Catalog D 86.1 • 2007

ac motors
LARGE DRIVES

Asynchronous Motors
Standardline

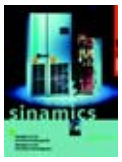
N-compact 1LA8
H-compact 1LA4

SIEMENS

Catalogs for „Large Drives“

SINAMICS G130/G150 D 11
SINAMICS G130 Drive Converter Chassis Units
SINAMICS G150 Drive Converter Cabinet Units

Order No.:
German: E86060-K5511-A101-A3
English: E86060-K5511-A101-A3-7600



Low-Voltage Motors D 81.1
IEC Squirrel-Cage Motors
Frame sizes 56 to 450
Power range 0.06 kW to 1250 kW
Order No.:
German: E86060-K5581-A111-A1
English: E86060-K5581-A111-A1-7600

Three-phase synchronous motors D 86.2
HT-direct 1FW4

Order No.:
German: E86060-K5586-A121-A2
English: E86060-K5586-A121-A2-7600

Catalog CA 01 CA 01
the Offline Mall of
Automation and Drives

Order No.:
German: E86060-D4001-A100-C5
English: E86060-D4001-A110-C5-7600

A&D Mall

Internet:
www.siemens.com/automation/mall

Energy-saving program SinaSave™

Energy is valuable. Electrical power is the most important resource in industry and ensures that motors run, machines operate and plants manufacture.

Our SinaSave software tool can show you how fast an investment in an EFF1 energy-saving motor or a frequency drive amortizes. Based on your plant characteristics, the program determines how much energy you'll save in the specific application case. The amortization period is calculated based on the overall monthly savings and the purchase price of the motor or frequency drives. The amortization period often lasts for just a few months.

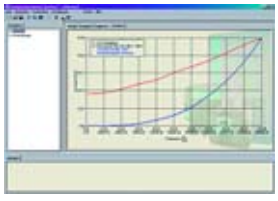
The SinaSave energy-saving program has been developed for applications with motors in direct online operation (fixed speed) and in frequency drive operation (variable speed). With fixed speed, cost savings and payback time of the higher motor price for Siemens EFF1 energy-saving motors can be calculated based on the following three cases. Compared to…

- Siemens EFF2 energy-saving motors - **Case 1**
- Individually selected known motors - **Case 2**
- Known motors within the framework of a complete plant analysis - **Case 3**

With variable speed, SinaSave considers all required system-specific parameters. Values required for the process are considered, such as flow rate and delivery head of pumps, mass flow rate and total pressure drop on fans and the density of the delivered medium, as well as the efficiency of the pumps and compressors, the electrical efficiency and the overall efficiency of the plant. Further basic data used by the program is the number of workdays and work shifts as well as the daily and annual output profile, which is decisive with respect to the energy savings effect.

First of all, the program uses the plant-specific basic data entered, to determine the drive system with the required output, and the price of a suitable frequency drive. In another step, the program determines the energy demand of the variable-speed drive system for the specific application and compares it with the calculated values of all possible alternative concepts for the respective plant, such as throttle valves, bypass, pre-rotation control or pole-changing motors. Energy savings in kilowatt hours are derived from the resulting difference. The program converts this difference into actual cash value based on the currently valid power supply price for the plant.

The program calculates the payback period considering the price of the frequency drives, the decisive energy savings, and other cost-cutting effects of the variable-speed operation, such as improved power factor and machine-friendly operation.



Further information and download of SinaSave:
www.siemens.com/energysaving

Asynchronous Motors
Standardline
N-compact 1LA8
H-compact 1LA4

Catalog D 86.1 · 2007

Supersedes:
Catalog D 86.1 · 2005

The products in this catalog (except for High-Voltage Motors) are also included in the electronic catalog CA 01
Order No.:
E86060-D4001-A110-C5-7600 (CD-ROM)
E86060-D4001-A510-C5-7600 (DVD)

Contact your local Siemens representative for further information

The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with DIN EN ISO 9001. The certificate is recognized by all IQNet countries.

SIEMENS

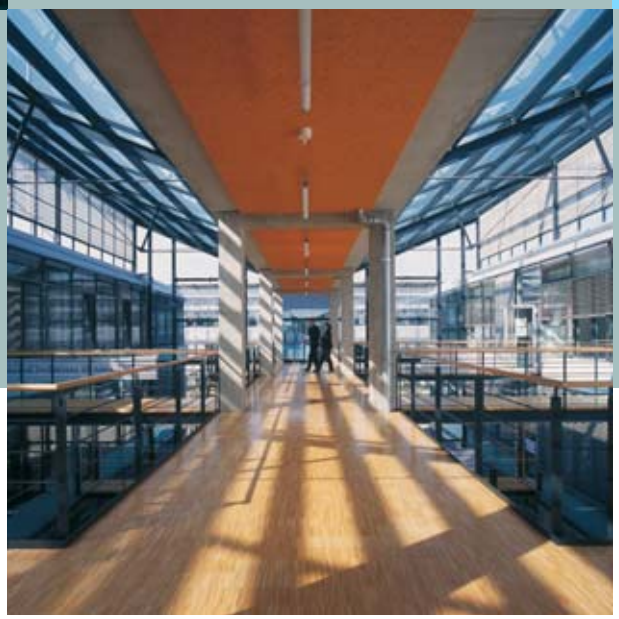
Siemens Automation and Drives. Welcome

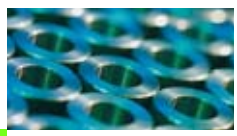
More than 70,000 people aiming for the same goal: increasing your competitiveness. That's Siemens Automation and Drives.

We offer you a comprehensive portfolio for sustained success in your sector, whether you're talking automation engineering, drives or electrical installation systems. Totally Integrated Automation (TIA) and Totally Integrated Power (TIP) form the core of our offering. TIA and TIP are the basis of our integrated range of products and systems for the manufacturing and process industries as well as building automation. This portfolio is rounded off by innovative services over the entire life cycle of your plants.

Learn for yourself the potential our products and systems offer. And discover how you can permanently increase your productivity with us.

Your regional Siemens contact can provide more information. He or she will be glad to help.

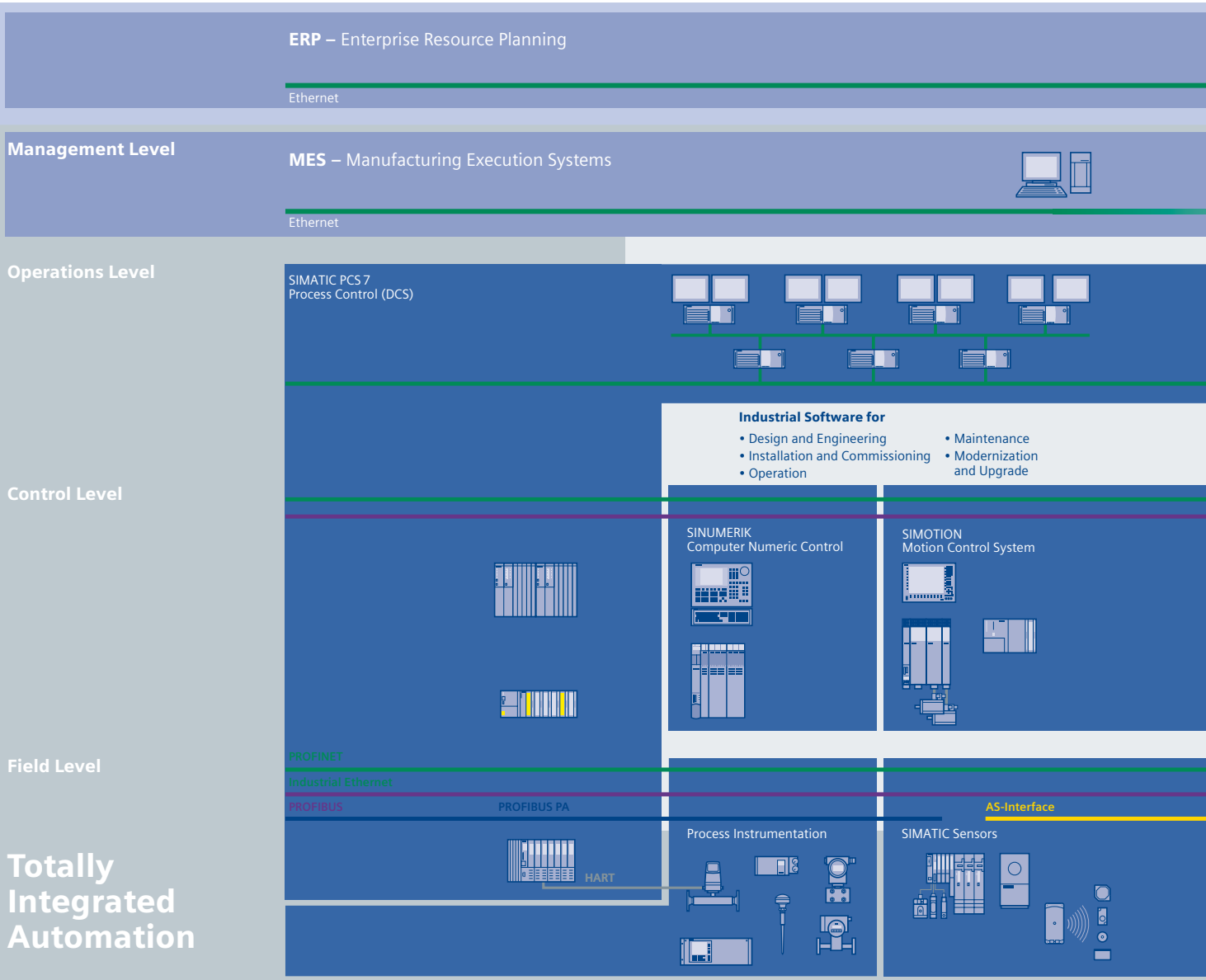




Sharpen your competitive edge.
Totally Integrated Automation

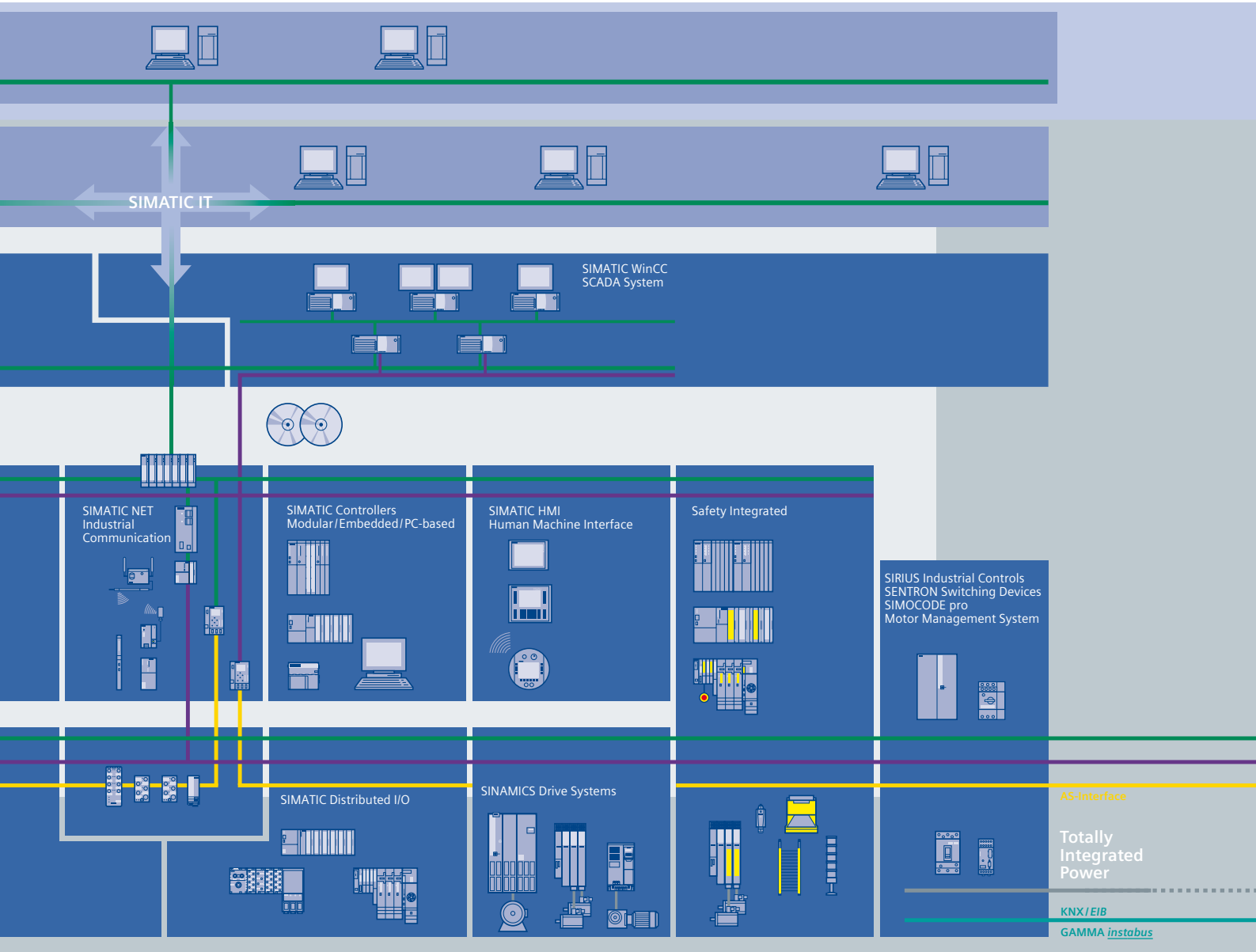
With Totally Integrated Automation (TIA), Siemens is the only manufacturer to offer an integrated range of products and systems for automation in all sectors - from incoming goods to outgoing goods, from the field level through the production control level to connection with the corporate management level.

On the basis of TIA, we implement solutions that are perfectly tailored to your specific requirements and are characterized by a unique level of integration. This integration not only ensures significant reductions in interface costs but also guarantees the highest level of transparency across all levels.



It goes without saying that you profit from Totally Integrated Automation during the entire life cycle of your plants - from the first planning steps, through operation, right up to modernization. Consistent integration in the further development of our products and systems guarantees a high degree of investment security here.

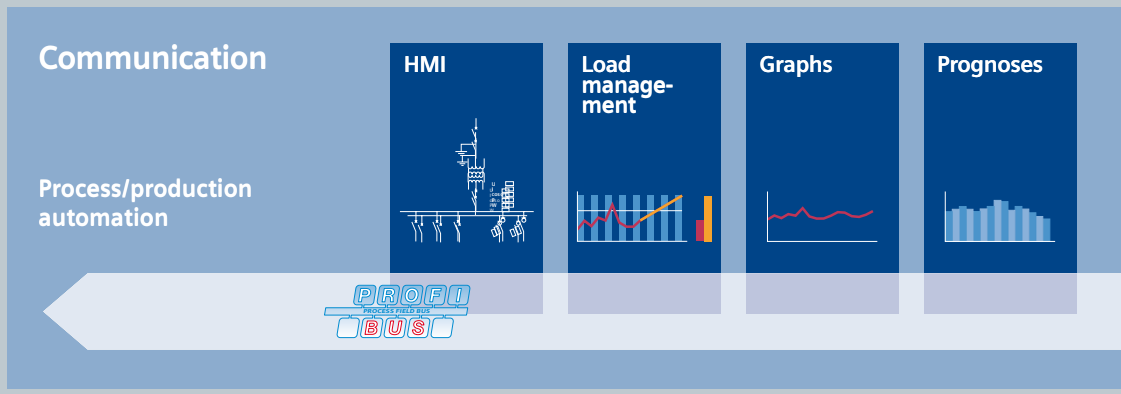
Totally Integrated Automation makes a crucial contribution towards optimizing everything that happens in the plant and thus creates the conditions for a significant increase in productivity.

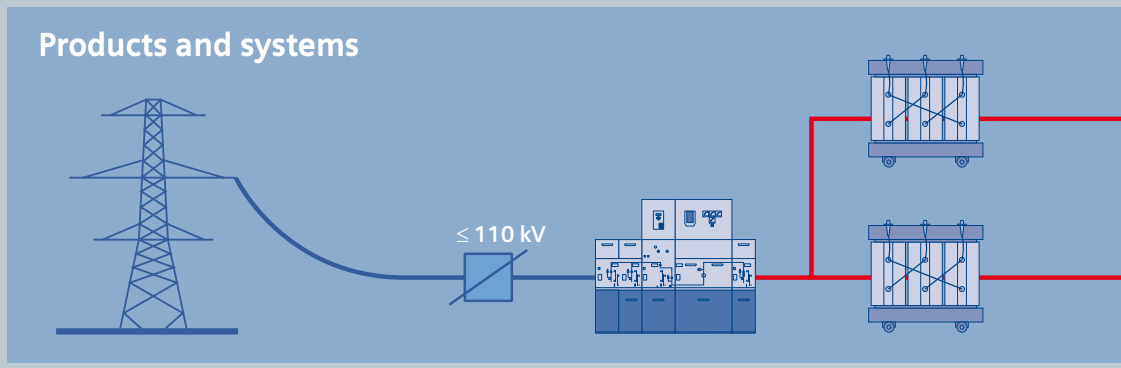


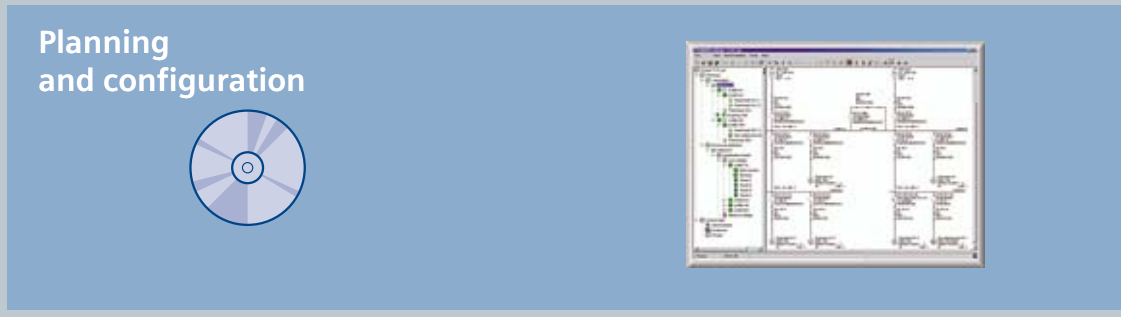
Integrated energy distribution from a single source. Totally Integrated Power

Totally Integrated Power (TIP) brings together all the components of electrical energy distribution into an integrated whole. Thus TIP provides the answer to growing market demands in the planning, construction and use of utility buildings and industrial buildings.

On the basis of TIP, we offer integrated solutions for energy distribution, from medium voltage to the power outlet. Totally Integrated Power is based here on integration in planning and configuring as well as on perfectly matched products and systems.







Totally Integrated Power offers communication and software modules for connecting the energy distribution systems to industrial automation and building automation. This enables the implementation of significant savings potential.

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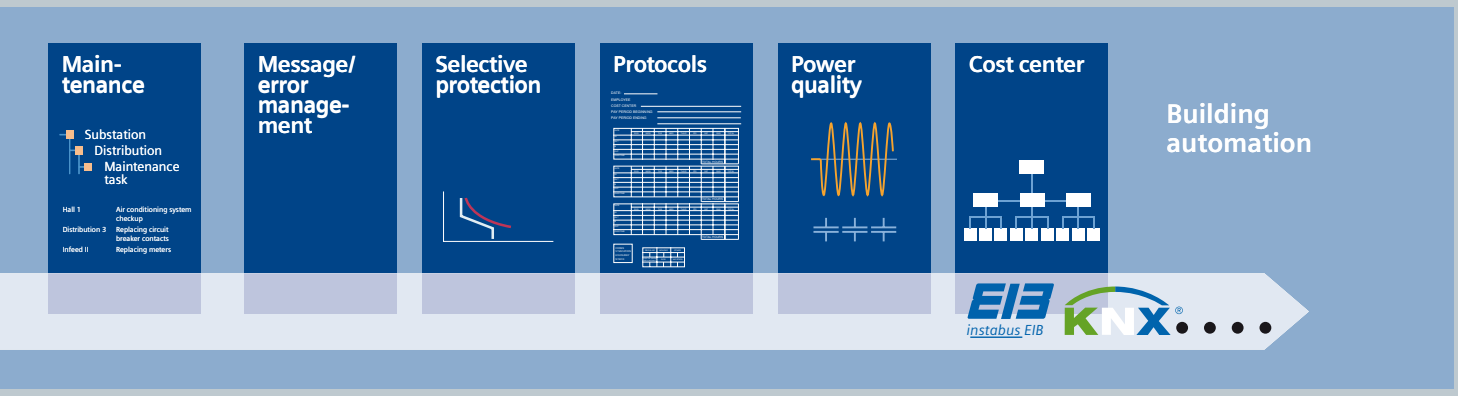
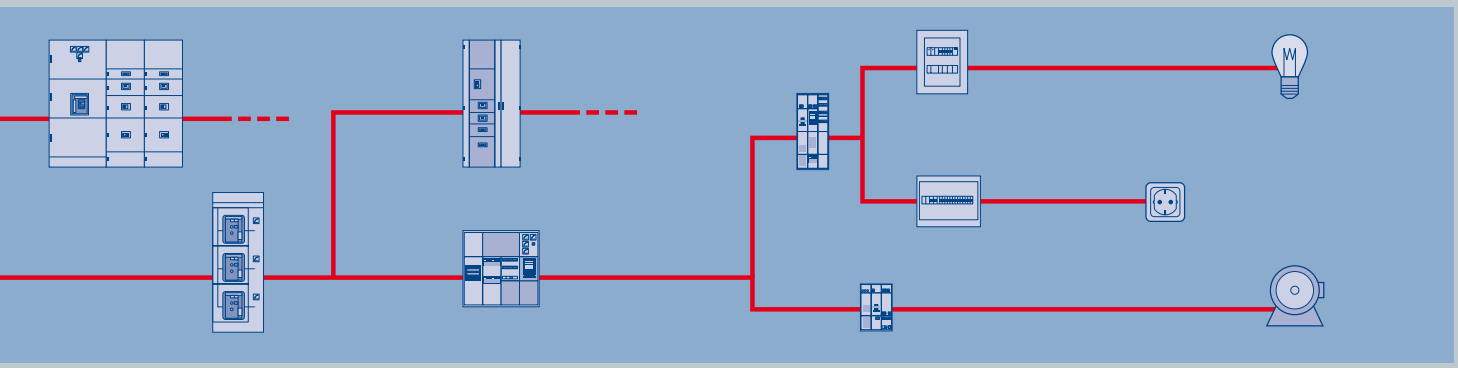
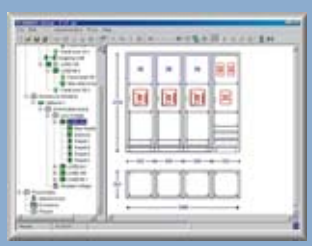






1

Asynchronous Motors Standardline

Overview

Complete drive systems can be selected and configured simply in this catalog.

The following variants of Standardline N-compact and H-compact motors are available:

- Type of construction: IM B3
- Degree of protection: IP55
- Cooling method: IC 411

Motor	Operation	Rated voltage	Power range	Pole number	Catalog section
N-compact 1LA8 low-voltage	**on supply system**	400 V△/690 VY, 50 Hz 500 V△, 50 Hz	250 ... 500 kW	4-pole	2
	with SINAMICS G150 converter	400 V△, 50 Hz 400 V△/690 VY, 50 Hz 500 V△, 50 Hz	250 ... 500 kW	4-pole	3
H-compact 1LA4 high-voltage	**on supply system**	3.0 kV, 50 Hz 3.3 kV, 50 Hz 6.0 kV, 50 Hz 6.6 kV, 50 Hz	200 ... 800 kW	2-pole, 4-pole and 6-pole	4

Benefits

Standardline – large-drive technology kept simple

The Standardline range provides a family of high-voltage and low-voltage motors which have been standardized to minimize product complexity.

Benefits to the customer:

- Sophisticated technology - available quickly
- Products in the Standardline range can be configured with a variety of options so as to ensure a high degree of flexibility.

Application

Standardline high-voltage and low-voltage motors are ideally designed for application in pump, fan and compressor drives.

The low-voltage motors are specially constructed for use in complete, coordinated drive systems comprising the motor and a SINAMICS G150 frequency converter.

More information

H-compact

- in Sales Brochures:
  - H-compact
    Maximum power, minimum size
    Order No. E20001-A100-P530-X-7600
  - H-compact Standardline
    Outstanding performance, short delivery time
    Order No. E20001-A130-P530-X-7600
- on the Internet: www.siemens.com/h-compact

N-compact

- in Sales Brochures:
  - N-compact
    Higher performance and cost-effectiveness with outstanding reliability
    Order No. E20001-A80-P530-X-7600
- in Catalog D 81.1:
  Order No. E86060-K5581-A111-A1-7600
- on the Internet: www.siemens.com/n-compact
- in Online Catalog CA 01: www.ad.siemens.com/ca01

SINAMICS G150

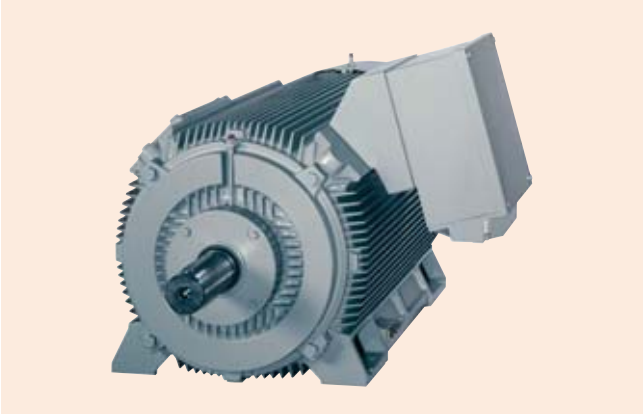
- in the System Overview:
  SINAMICS - The New Drive Family
  Order No. 6ZB5471-0AB02-0BA2
- in Catalog D 11:
  Order No. E86060-K5511-A101-A3-7600
- on the Internet: www.siemens.com/sinamics-g150

Low-Voltage Motors
N-compact Standardline
Operation on supply system

2

Operation on supply system

Overview



The N-compact series sets the modern worldwide standard for large three-phase low-voltage motors. Many details of the motors' design make them durable and so robust that they are always capable of withstanding extreme stresses.

In terms of technical design, the N-compact Standardline series is identical to the familiar 1LA8 N-compact motors which are described in Catalog D 81.1 (Order No. E86060-K5581-A111-A1-7600).

Standardline is intentionally designed to focus the N-compact series on meeting the requirements of drives for pumps, fans and compressors:

- Power range 250 to 500 kW
- Supply voltages 400 V, 500 V and 690 V at a frequency of 50 Hz
- 4-pole
- Type of construction IM B3

Benefits

Standardization has made it possible to further optimize order handling and production processes.

Benefits to the customer:

- Significant reduction in delivery time to only 4 weeks
- State-of-the-art technology and quality which is already in use worldwide

Technical specifications

Further information about general technical data and the design and construction of the N-compact motor series can be found in Catalog D 81.1 (Order No. E86060-K5581-A111-A1-7600) and in the electronic Catalog CA 01 on CD-ROM (Order No. E86060-D4001-A110-C5-7600).

Selection and Ordering Data

Type IM B3, degree of protection IP55, temperature class F, utilization in accordance with temperature class B

Rated power	Order No. + order codes for further options	Operating values at rated output						Starting torque	Starting current	Stalling torque	Torque class	Moment of inertia J
		Rated speed	Efficiency η with 4/4 load	Efficiency η with 3/4 load	Power factor cos φ	Rated current at 400 V	Rated torque	with direct starting as multiple of rated torque	current	torque		
kW		rpm	%	%		A	Nm				CL	kgm²
3AC 400 V, 50 Hz												
1500 rpm, 4-pole												
250	**1LA8315-4AB■0-Z + B20**	1488	96.0	96.0	0.88	425	1600	1.9	6.5	2.8	13	3.6
315	**1LA8317-4AB■0-Z + B20**	1488	96.3	96.3	0.88	540	2020	2.0	6.8	2.8	13	4.4
355	**1LA8353-4AB■0-Z + B20**	1488	96.3	96.3	0.87	610	2280	2.1	6.5	2.6	13	6.1
400	**1LA8355-4AB■0-Z + B20**	1488	96.4	96.4	0.87	690	2570	2.1	6.5	2.6	13	6.8
500	**1LA8357-4AB■0-Z + B20**	1488	96.8	96.8	0.88	850	3210	2.1	6.5	2.4	13	8.5

Voltage distinctive number:

400 V△/690 VY — 6

500 V△ — 5

Ordering example:

Low-voltage motor
N-compact Standardline basic version
400 V△, 50 Hz, 1500 rpm, 4-pole, 355 kW
with option K45: Anti-condensation heating for 230 V

1LA8353-4AB60-Z
+B20+K45

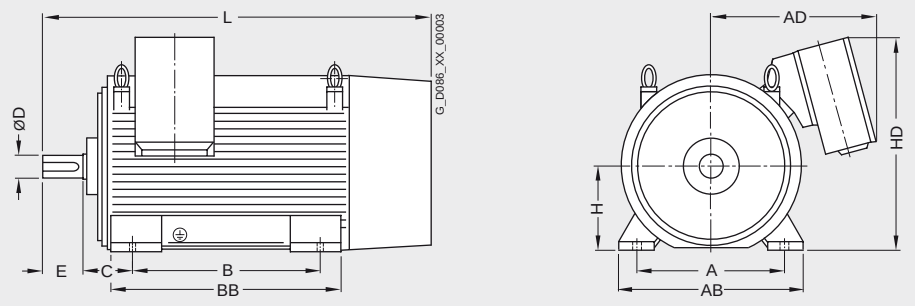
Options

Option description	Order code	Comment
Standardline design	**B20**	Always state
Motor temperature sensing by KTY 84-130 temperature sensor	**A23**	
Motor temperature sensing by 6 PT100 resistance thermometers	**A61**	In basic circuit
2 screw-in PT100 resistance thermometers in basic circuit for rolling-contact bearings	**A72**	
Measuring nipple for SPM shock pulse measurement for bearing inspection	**G50**	
Connection box on RHS (view onto DE)	**K09**	Standard
Connection box on LHS (view onto DE)	**K10**	
Anti-condensation heating for 230 V	**K45**	
Anti-condensation heating for 115 V	**K46**	
Cable entry, maximum configuration	**K57**	
Rotation of the connection box through 90°, entry from DE	**K83**	
Rotation of the connection box through 90°, entry from NDE	**K84**	
Rotation of the connection box through 180°	**K85**	
Next larger connection box 1XB1 631	**L00**	
Auxiliary connection box 1XB3 020	**L97**	
Auxiliary connection box 1XB9 014	**M88**	
Next larger connection box 1XB1 621 with shaft height 315	**M58**	The next larger size of connection box is recommended when cables with cross sections >185 mm^2 are installed for motors with shaft height 315.
Standard paint finish in a color different from RAL 7030	**Y53**	Plain text required

Dimensional drawings

Design:

Type IM B3, rolling-contact bearing, degree of protection IP55, cooling method IC 441



Type	Weight	A	AB	AD	B	BB	C	H	HD	L	D	E
	approx. kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
4-pole												
1LA8315-4AB.0	1300	560	680	570	630	780	180	315	825	1410	85	170
1LA8317-4AB.0	1500	560	680	570	630	780	180	315	825	1410	85	170
1LA8353-4AB.0	1900	630	780	710	800	980	200	355	905	1635	95	170
1LA8355-4AB.0	2000	630	780	710	800	980	200	355	905	1635	95	170
1LA8357-4AB.0	2200	630	780	840	800	980	200	355	945	1635	95	170

For further information see Catalog D 81.1
(Order No. E86060-K5581-A111-A1-7600).

Operation on supply system

More information

Power cables

As specified in the table below, parallel feeders are required to connect the motors (see also Catalog D 81.1, Part 1 “Motor connection and connection boxes”, “Parallel feeders”):

	1LA8 . . .				
Voltage	**315**	**317**	**353**	**355**	**357**
400 V	•	•	•	•	•
500 V			•	•	

Low-Voltage Motors
N-compact Standardline
Operation with converter

3

Operation with converter

Overview

Variable-speed drive systems for 400 V and 500 V

N-compact Standardline motors with SINAMICS G150 frequency converter

SINAMICS G150 converter cabinet units are designed for use in variable-speed drives in machine construction and plant engineering. They offer a low-cost drive solution which can be flexibly tailored from a wide spectrum of components and options to meet the requirements of individual customers.

A detailed description of the SINAMICS G150 converter series can be found in Catalog D 11 (Order No. E86060-K5511-A101-A3-7600), Part 3.

N-compact Standardline 1LA8 low-voltage motors and SINAMICS G150 frequency converters combine to make an ideally coordinated system for variable-speed drives specially tailored for operating pumps, fans and compressors (square-law characteristic):

- Power range 250 to 500 kW
- Supply voltages 400 V and 500 V, 50 Hz
- 4-pole motor
- Motor type IM B3

Benefits

Benefits to the customer:

- The complete system can be delivered within 4 weeks.
- Optimally coordinated drive system
- Economical drive solution
- Easy to customize

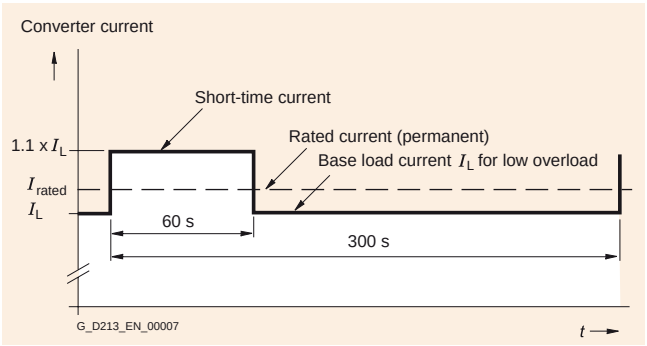
Configuration

With the motor - converter combination (selection and ordering data), the drive can be operated under both “low overload” and “high overload” on the basis of the motor drive power (for exceptions, see selection and ordering data, footnotes 3 to 5).

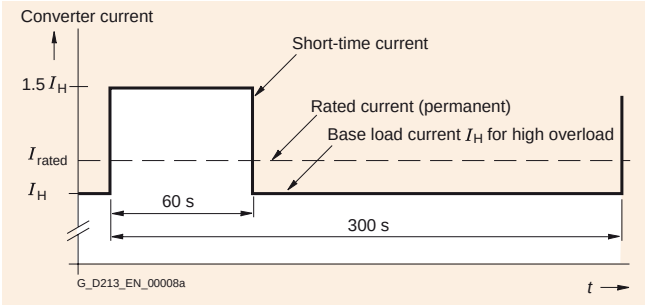
Note about “Low/high overload”:

The rated output current of the converter equals the maximum permissible current for continuous operation (without overload).

If the converter must be capable of handling overload conditions such as breakaway torques or shock loads, a base load current determined according to the duty cycle must be applied to calculate the converter rating.



Low overload



High overload

The diagrams show the duty cycles for two different conditions, i.e. “low overload” and “high overload”, with the resulting base load currents I_L and I_H.

“Low overload” is defined as a 300 s duty cycle in which the converter may operate at 110% of the base load current I_L for 60 s, or at 150% for 10 s (not illustrated).

“High overload” is defined as a 300 s duty cycle in which the converter may operate at 150% of the base load current I_H for 60 s, or at 160% for 10 s (not illustrated).

The converter may be operated under the appropriate overload conditions only if the base load current is not exceeded within the duty cycle either before or after the overload phase.

Technical specifications

Further information about general technical data and the design of the SINAMICS G150 converter series can be found in Catalog D 11 (Order No. E86060-K5511-A101-A3-7600) and in the electronic Catalog CA 01 on CD-ROM (Order No. E86060-D4001-A110-C5-7600).

Selection and Ordering Data

The following drive systems (motor + converter) are recommended for applications with square-law load torque.

Drive power [1] kW	N-compact motor Order No. + order codes for further options	Rated current A	SINAMICS G150 converter variant A [2] Order No. for converter options Order No. with -Z + Order codes	Rated output current A
3AC 400 V △, 50 Hz				
1500 rpm, 4-pole				
250	**1LA8315-4PB80-Z + B20**	430	**6SL3710-1GE35-0AA0**	490
315	**1LA8317-4PB80-Z + B20**	540	**6SL3710-1GE36-1AA0**	605
355	**1LA8353-4PB80-Z + B20**	610	**6SL3710-1GE37-5AA0**	745
400	**1LA8355-4PB80-Z + B20**	690	**6SL3710-1GE37-5AA0** [3]	745
500	**1LA8357-4PB80-Z + B20**	850	**6SL3710-1GE41-0AA0**	985
3AC 500 V △, 50 Hz				
1500 rpm, 4-pole				
250	**1LA8315-4PB50-Z + B20**	340	**6SL3710-1GF34-1AA0**	410
315	**1LA8317-4PB50-Z + B20**	432	**6SL3710-1GF34-7AA0** [4]	465
355	**1LA8353-4PB50-Z + B20**	488	**6SL3710-1GF35-8AA0**	575
400	**1LA8355-4PB50-Z + B20**	552	**6SL3710-1GF37-4AA0**	735
500	**1LA8357-4PB50-Z + B20**	680	**6SL3710-1GF37-4AA0** [5]	735
3AC 690 V Y, 50 Hz				
1500 rpm, 4-pole				
250	**1LA8315-4PB80-Z + B20**	283	SINAMICS S 150 converters for 690 V motors are not part of the Standardline program. For operating the listed 690 V motors on the SINAMICS converter, the converter has to be ordered with option L10 (du/dt filter). For Selection and Ordering Data, see Catalog D 11.	
315	**1LA8317-4PB80-Z + B20**	360		
355	**1LA8353-4PB80-Z + B20**	406		
400	**1LA8355-4PB80-Z + B20**	460		
500	**1LA8357-4PB80-Z + B20**	566		

1) Temperature class F, utilization in accordance with F. The drive output must be reduced by 10% for motors utilized in accordance with temperature class B.

2) For information about SINAMICS G150 design variant A and "overload capability", refer to Catalog D 11, Part 3 and section "Configuration".

3) Converter model 6SL3710-1GE38-4AA0 (840 A) must be selected when this drive is operated under high overload conditions!

4) Converter model 6SL3710-1GF35-8AA0 (575 A) must be selected when this drive is operated under high overload conditions!

5) Converter model 6SL3710-1GF38-1AA0 (810 A) must be selected when this drive is operated under high overload conditions!

Ordering example:

Low-voltage motor
N-compact Standardline basic version
3AC 400 V, 50 Hz, 1500 rpm, 4-pole, 355 kW
with motor option K45: Anti-condensation heating for 230 V

Matching converter
SINAMICS G150 variant A
with converter option K50: Sensor Module Cabinet-Mounted for motor speed acquisition

1LA8353-4PB80-Z
+B20+K45

6SL3710-1GE37-5AA0-Z
+K50

Options

N-compact Standardline motor Option description	Order code	Relevant option with SINAMICS G150 Option description	Order code
Motor temperature sensing using built-in temperature sensor KTY 84-130	**A23**	Standard	**-**
Motor temperature sensing by means of 6 built-in PT100 G resistance thermometers	**A61**	PT100 evaluation unit for 6 sensors, divided into two groups with factory setting, e.g. with motors, 3 PT100 for the stator windings and two for the motor bearings	**L86**
Installation of 2 screw-in PT100 resistance thermometers in basic circuit for rolling-contact bearings	**A72**		
Built-on pulse encoder LL861 900 220	**H70**	Sensor Module Cabinet-Mounted for motor speed acquisition	**K50**
Built-on pulse encoder HOG 10 D 1024 I For further options, see page 2/3.	**H73**		

Operation with converter

Further converter options
(see Catalog D 11 for detailed descriptions):

Option description	Order code
Input side	
Line filter for use in the first environment to EN 61 800-3, category C2 (TN/TT supplies)	**L00**
Main contactor for currents < 800 A	**L13**
Without line reactor in power range P < 500 kW	**L22**
Line reactor 2% may be required for P > 500 kW	**L23**
EMC shield bus [1] (cable connection from below)	**M70**
PE bus [1] (cable connection from below)	**M75**
Output side	
EMC shield bus [1] (cable connection from below)	**M70**
PE bus [1] (cable connection from below)	**M75**
Motor protection and safety functions	
EMERGENCY STOP button in the cabinet door	**L45**
EMERGENCY STOP category 0, 230 V AC or 24 V DC, uncontrolled stop	**L57**
EMERGENCY STOP category 1, 230 V AC, controlled stop [2]	**L59**
EMERGENCY STOP category 1, 24 V DC, controlled stop [2]	**L60**
Thermistor protection unit with PTB approval (alarm)	**L83**
Thermistor protection unit with PTB approval (switch-off)	**L84**
Insulation monitoring	**L87**
Additional shock protection	**M60**
Increase in degree of protection	
IP21 degree of protection	**M21**
IP23 degree of protection	**M23**
IP54 degree of protection	**M54**
Mechanical options	
Plinth, 100 mm high, RAL 7022	**M06**
Cable connection area, 200 mm high, RAL 7035	**M07**
Power supply connection from above	**M13**
Motor connection from above	**M78**
Top-mounted crane transport assembly for cabinets	**M90**
Miscellaneous options	
Customer terminal block extension	**G61**
Cabinet illumination with service socket	**L50**
Anti-condensation heating for cabinet	**L55**
200 kW braking unit	**L62**
Languages	
Documentation in English/French	**D58**
Documentation in English/Spanish	**D60**
Documentation in English/Italian	**D80**
Rating plate and operator panel in English/French	**T58**
Rating plate and operator panel in English/Spanish	**T60**
Rating plate and operator panel in English/Italian	**T80**
Options specific to chemical industry	
NAMUR terminal block	**B00**
Protective separation for 24 V supply (PELV)	**B02**
Separate output for external auxiliaries (uncontrolled)	**B03**

[1] These options are listed for the input and output options, but are only required once.

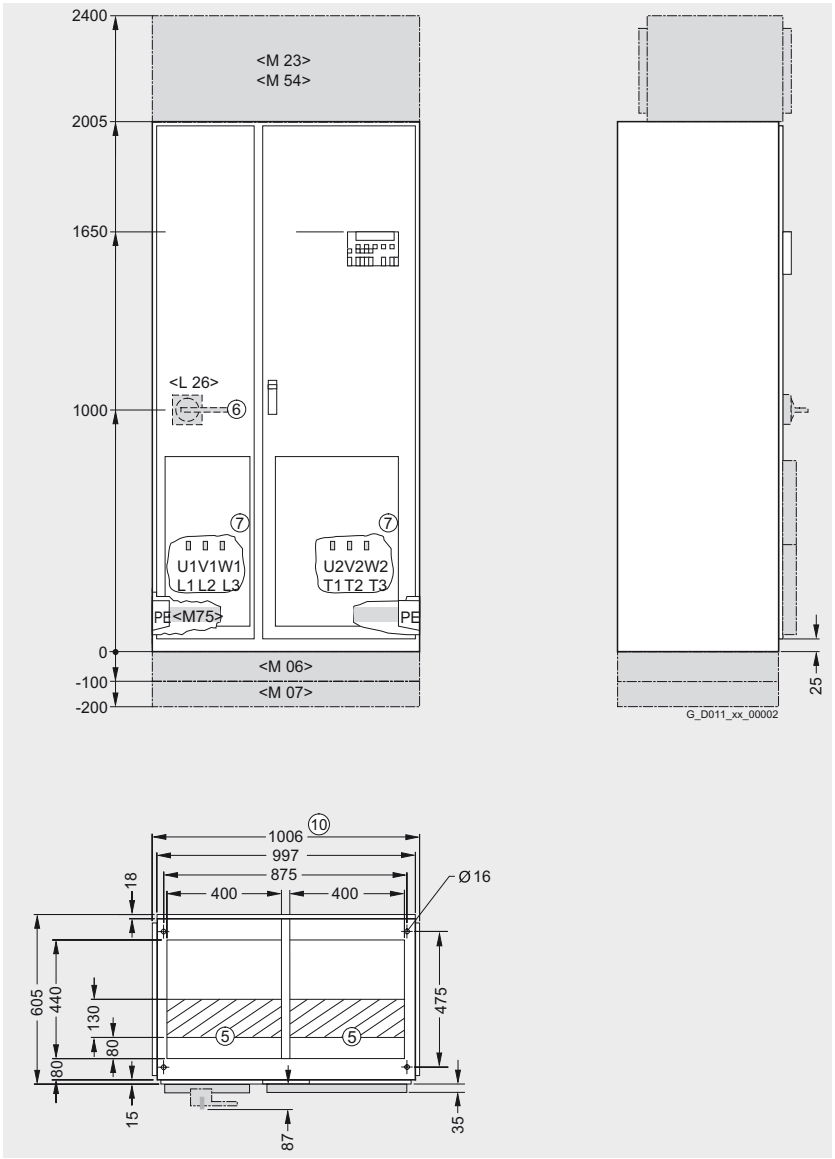
[2] The drive stop requirements must be taken into account with this option. Additional braking units may be needed.

Dimensional drawings

SINAMICS G150 Converter Cabinet Units - Variant A

6SL3710-1GE35-0AA0

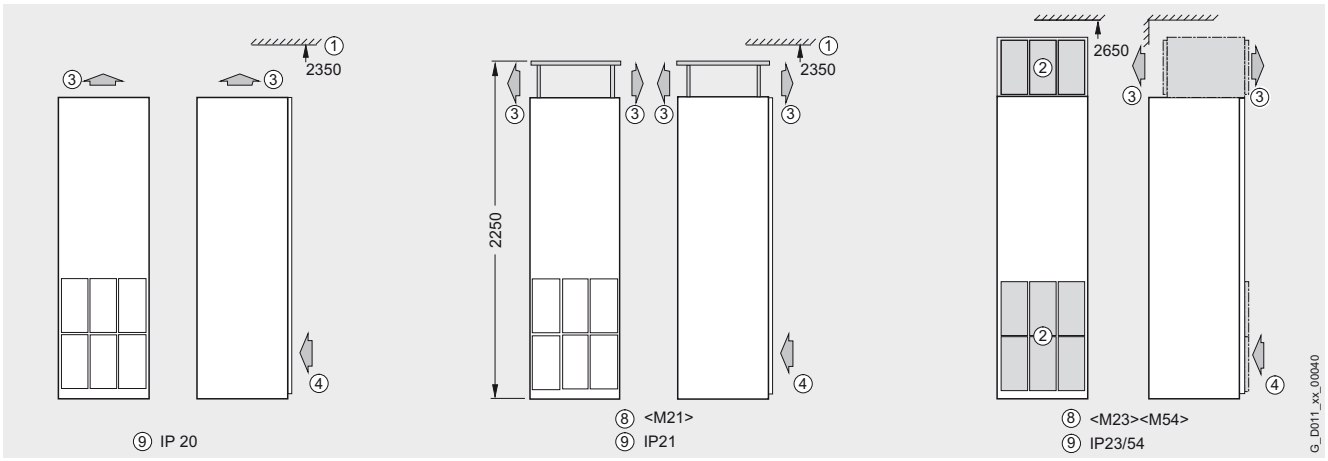
Mains supply and motor terminals at bottom of cabinet
(see Catalog D 11 for further connection options)



① Minimum ceiling height for wall mounting
② Ventilation grille
③ Air outlet zone
④ Air inlet zone
⑤ Cables can enter from below within hatched area
⑥ Main switch, can be secured by padlock
⑦ Power connection
⑧ Degrees of protection option
⑨ Degrees of protection IP20
IP21 option <M21>
IP23 option <M23>
IP54 option <M54>
⑩ Transport unit

Options are shaded grey

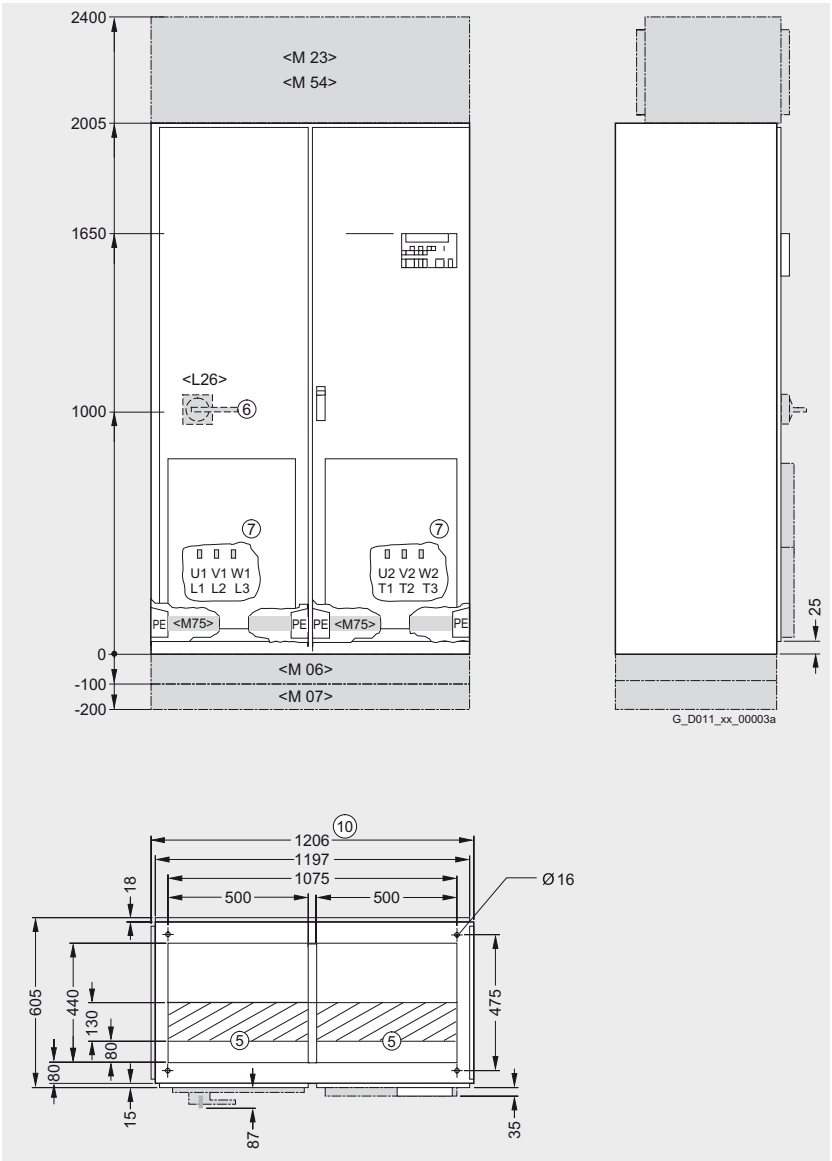
Degrees of protection



Operation with converter

Dimensional drawings

6SL3710-1GE36-1AA0, 6SL3710-1GF34-1AA0, 6SL3710-1GF34-7AA0, 6SL3710-1GF35-8AA0



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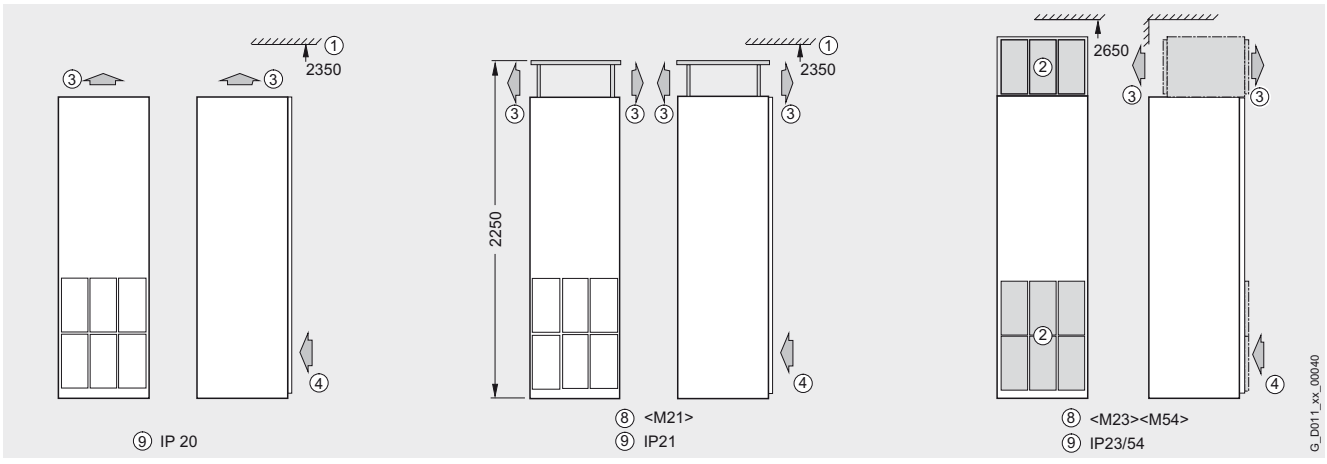
⑧ Degrees of protection option
⑨ Degrees of protection IP20
IP21 option <M21>
IP23 option <M23>
IP54 option <M54>
⑩ Transport unit

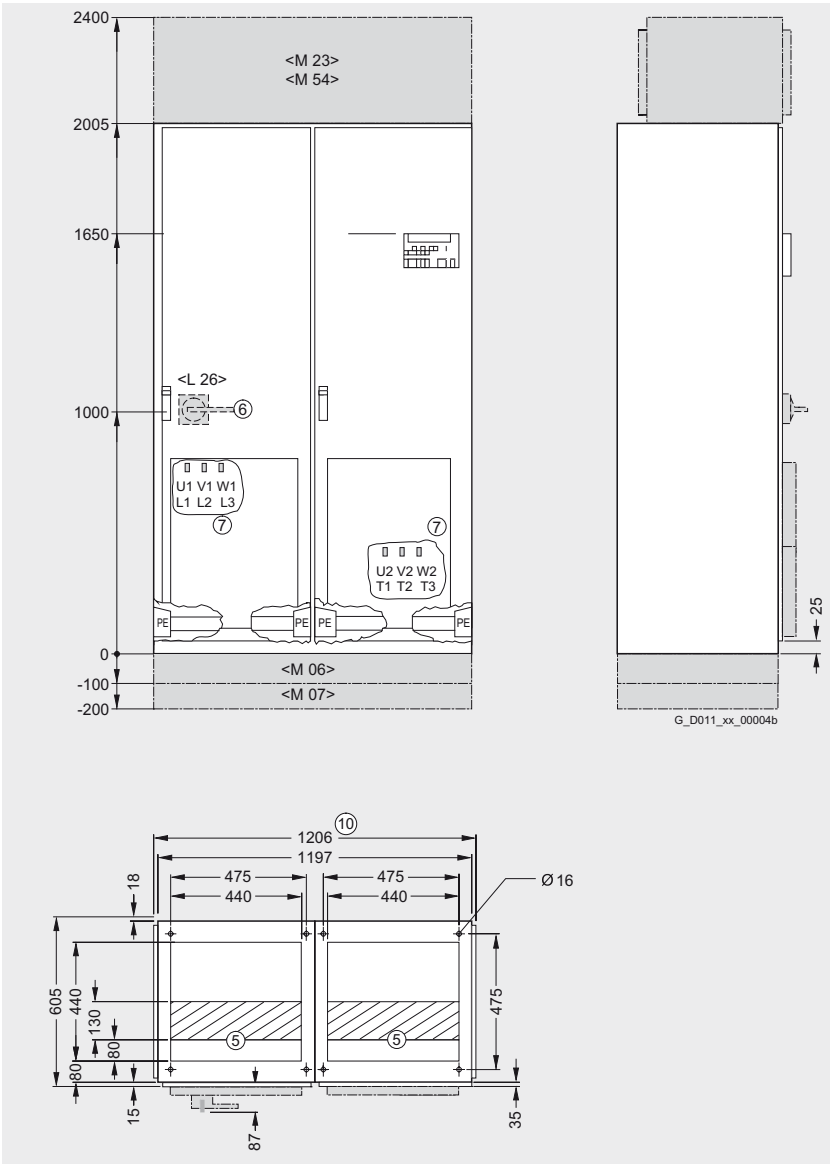
Options are shaded grey

Degrees of protection



Dimensional drawings

6SL3710-1GE37-5AA0, 6SL3710-1GE38-4AA0



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④ Air inlet zone
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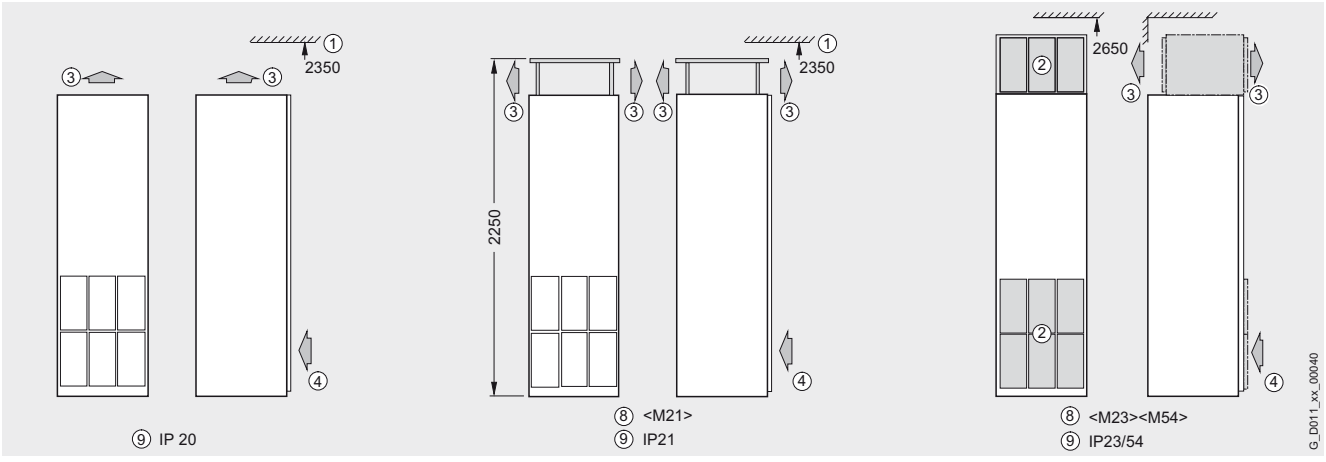
⑧ Degrees of protection option
⑨ Degrees of protection IP20
IP21 option <M21>
IP23 option <M23>
IP54 option <M54>
⑩ Transport unit

Options are shaded grey

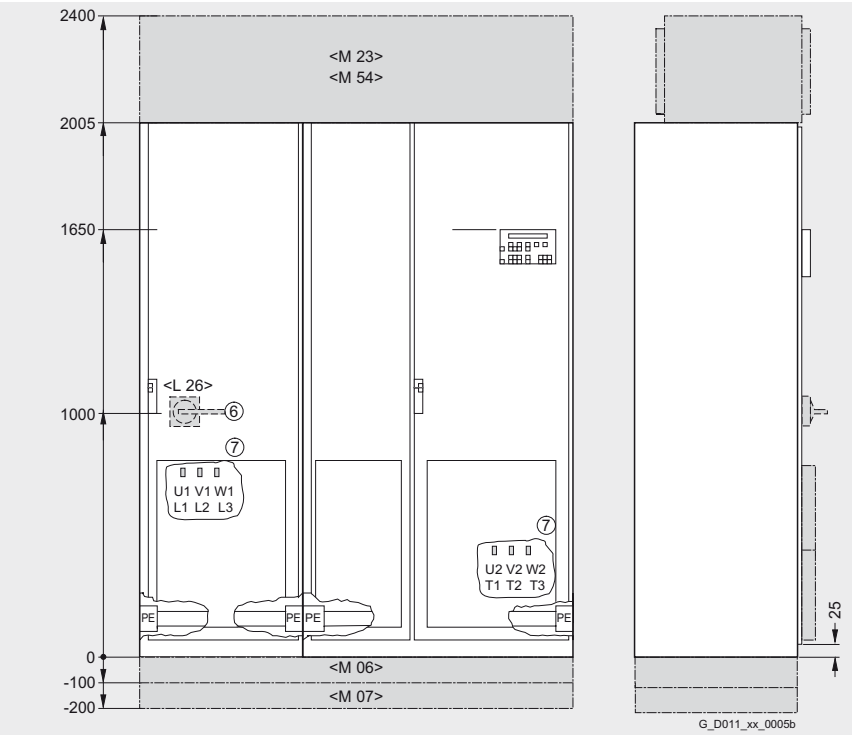
Degrees of protection



Operation with converter

Dimensional drawings

6SL3710-1GE41-0AA0, 6SL3710-1GF37-4AA0, 6SL3710-1GF38-1AA0



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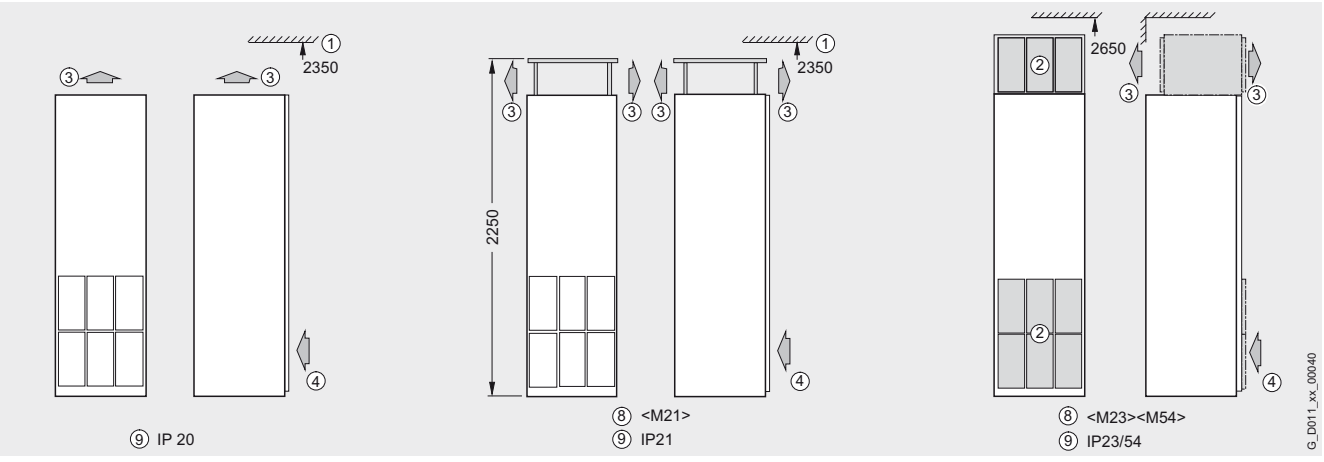
IP21 option <M21>
IP23 option <M23>
IP54 option <M54>
⑩ Transport unit

Options are shaded grey

Degrees of protection



More information

Power cables

The following table shows the recommended or maximum possible cable connections on the power supply and motor sides.

Drive power	Power supply connection (converter input)				Motor connection (converter output)						
	Cable cross section (to DIN VDE)				Cable cross section (to DIN VDE)				Motor connection box		
	Recommended		Max. cross section	Fixing screw M12 (no. of holes)	Recommended		Max. cross section	Fixing screw M12 (no. of holes)	Number of terminals	Contact screw thread	Max. diameter (sealing area connection box)
	400 V	500 V			400 V	500 V					
kW	mm^2	mm^2	mm^2		mm^2	mm^2	mm^2				mm
250	2 x 120	2 x 95	4 x 240	(2)	2 x 120	2 x 95	2 x 240	(2)	6	M12	41 ... 56.5
315	2 x 185	2 x 120	4 x 240	(2)	2 x 185	2 x 120	2 x 240	(2)	6	M12	41 ... 56.5
355	2 x 240	2 x 150	4 x 240	(2)	2 x 240	2 x 150	4 x 240	(2)	6	M16	56 ... 68.5
400	2 x 240	2 x 185	4 x 240	(2)	2 x 240	2 x 185	4 x 240	(2)	6	M16	56 ... 68.5
500	3 x 185	2 x 240	8 x 240	(4)	3 x 185	2 x 240	6 x 240	(3)	12	M16	56 ... 68.5

The cross section recommendations are based on the fuses specified in Part 3 “Accessories” of Catalog D11, and on single routing of 3-core copper cables at 40 °C ambient temperature.

If these conditions do not apply (cable routing, number of cables and ambient temperature), the planning guide for cable installation in Part 4 “Conductor cross sections and terminals” in Catalog D11 must be observed.

Notes

High-Voltage Motors
H-compact Standardline
Operation on supply system

4

Operation on supply system

Overview

H-compact Standardline is a range of standardized, rib-cooled high-voltage motors incorporating the latest state-of-the-art technology.

Their appeal lies in their excellent reliability, durability and robust design.

The following versions of H-compact Standardline motors are available:

- Power range 200 to 800 kW
- Supply voltages 3 / 3.3 / 6 and 6.6 kV, 50 Hz
- 2-pole, 4-pole and 6-pole
- Type of construction IM B3

Benefits

The focus on a design which is standardized, but capable of satisfying a wide range of applications, has made it possible to optimize production processes and consequently slash delivery times and the price at which high-voltage motors are supplied.

Benefits to the customer:

- State-of-the-art motor technology which is already in use worldwide
- Attractive price
- Quick delivery time of only 6 weeks
- Maximum power density
- Low operating costs thanks to excellent efficiency
- High output combined with small dimensions makes it possible to build extremely compact units

Technical specifications

Type of construction	IM B3 (IM 1001)
Shaft heights	315 mm, 355 mm, 400 mm
Type of protection	IP55
Cooling method	IC 411; ribbed cooling, self-ventilated, with additional inner cooling circuit
Ambient conditions	Max. ambient temperature (cooling medium temp.) CT = 40 °C Installation altitude ≤1000 m above sea level. Ambient temperatures up to 55 °C possible with utilization according to temperature class F. Operation and starting permissible at temperatures down to -20 °C.
Insulation system	MICALASTIC® with Vacuum Pressure Impregnation (VPI)
Rotor construction	with aluminum die-cast cage
Bearing construction	Deep-groove ball bearing to DIN 625, with SPM nipple (shock pulse measurement)
Bearing box and shields	Made of grey cast iron, integrally cast motor feet
Temperature monitoring	By 6 PT 100s in stator winding as standard (not included if PTC thermistors are ordered)
Auxiliary connection box	standard feature
Regulations and standards	in accordance with IEC 60034-1 ff.

Selection and Ordering Data

Note:

Motors are available only with the specified data for voltage, frequency and output.

The documentation supplied is standardized. It contains starting characteristics for V_{rated} and 80 % V_{rated} without load torque. A starting inspection is not included.

Rated output [1]	Order No. + order codes for further options	Operating values at rated output						Starting torque	Starting current	Stalling torque	Moment of inertia J		Sound pressure level [2]
		Rated speed	Efficiency η with		Power factor	Rated current	Rated torque	with direct starting as multiple of rated			Motor	External max. perm.	
			4/4 load	3/4 load	cos φ			torque	current	torque			No load/ load
kW		rpm	%	%		A	Nm				kgm²	kgm²	dB(A)
3 kV, 50 Hz													
3000 rpm, 2-pole													
200	**1LA4310-2AN30-Z + B20**	2970	95.2	95.2	0.87	46.0	643	0.90	5.05	2.3	2.2	28	73/74
236	**1LA4312-2AN30-Z + B20**	2967	95.0	95.2	0.87	55.0	759	0.90	5.00	2.3	2.2	26	73/74
300	**1LA4314-2AN30-Z + B20**	2972	95.7	95.8	0.88	69.0	964	1.05	5.20	2.4	2.7	30	73/74
355	**1LA4316-2AN30-Z + B20**	2974	96.2	96.2	0.88	81.0	1140	1.10	5.30	2.5	3.1	35	73/74
400	**1LA4350-2AN30-Z + B20**	2978	96.1	96.2	0.88	91.0	1283	1.05	5.25	2.3	4.3	38	75/76
450	**1LA4352-2AN30-Z + B20**	2978	96.4	96.4	0.88	102.0	1443	1.20	5.55	2.5	4.8	43	75/76
500	**1LA4354-2AN30-Z + B20**	2980	96.6	96.7	0.88	114.0	1602	1.20	5.55	2.5	5.2	46	75/76
560	**1LA4400-2AN30-Z + B20**	2984	96.5	96.4	0.88	128.0	1792	0.85	5.40	2.5	7.8	26	77/78
650	**1LA4402-2AN30-Z + B20**	2985	96.8	96.7	0.88	146.0	2079	0.90	5.60	2.6	8.7	27	77/78
750	**1LA4404-2AN30-Z + B20**	2985	96.7	96.7	0.89	168.5	2398	0.95	5.60	2.6	9.9	30	77/78
1500 rpm, 4-pole													
200	**1LA4310-4AN30-Z + B20**	1480	94.3	94.4	0.81	50.0	1290	1.15	5.20	2.30	2.8	159	75/77
250	**1LA4312-4AN30-Z + B20**	1480	95.0	95.2	0.84	60.0	1613	1.15	5.30	2.30	3.5	201	75/77
300	**1LA4314-4AN30-Z + B20**	1480	95.2	95.4	0.85	72.0	1936	1.25	5.50	2.40	4.0	222	75/77
365	**1LA4316-4AN30-Z + B20**	1481	95.7	95.9	0.85	87.0	2353	1.25	5.50	2.40	4.8	297	75/77
400	**1LA4350-4AN30-Z + B20**	1485	95.7	95.8	0.84	96.0	2572	1.25	5.50	2.50	6.0	224	77/79
470	**1LA4352-4AN30-Z + B20**	1484	95.9	96.0	0.85	110.0	3024	1.20	5.30	2.35	6.9	247	77/79
560	**1LA4354-4AN30-Z + B20**	1485	96.2	96.3	0.86	130.0	3601	1.30	5.50	2.40	8.1	296	77/79
630	**1LA4400-4AN30-Z + B20**	1488	96.3	96.3	0.85	148.0	4043	1.20	5.50	2.50	11.6	288	79/81
710	**1LA4402-4AN30-Z + B20**	1488	96.5	96.5	0.85	166.0	4556	1.20	5.50	2.50	12.9	330	79/81
800	**1LA4404-4AN30-Z + B20**	1488	96.6	96.6	0.86	186.0	5134	1.20	5.50	2.50	14.5	381	79/81
1000 rpm, 6-pole													
236	**1LA4314-6AN30-Z + B20**	986	94.6	94.9	0.82	59.0	2286	1.25	5.30	2.50	5.3	375	69/72
270	**1LA4316-6AN30-Z + B20**	985	94.8	95.2	0.82	66.0	2617	1.25	5.50	2.40	6.4	431	69/72
315	**1LA4350-6AN30-Z + B20**	989	95.3	95.5	0.82	78.0	3042	1.10	5.30	2.30	10.8	541	71/74
365	**1LA4352-6AN30-Z + B20**	989	95.6	95.8	0.83	89.0	3523	1.10	5.30	2.20	12.7	667	71/74
425	**1LA4354-6AN30-Z + B20**	990	95.8	95.9	0.82	104.0	4099	1.25	5.50	2.40	15.0	841	71/74
490	**1LA4400-6AN30-Z + B20**	991	95.9	96.0	0.81	118.0	4722	1.05	5.50	2.30	21.2	740	73/76
570	**1LA4402-6AN30-Z + B20**	992	96.2	96.3	0.81	136.0	5487	1.10	5.50	2.30	24.2	1193	73/76
630	**1LA4404-6AN30-Z + B20**	991	96.3	96.3	0.80	154.0	6071	1.20	5.50	2.40	27.3	1233	73/76

[1] Temperature class F, utilization in accordance with B.

[2] Measured at distance of 1 m in accordance with DIN 45635 (Part 1), tolerance +3 dB(A).

Operation on supply system

Rated output [1]	Order No. + order codes for further options	Operating values at rated output						Starting torque	Starting current	Stalling torque	Moment of inertia J		Sound pressure level [2]
		Rated speed	Efficiency η with		Power factor	Rated current	Rated torque	with direct starting as multiple of rated			Motor	External max. perm.	
			4/4 load	3/4 load	cos φ			torque	current	torque			No load/ load
kW		rpm	%	%		A	Nm				kgm^2	kgm^2	dB(A)
3.3 kV, 50 Hz													
3000 rpm, 2-pole													
200	**1LA4310-2AN00-Z + B20**	2977	95.5	95.2	0.85	43.0	641	1.10	6.00	2.85	2.2	28	73/74
236	**1LA4312-2AN00-Z + B20**	2975	95.2	95.2	0.84	52.0	757	1.10	5.90	2.80	2.2	26	73/74
300	**1LA4314-2AN00-Z + B20**	2978	95.9	95.7	0.85	65.0	962	1.30	6.15	2.95	2.7	30	73/74
355	**1LA4316-2AN00-Z + B20**	2980	96.3	96.1	0.85	76.0	1138	1.35	6.30	3.10	3.1	35	73/74
400	**1LA4350-2AN00-Z + B20**	2983	96.3	96.2	0.85	86.0	1280	1.30	6.15	2.85	4.3	38	75/76
450	**1LA4352-2AN00-Z + B20**	2983	96.5	96.4	0.85	96.5	1441	1.45	6.50	3.10	4.8	43	75/76
500	**1LA4354-2AN00-Z + B20**	2985	96.7	96.7	0.85	107.0	1600	1.45	6.55	3.10	5.2	46	75/76
560	**1LA4400-2AN00-Z + B20**	2988	96.6	96.3	0.84	121.5	1790	1.05	6.35	3.05	7.8	26	77/78
650	**1LA4402-2AN00-Z + B20**	2988	96.8	96.6	0.85	138.0	2077	1.10	6.60	3.20	8.7	27	77/78
750	**1LA4404-2AN00-Z + B20**	2989	96.8	96.6	0.87	157.0	2396	1.15	6.70	3.20	9.9	30	77/78
1500 rpm, 4-pole													
200	**1LA4310-4AN00-Z + B20**	1484	94.4	94.2	0.74	50.0	1287	1.40	5.75	2.80	2.8	159	75/77
250	**1LA4312-4AN00-Z + B20**	1485	95.2	95.2	0.79	58.0	1608	1.40	6.15	2.85	3.5	201	75/77
300	**1LA4314-4AN00-Z + B20**	1484	95.4	95.4	0.80	69.5	1931	1.55	6.35	2.95	4.0	222	75/77
365	**1LA4316-4AN00-Z + B20**	1485	95.9	95.9	0.80	83.5	2346	1.55	6.35	2.95	4.8	297	75/77
400	**1LA4350-4AN00-Z + B20**	1488	95.8	95.6	0.77	95.0	2566	1.55	6.20	3.05	6.0	224	77/79
470	**1LA4352-4AN00-Z + B20**	1488	96.1	96.0	0.80	105.5	3017	1.45	6.15	2.85	6.9	247	77/79
560	**1LA4354-4AN00-Z + B20**	1489	96.4	96.3	0.82	124.0	3592	1.60	6.40	2.95	8.1	296	77/79
630	**1LA4400-4AN00-Z + B20**	1491	96.4	96.2	0.80	143.0	4036	1.45	6.35	3.05	11.6	288	79/81
710	**1LA4402-4AN00-Z + B20**	1491	96.6	96.4	0.81	159.0	4548	1.45	6.40	3.05	12.9	330	79/81
800	**1LA4404-4AN00-Z + B20**	1491	96.7	96.5	0.82	177.5	5125	1.45	6.45	3.05	14.5	381	79/81
1000 rpm, 6-pole													
236	**1LA4314-6AN00-Z + B20**	989	94.8	94.8	0.77	57.0	2279	1.50	6.10	3.05	5.3	375	69/72
270	**1LA4316-6AN00-Z + B20**	988	95.1	95.2	0.78	62.5	2609	1.55	6.45	2.95	6.4	431	69/72
315	**1LA4350-6AN00-Z + B20**	991	95.5	95.4	0.78	74.5	3034	1.35	6.20	2.80	10.8	541	71/74
365	**1LA4352-6AN00-Z + B20**	991	95.8	95.7	0.79	84.5	3515	1.35	6.20	2.70	12.7	667	71/74
425	**1LA4354-6AN00-Z + B20**	992	95.9	95.8	0.78	99.5	4091	1.55	6.40	2.95	15.0	841	71/74
490	**1LA4400-6AN00-Z + B20**	993	96.0	95.9	0.81	111.5	4713	1.30	6.50	2.80	21.2	740	73/76
570	**1LA4402-6AN00-Z + B20**	994	96.3	96.2	0.81	128.5	5476	1.35	6.45	2.80	24.2	1193	73/76
630	**1LA4404-6AN00-Z + B20**	993	96.4	96.2	0.78	146.5	6060	1.45	6.45	2.95	27.3	1233	73/76

[1] Temperature class F, utilization in accordance with B.

[2] Measured at distance of 1 m in accordance with DIN 45635 (Part 1), tolerance +3 dB(A).

Operation on supply system

Rated output [1]	Order No. + order codes for further options	Operating values at rated output						Starting torque	Starting current	Stalling torque	Moment of inertia J		Sound pressure level [2]
		Rated speed	Efficiency η with		Power factor	Rated current	Rated torque	with direct starting as multiple of rated			Motor	External max. perm.	
			4/4 load	3/4 load	cos φ			torque	current	torque			No load/ load
kW		rpm	%	%		A	Nm				kgm^2	kgm^2	dB(A)
6 kV, 50 Hz													
3000 rpm, 2-pole													
200	**1LA4310-2AN60-Z + B20**	2970	95.2	95.2	0.87	23.0	643	0.90	5.00	2.30	2.2	28	73/74
236	**1LA4312-2AN60-Z + B20**	2967	95.0	95.2	0.87	27.5	759	0.90	5.00	2.30	2.2	26	73/74
300	**1LA4314-2AN60-Z + B20**	2972	95.7	95.8	0.88	34.5	964	1.05	5.20	2.40	2.7	30	73/74
355	**1LA4316-2AN60-Z + B20**	2974	96.2	96.2	0.88	40.5	1140	1.10	5.30	2.50	3.1	35	73/74
400	**1LA4350-2AN60-Z + B20**	2978	96.1	96.2	0.88	45.5	1283	1.05	5.20	2.30	4.3	38	75/76
450	**1LA4352-2AN60-Z + B20**	2978	96.4	96.4	0.88	51.0	1443	1.20	5.50	2.50	4.8	43	75/76
500	**1LA4354-2AN60-Z + B20**	2980	96.6	96.7	0.88	57.0	1602	1.20	5.50	2.50	5.2	46	75/76
560	**1LA4400-2AN60-Z + B20**	2984	96.5	96.4	0.88	64.0	1792	0.85	5.40	2.50	7.8	26	77/78
650	**1LA4402-2AN60-Z + B20**	2985	96.8	96.7	0.88	73.0	2079	0.90	5.60	2.60	8.7	27	77/78
750	**1LA4404-2AN60-Z + B20**	2985	97.0	96.9	0.89	84.0	2399	0.95	5.60	2.60	9.9	30	77/78
1500 rpm, 4-pole													
200	**1LA4310-4AN60-Z + B20**	1480	94.3	94.4	0.81	25.0	1290	1.15	5.20	2.30	2.8	159	75/77
250	**1LA4312-4AN60-Z + B20**	1480	95.0	95.2	0.84	30.0	1613	1.15	5.30	2.30	3.5	201	75/77
300	**1LA4314-4AN60-Z + B20**	1480	95.2	95.4	0.85	36.0	1936	1.25	5.50	2.40	4.0	222	75/77
365	**1LA4316-4AN60-Z + B20**	1481	95.7	95.9	0.85	43.5	2353	1.25	5.50	2.40	4.8	297	75/77
400	**1LA4350-4AN60-Z + B20**	1485	95.7	95.8	0.84	48.0	2572	1.25	5.50	2.50	6.0	224	77/79
470	**1LA4352-4AN60-Z + B20**	1484	95.9	96.0	0.85	55.0	3024	1.20	5.30	2.35	6.9	247	77/79
560	**1LA4354-4AN60-Z + B20**	1485	96.2	96.3	0.86	65.0	3601	1.30	5.50	2.40	8.1	296	77/79
630	**1LA4400-4AN60-Z + B20**	1488	96.3	96.3	0.85	74.0	4043	1.20	5.50	2.50	11.6	288	79/81
710	**1LA4402-4AN60-Z + B20**	1488	96.5	96.5	0.85	83.0	4556	1.20	5.50	2.50	12.9	330	79/81
800	**1LA4404-4AN60-Z + B20**	1488	96.6	96.6	0.86	93.0	5134	1.20	5.50	2.50	14.5	381	79/81
1000 rpm, 6-pole													
236	**1LA4314-6AN60-Z + B20**	986	94.6	94.9	0.82	29.5	2286	1.25	5.30	2.50	5.3	375	69/72
270	**1LA4316-6AN60-Z + B20**	985	94.8	95.2	0.82	33.0	2617	1.25	5.50	2.40	6.4	431	69/72
315	**1LA4350-6AN60-Z + B20**	989	95.3	95.5	0.82	39.0	3041	1.10	5.30	2.30	10.8	541	71/74
365	**1LA4352-6AN60-Z + B20**	989	95.6	95.8	0.83	44.5	3524	1.10	5.30	2.20	12.7	667	71/74
425	**1LA4354-6AN60-Z + B20**	990	95.8	95.9	0.82	52.0	4099	1.25	5.50	2.40	15.0	841	71/74
490	**1LA4400-6AN60-Z + B20**	991	95.9	96.0	0.84	59.0	4722	1.05	5.50	2.30	21.2	740	73/76
570	**1LA4402-6AN60-Z + B20**	992	96.2	96.3	0.84	68.0	5487	1.10	5.50	2.30	24.2	1193	73/76
630	**1LA4404-6AN60-Z + B20**	991	96.3	96.3	0.82	77.0	6071	1.20	5.50	2.40	27.3	1233	73/76

[1] Temperature class F, utilization in accordance with B.

[2] Measured at distance of 1 m in accordance with DIN 45635 (Part 1), tolerance +3 dB(A).

Operation on supply system

Rated output [1]	Order No. + order codes for further options	Operating values at rated output						Starting torque	Starting current	Stalling torque	Moment of inertia J		Sound pressure level [2]
		Rated speed	Efficiency η with		Power factor	Rated current	Rated torque	with direct starting as multiple of rated			Motor	External max. perm.	
			4/4 load	3/4 load	cos φ			torque	current	torque			No load/ load
kW		rpm	%	%		A	Nm				kgm^2	kgm^2	dB(A)
6.6 kV, 50 Hz													
3000 rpm, 2-pole													
200	**1LA4310-2AN70-Z + B20**	2977	95.4	95.2	0.85	21.5	641	1.10	6.00	2.80	2.2	28	73/74
236	**1LA4312-2AN70-Z + B20**	2975	95.2	95.2	0.84	26.0	757	1.10	5.90	2.80	2.2	26	73/74
300	**1LA4314-2AN70-Z + B20**	2978	95.9	95.7	0.85	32.5	962	1.30	6.15	2.95	2.7	30	73/74
355	**1LA4316-2AN70-Z + B20**	2980	96.3	96.1	0.85	38.0	1138	1.35	6.30	3.05	3.1	35	73/74
400	**1LA4350-2AN70-Z + B20**	2983	96.3	96.2	0.85	43.0	1280	1.30	6.10	2.80	4.3	38	75/76
450	**1LA4352-2AN70-Z + B20**	2983	96.5	96.3	0.85	48.0	1441	1.45	6.50	3.05	4.8	43	75/76
500	**1LA4354-2AN70-Z + B20**	2985	96.7	96.7	0.85	53.5	1600	1.45	6.50	3.05	5.2	46	75/76
560	**1LA4400-2AN70-Z + B20**	2988	96.5	96.3	0.84	60.5	1790	1.00	6.30	3.05	7.8	26	77/78
650	**1LA4402-2AN70-Z + B20**	2988	96.8	96.6	0.85	69.0	2077	1.10	6.60	3.20	8.7	27	77/78
750	**1LA4404-2AN70-Z + B20**	2989	97.1	96.8	0.87	78.5	2396	1.15	6.70	3.20	9.9	30	77/78
1500 rpm, 4-pole													
200	**1LA4 310-4AN70-Z + B20**	1484	94.4	94.2	0.74	25.0	1287	1.40	5.75	2.80	2.8	159	75/77
250	**1LA4 312-4AN70-Z + B20**	1485	95.2	95.2	0.79	29.0	1609	1.40	6.10	2.80	3.5	201	75/77
300	**1LA4 314-4AN70-Z + B20**	1484	95.4	95.3	0.80	35.0	1931	1.55	6.30	2.95	4.0	222	75/77
365	**1LA4 316-4AN70-Z + B20**	1485	95.9	95.9	0.80	42.0	2346	1.55	6.35	2.95	4.8	297	75/77
400	**1LA4 350-4AN70-Z + B20**	1488	95.8	95.6	0.77	47.5	2567	1.50	6.20	3.05	6.0	224	77/79
470	**1LA4 352-4AN70-Z + B20**	1488	96.1	96.0	0.80	53.0	3017	1.45	6.15	2.85	6.9	247	77/79
560	**1LA4 354-4AN70-Z + B20**	1490	96.4	96.3	0.82	62.0	3592	1.55	6.40	2.95	8.1	296	77/79
630	**1LA4 400-4AN70-Z + B20**	1491	96.4	96.2	0.80	71.5	4036	1.45	6.35	3.05	11.6	288	79/81
710	**1LA4 402-4AN70-Z + B20**	1491	96.6	96.4	0.81	79.5	4548	1.45	6.40	3.05	12.9	330	79/81
800	**1LA4 404-4AN70-Z + B20**	1491	96.7	96.5	0.82	88.5	5125	1.45	6.40	3.05	14.5	381	79/81
1000 rpm, 6-pole													
236	**1LA4 314-6AN70-Z + B20**	989	94.8	94.8	0.77	28.5	2279	1.50	6.10	3.05	5.3	375	69/72
270	**1LA4 316-6AN70-Z + B20**	988	95.1	95.2	0.78	31.5	2609	1.55	6.45	2.95	6.4	431	69/72
315	**1LA4 350-6AN70-Z + B20**	991	95.5	95.4	0.78	37.0	3034	1.35	6.15	2.80	10.8	541	71/74
365	**1LA4 352-6AN70-Z + B20**	991	95.8	95.7	0.79	42.0	3515	1.35	6.20	2.70	12.7	667	71/74
425	**1LA4 354-6AN70-Z + B20**	992	95.9	95.8	0.78	50.0	4091	1.55	6.40	2.95	15.0	841	71/74
490	**1LA4 400-6AN70-Z + B20**	993	96.0	95.9	0.81	55.5	4713	1.30	6.45	2.80	21.2	740	73/76
570	**1LA4 402-6AN70-Z + B20**	994	96.3	96.2	0.81	64.5	5476	1.35	6.45	2.80	24.2	1193	73/76
630	**1LA4 404-6AN70-Z + B20**	993	96.4	96.2	0.78	73.0	6060	1.45	6.45	2.95	27.3	1233	73/76

[1] Temperature class F, utilization in accordance with B.

[2] Measured at distance of 1 m in accordance with DIN 45635 (Part 1), tolerance +3 dB(A).

Ordering example:

High-voltage motor
H-compact Standardline basic version
6.6 kV, 50 Hz, 1500 rpm, 4-pole, 300 kW
with option M13: Anti-condensation heating for 230 V

1LA4314-4AN70-Z
+B20+M13

Options

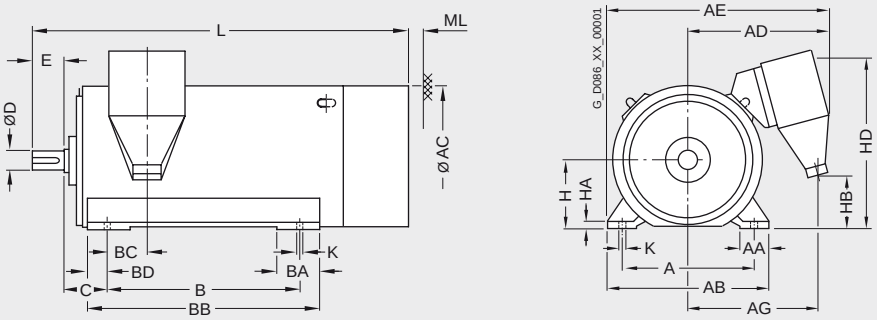
Option description	Order code	Comment
Standardline design	**B20**	Always state
Motor protection through PTC thermistor with 6 built-in temperature sensors for alarm and switch-off	**A12**	
Motor temperature sensing by means of 6 built-in PT100 G resistance thermometers	**A65**	Standard
Installation of 2 screw-in PT100 resistance thermometers in basic circuit for rolling-contact bearings	**A40**	
Nipples for SPM (shock pulse measurement)	**G50**	Standard
Connection box on RHS (view onto DE)	**K09**	
Connection box on LHS (view onto DE)	**K10**	
Connection box at 90° angle, cable from DE	**K83**	
Connection box at 90° angle, cable from NDE	**K84**	
Connection box at 180° angle, cable from top	**K85**	
Special finish in standard color RAL 7030	**K26**	
Anti-condensation heating for 110 V	**M12**	
Anti-condensation heating for 230 V	**M13**	
Supplementary (second) auxiliary connection box in grey cast iron	**M50**	
Separate auxiliary connection box for anti-condensation heating	**M52**	
Version for clockwise rotation	**K97**	
Version for counter-clockwise rotation	**K98**	
Ambient temperature 45 °C	**D11**	With utilization in accordance with F
Ambient temperature 50 °C	**D12**	With utilization in accordance with F
Ambient temperature 55 °C	**D13**	With utilization in accordance with F
Standard paint finish in a color different from RAL 7030	**Y53**	Plain text required
Documentation		
Documentation in English	**-**	Standard
Documentation in German	**D00**	
Documentation in Russian	**D56**	
Documentation in Italian	**D72**	
Documentation in French	**D77**	
Documentation in Spanish	**D78**	
Documentation in Portuguese	**D79**	
Documentation in Swedish	**D83**	
Documentation in Chinese	**D84**	
Documentation on CD-ROM	**B21**	

Operation on supply system

Dimensional drawings

Design:

Type IM B3, rolling-contact bearing, degree of protection IP55,
type of cooling IC 441



Type	Weight	A	AD	AE	B	C	H	HD	L	D	E
	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
2-pole											
1LA4310–2	1550	610	710	1075	710	200	315	860	1590	70	105
1LA4312–2	1550	610	710	1075	710	200	315	860	1590	70	105
1LA4314–2	1850	610	710	1075	900	200	315	860	1790	70	105
1LA4316–2	2000	610	710	1075	900	200	315	860	1790	70	105
1LA4350–2	2300	686	740	1155	1000	224	355	930	1930	75	105
1LA4352–2	2400	686	740	1155	1000	224	355	930	1930	75	105
1LA4354–2	2550	686	740	1155	1000	224	355	930	1930	75	105
1LA4400–2	3150	750	775	1120	1120	254	400	1010	2095	85	130
1LA4402–2	3300	750	775	1120	1120	254	400	1010	2095	85	130
1LA4404–2	3550	750	775	1120	1120	254	400	1010	2095	85	130
4-pole											
1LA4310–4	1500	610	710	1075	710	200	315	860	1610	90	130
1LA4312–4	1650	610	710	1075	710	200	315	860	1610	90	130
1LA4314–4	1900	610	710	1075	900	200	315	860	1810	90	130
1LA4316–4	2050	610	710	1075	900	200	315	860	1810	90	130
1LA4350–4	2350	686	740	1155	1000	224	355	930	1985	100	165
1LA4352–4	2550	686	740	1155	1000	224	355	930	1985	100	165
1LA4354–4	2750	686	740	1155	1000	224	355	930	1985	100	165
1LA4400–4	3400	750	775	1125	1120	254	400	1010	2125	120	165
1LA4402–4	3600	750	775	1125	1120	254	400	1010	2125	120	165
1LA4404–4	3800	750	775	1125	1120	254	400	1010	2125	120	165
6-pole											
1LA4314–6	1950	610	710	1075	900	200	315	860	1810	90	130
1LA4316–6	2150	610	710	1075	900	200	315	860	1810	90	130
1LA4350–6	2400	686	740	1155	1000	224	355	930	1985	100	165
1LA4352–6	2600	686	740	1155	1000	224	355	930	1985	100	165
1LA4354–6	2850	686	740	1155	1000	224	355	930	1985	100	165
1LA4400–6	3500	750	775	1225	1120	254	400	1010	2125	120	165
1LA4402–6	3750	750	775	1225	1120	254	400	1010	2125	120	165
1LA4404–6	4000	750	775	1225	1120	254	400	1010	2125	120	165

More information

Description - construction details

Housing, cooling system

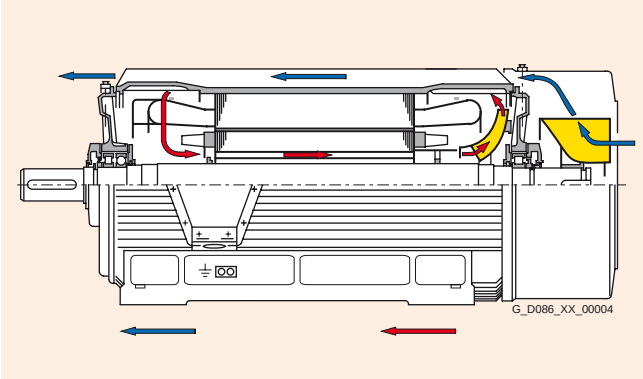
The stator housing on all motors is made of grey cast iron.

The housing contains 4 axial cooling air ducts equally spaced around the circumference.

The main and auxiliary connection boxes are bolted onto the two upper ducts, which also contain the winding conductors and monitoring cables.

The two bottom ducts are located in the foot area.

These cooling air ducts are a component of the supplementary inner cooling circuit that is a feature of Siemens H-compact and N-compact motors. This cooling circuit ensures even thermal distribution within the motor and provides for optimum cooling. The resulting bearing and winding overhang temperatures have a positive impact on the service life and availability of the motors.



Hoisting gear

Two diagonally arranged, reversible hoisting lugs which align automatically with the lifting cable, i.e. according to the applied direction of force.

Rotor construction

The rotor winding is made of die-cast aluminum.

The aluminum is poured into the rotor slots under pressure and thus bonded with the rotor laminations in a positive connection. This method of manufacture precludes any risk of cage movement or cage “creepage” in the rotor core.

Another advantage of the die-cast method is the excellent thermal coupling between the cage and laminated rotor core, resulting in high permissible starting and rotor locking times.

Shaft

All motors have a shaft extension designed according to DIN 748 “short” with key steel featherkey according to DIN 6880. The rotors are balanced with half-key.

Direction of rotation, fans and fan shroud

The direction of rotation must be stated in every order!

On 2-pole motors, the external fan is a low-noise, direction-dependent axial fan. 4-pole and 6-pole motors are equipped with a direction-neutral radial fan.

The external fan is covered by a sheet-steel shroud.

Vibration response

H-compact Standardline motors comply with vibration severity grade N as stipulated by IEC 60034-14, or grade A according to the revised version of IEC 60034-14 (valid from December 2006). The vibration levels remain well below limit values in most cases.

Insulation system

The SIEMENS-MICALASTIC® insulation system, tried and tested on high-power high-voltage motors for many years, has been used on the H-compact Standardline range.

The MICALASTIC insulation system complies with temperature class F, thermally utilized according to B (in normal operation).

An important element is the VPI (Vacuum Pressure Impregnation) process which is specially tailored to this insulation system.

The winding is resistant to system transfers with 100% residual field and switching operations up to 110% with phase opposition.

The surge withstand capability of the insulation satisfies insulation coordination requirements. The insulation properties exceed the values (V_p = 4 x V_{rated} + 5 kV) stipulated in DIN EN 60034-15/VDE 0530-15.

Noise

H-compact Standardline motors are low-noise machines. This is achieved by:

- Motor construction designed for low noise
- Optimization of external ventilation
- Fans with good air-flow form design
- Noise-optimized construction of steel fan shroud
- Number of stator and rotor slots carefully selected for low magnetic noise excitation

Switching frequency

H-compact Standardline motors are designed for continuous operation in accordance with IEC / VDE 0530 Part 1. The permissible switching frequency limit is 5000 starts per year.

Operation on supply system

Connection box 1XA8711

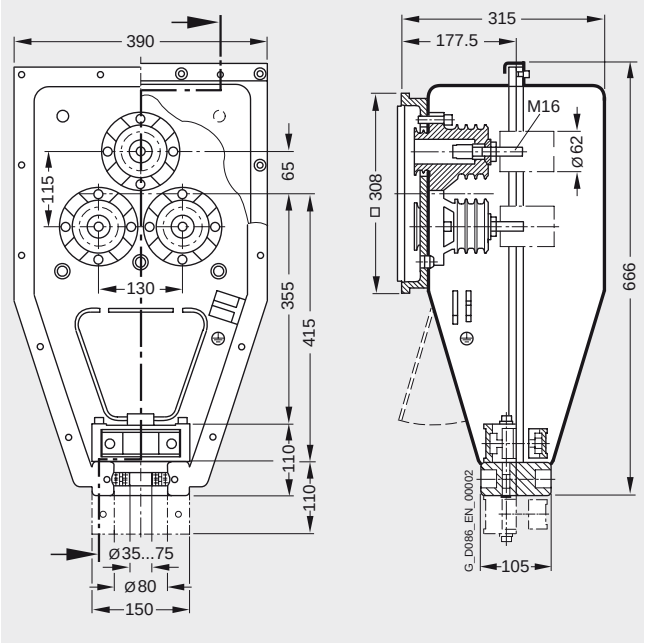
Rated voltage 6.6 kV, up to 315 A, 3 connections (M16) for mains connection

- Up to 240 mm^2 conductor cross section with cable lug in accordance with DIN 46234,
- Up to 400 mm^2 conductor cross section with cable lug in accordance with DIN 46235,
- Alternatively, connection without cable lug,

Internal ground connection

Mounted on motor on RHS at DE (looking towards the DE shaft end).

As an option, the connection box can be mounted on LHS at DE, rotated through an angle of 90° or 180°.



Auxiliary connection box 1XB9014

The auxiliary connection box is designed to hold connections for connecting monitoring elements, heating, etc. It is made of aluminum and is shipped as standard with a cable entry plate without drill holes. This means that the cable entry parameters do not need to be clarified in advance when the motor is ordered. The plate is secured by 2 or 4 screws and can be removed easily for machining with the required entry holes.

- Dimensions (W x D x H): 360 x 160 x 90 mm
- No. of connections: 35
- Max. box mounting height: 50 mm

Paint finish

Two paint systems - standard paint and special paint - are available for protecting motors against corrosion. They satisfy the following requirements relating to environmental conditions:

The **Standard paint** is categorized in the “Moderate” climate group as specified by IEC 721-2-1.

It is suitable for

- installation indoors or outdoors under cover, without direct natural weathering.
- Temperatures up to +120 °C for short periods or +100 °C continuously.
- Rel. air humidity up to 100% at temperatures up to +30 °C for short periods, up to 85% at temperatures up to +25 °C continuously.

Normal paint system:

- Primer approx. 30 µm on parts which can be dipped (casting), approx. 60 µm on parts which can be sprayed (steel)
- Final coat approx. 30 µm

The **Special paint** is categorized in the “Worldwide” climate group as specified by IEC 721-2-1.

It is suitable for

- installation outdoors with direct exposure to solar radiation and weathering over a wide temperature and humidity range (industrial or coastal areas are typical installation sites).
- Temperatures up to +140 °C for short periods or +120 °C continuously.

Special paint system:

- Primer approx. 30 µm on parts which can be dipped (casting), approx. 60 µm on parts which can be sprayed (steel)
- Final coat approx. 60 µm

The primer coat is applied to internal and external surfaces, the final coat to external surfaces.

Increased total film thicknesses, e.g. 120 or 150 µm, are available at an additional cost.

Bearing construction

The motors are equipped with deep-groove ball bearings in accordance with DIN 625.

The location bearing is positioned at the DE.

All rolling-contact bearings are lubricated with mineral-oil-based lithium soap grease. The bearings have a re-greasing device with flat grease nipple M10 x 1 to DIN 3404 and a collector for used grease which is large enough to cover the calculated bearing life when the re-greasing intervals and quantities are observed (lubrication data can be found on lubrication plate or in order documentation).

The rolling-contact bearings are sealed externally by V-ring seals and internally by gap seals.

Appendix

5

At

http://www.siemens.com/automation/partner

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You can obtain in most cases a contact partner for

- Technical Support,
- Spare parts/repairs,
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- Consultation/engineering.

You start by selecting a

- Country,
- Product or
- Sector.

By further specifying the remaining criteria you will find exactly the right contact partner with his/her respective expertise.

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The Siemens Automation and Drives Group (A&D) has therefore built up a comprehensive range of information in the World Wide Web, which offers quick and easy access to all data required.

Under the address

http://www.siemens.com/automation

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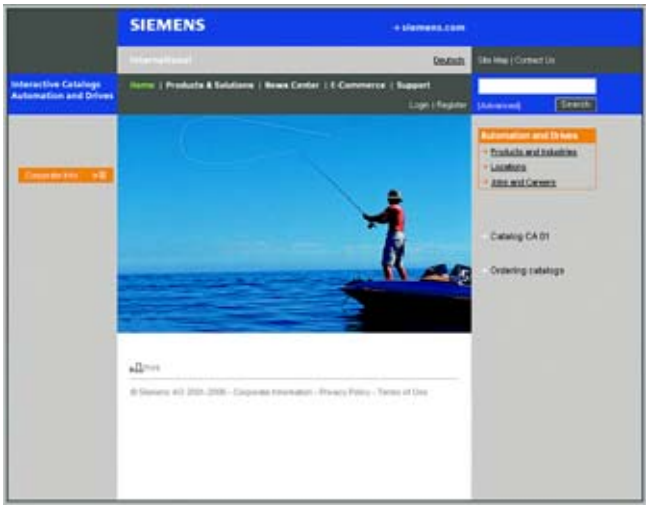
Product Selection Using the Offline Mall of Automation and Drives



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Support in the planning and designing of your project from detailed actual-state analysis, target definition and consulting on product and system questions right to the creation of the automation solution. [1])

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In the operating phase of a machine or automation system we provide a comprehensive repair and spare parts service ensuring the highest degree of operating safety and reliability.

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3) For country-specific telephone numbers go to our Internet site at: http://www.siemens.com/automation/service&support

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The CD-ROM also includes a full-text search and our Knowledge Manager for targeted searches for solutions. The CD-ROM will be updated every 4 months.

Just the same as our online offer in the Internet, the Service & Support Knowledge Base on CD comes complete in 5 languages (German, English, French, Italian, Spanish).

You can order the **Service & Support Knowledge Base** CD from your Siemens contact.

Order no. **6ZB5310-0EP30-0BA2**

Orders via the Internet
(with Automation Value Card or credit card) at:

http://www.siemens.com/automation/service&support

in the Shop domain.

Automation Value Card

Small card - great support

The Automation Value Card is an integral component of the comprehensive service concept with which Siemens Automation and Drives will accompany you in each phase of your automation project.

It doesn't matter whether you want just specific services from our Technical Support or want to purchase high-quality Support Tools in our Online Shop, you can always pay with your Automation Value Card. No invoicing, transparent and safe. With your personal card number and associated PIN you can view the state of your account and all transactions at any time.

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By entering the card number and PIN you have full access to the Service & Support services being offered. The charge for the services procured is debited from the credits on your Automation Value Card.

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Automation Value Card order numbers	
Credits	Order no.
200	**6ES7 997-0BA00-0XA0**
500	**6ES7 997-0BB00-0XA0**
1000	**6ES7 997-0BC00-0XA0**
10000	**6ES7 997-0BG00-0XA0**

Detailed information on the services offered is available on our Internet site at:

http://www.siemens.com/automation/service&support

Service & Support à la Card: Examples

Technical Support	
"Priority"	Priority processing for urgent cases
"24 h"	Availability round the clock
„Extended"	Technical consulting for complex questions
Support Tools in the Support Shop	
"System Utilities"	Tools that can be used directly for configuration, analysis and testing
"Applications"	Complete topic solutions including ready-tested software
"Functions & Samples"	Adaptable blocks for accelerating your developments

Metal surcharges

Explanation of the metal factor

Surcharges will be added to the prices of products that contain silver, copper, aluminum, lead and/or gold if the respective basic official prices for these metals are exceeded.

The surcharges will be determined based on the following criteria:

- Official price of the metal

  Official price on the day prior to receipt of the order or prior to the release order (=daily price) for
  - silver (sale price of the processed material),
  - gold (sale price of the processed material)

  Source: Umicore, Hanau
  (http://www.metalsmanagement.umicore.com)
  and for
  - copper (low DEL notation + 1%),
  - aluminum (aluminum in cables) and
  - lead (lead in cables)

  Source: German Trade Association for Cables and Conductors
  (http://www.kabelverband.de)

- Metal factor of the products

  Certain products are assigned a metal factor. The metal factor determines the official price as of which the metal surcharges are charged and the calculation method used (weight or percentage method). An exact explanation is given below.

Structure of the metal factor

The metal factor consists of several digits; the first digit indicates whether the method of calculation refers to the list price or a discounted price (customer net price)
(L = list price / N = customer net price).

The remaining digits indicate the method of calculation used for the respective metal. If no surcharge is added, a "-" is used.

1st digit	List or customer net price using the percentage method
2nd digit	for silver (AG)
3rd digit	for copper (CU)
4th digit	for aluminum (AL)
5th digit	for lead (PB)
6th digit	for gold (AU)

Weight method

The weight method uses the basic official price, the daily price and the raw material weight. In order to calculate the surcharge, the basic official price must be subtracted from the daily price. The result is then multiplied by the raw material weight.

The basic official price can be found in the table below using the number (2 to 9) of the respective digit of the metal factor. The raw material weight can be found in the respective product descriptions.

Percentage method

Use of the percentage method is indicated by the letters A-Z at the respective digit of the metal factor.

The surcharge is increased - dependent on the deviation of the daily price compared with the basic official price - using the percentage method in "steps" and consequently offers surcharges that remain constant within the framework of this "step range". A higher percentage rate is charged for each new step. The respective percentage level can be found in the table below.

Metal factor examples

L E A – – –	
	Basis for % surcharge: List price
	Silver: basis 150 €, step range 50 €, 0.5%
	Copper: basis 150 €, step range 50 €, 0.1 %
	No surcharge for aluminum
	No surcharge for lead
	No surcharge for gold
N – A 6 – –	
	Basis for % surcharge: Customer net price
	No surcharge for silver
	Copper: basis 150 €, step range 50 €, 0.1 %
	Aluminum acc. to weight, basic offic. price 225 €
	No surcharge for lead
	No surcharge for gold
– – 3 – – –	
	No basis necessary
	No surcharge for silver
	Copper acc. to weight, basic official price150 €
	No surcharge for aluminum
	No surcharge for lead
	No surcharge for gold

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Values of the metal factor

Percentage method	Basic official price	Step range	% surcharge 1st step	% surcharge 2nd step	% surcharge 3rd step	% surcharge 4th step	% surcharge per additional step
			Official price	Official price	Official price	Official price	
			151 € – 200 €	201 € – 250 €	251 € – 300 €	301 € – 350 €	
A	150	50	0.1	0.2	0.3	0.4	0.1
B	150	50	0.2	0.4	0.6	0.8	0.2
C	150	50	0.3	0.6	0.9	1.2	0.3
D	150	50	0.4	0.8	1.2	1.6	0.4
E	150	50	0.5	1.0	1.5	2.0	0.5
F	150	50	0.6	1.2	1.8	2.4	0.6
G	150	50	0.7	1.4	2.1	2.8	0.7
H	150	50	1.2	2.4	3.6	4.8	1.2
I	150	50	1.6	3.2	4.8	6.4	1.6
J	150	50	1.8	3.6	5.4	7.2	1.8
K	150	50	2.0	3.5	5.0	6.5	1.5
L	150	50	2.2	4.4	6.6	8.8	2.2
M	150	50	2.5	5.0	7.5	10.0	2.5
			176 € – 225 €	226 € – 275 €	276 € – 325 €	326 € – 375 €	
O	175	50	0.1	0.2	0.3	0.4	0.1
P	175	50	0.2	0.4	0.6	0.8	0.2
Q	175	50	0.3	0.6	0.9	1.2	0.3
R	175	50	0.5	1.0	1.5	2.0	0.5
			226 € – 275 €	276 € – 325 €	326 € – 375 €	376 € – 425 €	
S	225	50	0.2	0.4	0.6	0.8	0.2
T	225	50	0.5	1.0	1.5	2.0	0.5
U	225	50	1.0	2.0	3.0	4.0	1.0
V	225	50	1.0	1.5	2.0	3.0	1.0
W	225	50	1.2	2.5	3.5	4.5	1.0
			126 € – 150 €	151 € – 175 €	176 € – 200 €	201 € – 225 €	
X	125	25	1.9	3.8	5.7	7.6	1.9
			151 € – 175 €	176 € – 200 €	201 € – 225 €	226 € – 250 €	
Y	150	25	0.3	0.6	0.9	1.2	0.3
			401 € – 425 €	426 € – 450 €	451 € – 475 €	476 € – 500 €	
Z	400	25	0.1	0.2	0.3	0.4	0.1
	Price basis (1st digit)						
L	Charged on the list price						
N	Charged on the customer net price or discounted list price						

Weight method	Basic official price	
2	100	Calculation based on raw material weight
3	150	
4	175	
5	200	
6	225	
7	300	
8	400	
9	555	
Misc.		
–	No metal surcharge	

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Conditions of sale and delivery
Export regulations

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General

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches only apply to devices for export.

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The prices are in € (Euro) ex works, exclusive packaging.

The sales tax (value added tax) is not included in the prices. It shall be debited separately at the respective rate according to the applicable legal regulations.

Prices are subject to change without prior notice. We will debit the prices valid at the time of delivery.

Surcharges will be added to the prices of products that contain silver, copper, aluminum, lead and/or gold, if the respective basic official prices for these metals are exceeded. These surcharges will be determined based on the official price and the metal factor of the respective product.

The surcharge will be calculated on the basis of the official price on the day prior to receipt of the order or prior to the release order.
The metal factor determines the official price as of which the metal surcharges are charged and the calculation method used. The metal factor, provided it is relevant, is included with the price information of the respective products. An exact explanation of the metal factor can be found on the page entitled "Metal surcharges".

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  (for customers based in Germany)
- 6ZB5310-0KS53-0BA1
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(Germany: A&D Mall Online-Help System)

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The deciding factors are the AL or ECCN export authorization indicated on order confirmations, delivery notes and invoices.

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Catalogs of the
Automation and Drives Group (A&D)

Further information can be obtained from our branch offices listed in the appendix or at www.siemens.com/automation/partner

	Catalog
Automation and Drives	
Interactive catalog on CD-ROM and on DVD	
• The Offline Mall of Automation and Drives	CA 01
Automation Systems for Machine Tools	
SINUMERIK & SIMODRIVE	NC 60
SINUMERIK & SINAMICS	NC 61
Drive Systems	
Variable-Speed Drives	
SINAMICS G110/SINAMICS G120 Inverter Chassis Units SINAMICS G120D Distributed Frequency Inverters	D 11.1
SINAMICS G130 Drive Converter Chassis Units, SINAMICS G150 Drive Converter Cabinet Units	D 11
SINAMICS GM150/SINAMICS SM150 Medium-Voltage Converters	D 12
SINAMICS S120 Drive Converter Systems	D 21.1
SINAMICS S150 Drive Converter Cabinet Units	D 21.3
Asynchronous Motors Standardline	D 86.1
Synchronous Motors with Permanent-Magnet Technology, HT-direct	D 86.2
DC Motors	DA 12
SIMOREG DC MASTER 6RA70 Digital Chassis Converters	DA 21.1
SIMOREG K 6RA22 Analog Chassis Converters	DA 21.2
SIMOREG DC MASTER 6RM70 Digital Converter Cabinet Units	DA 22
SIMOVERT PM Modular Converter Systems	DA 45
SIEMOSYN Motors	DA 48
MICROMASTER 410/420/430/440 Inverters	DA 51.2
MICROMASTER 411/COMBIMASTER 411	DA 51.3
SIMOVERT MASTERDRIVES Vector Control	DA 65.10
SIMOVERT MASTERDRIVES Motion Control	DA 65.11
Synchronous and asynchronous servomotors for SIMOVERT MASTERDRIVES	DA 65.3
SIMODRIVE 611 universal and POSMO	DA 65.4
Low-Voltage Three-Phase-Motors	
IEC Squirrel-Cage Motors	D 81.1
Automation Systems for Machine Tools SIMODRIVE	NC 60
• Main Spindle/Feed Motors	
• Converter Systems SIMODRIVE 611/POSMO	
Automation Systems for Machine Tools SINAMICS	NC 61
• Main Spindle/Feed Motors	
• Drive System SINAMICS S120	
Drive and Control Components for Hoisting Equipment	HE 1
Electrical Installation Technology	
PDF: ALPHA Small Distribution Boards and Distribution Boards, Terminal Blocks	*ET A1*
PDF: ALPHA 8HP Molded-Plastic Distribution System	*ET A3*
PDF: BETA Low-Voltage Circuit Protection	*ET B1*
PDF: DELTA Switches and Socket Outlets	*ET D1*
GAMMA Building Controls	ET G1
Human Machine Interface Systems SIMATIC HMI	ST 80

	Catalog
Industrial Communication for Automation and Drives	IK PI
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SIVENT Fans	LV 65
SIVACON 8PS Busbar Trunking Systems	LV 70
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SIPART, Controllers and Software	MP 31
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