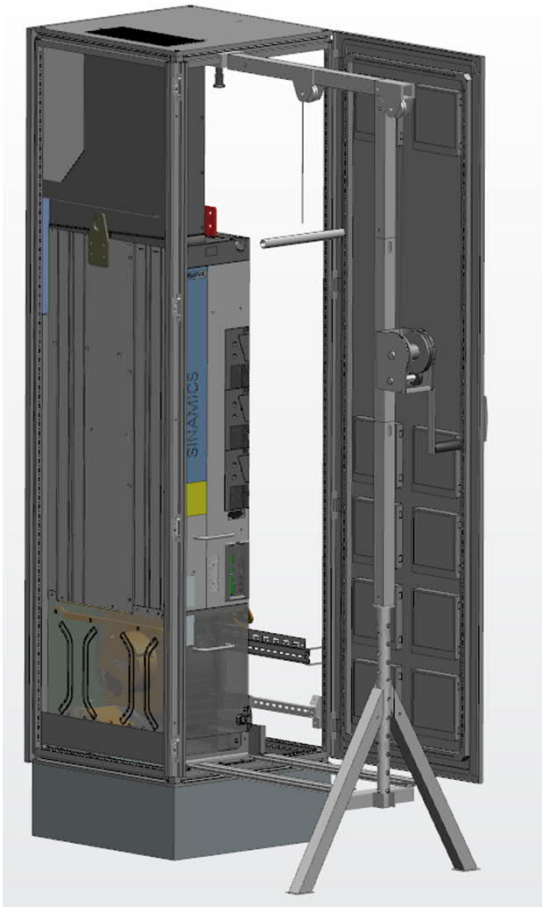


### Description

- new speed controlled fan comes in a drawer allowing an easy exchange after removing only 2 screws.
- The fan drawer is equipped with a self-contacting connector
- The drawer can be fully accessed from the front.



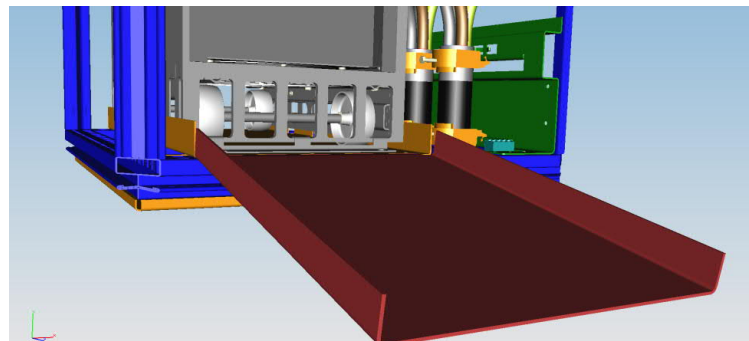
## Ramp or crane for easy disassembly and service



### Description

The chassis weighs max. just 162 kg:

1. For small heights a simple ramp, which is connected without screws to the cabinet frame
2. A crane-type mechanism to lift the power module to every required height. This mechanism is flexible through a plate which can be adjusted with standard tools to a variety of different cabinet systems.
3. crane-type mechanism Intended to be a tool for the service, it can be dismantled to single parts below 60cm and has a weight around 12kg.



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# SINAMICS S120 Chassis-2 & Cabinet Modules-2 Update Cataloge D21.3

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## Content:

- SINAMICS S120 Chassis/SINAMICS S120 Cabinet Modules
- **New! SINAMICS S120 Chassis-2 & Cabinet Modules-2**
- SINAMICS S150

NEW

<https://support.industry.siemens.com/cs/au/en/view/109749470>

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Thank you for your attention

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