

2010 Catalogue

Inverter AC • System Drive

SIEDrive

ADV200 AFE200



The new generation
of **high efficiency**



English

GEFRAN



Gefran is a leading manufacturer
of automation components



Forty-five years of experience, an extensive know-how, a structure precisely geared to our customers' requirements and continued investment in R&D, make Gefran a leader in the field of components for automation and industrial process control systems.

Customers know they can always depend on Gefran to provide the best solution for all their needs in terms of sensors, components, automation and motion control.



By working in partnership with [qualified Research Centres and Universities](#) and continuously [investing in R&D](#), the Gefran Group is at the forefront of technology, developing products that anticipate its customers' needs.



Gefran is based in Italy, where it has three engineering and production facilities. The Group has some 800 employees. It is directly present in 12 countries with 7 production plants and a global sales network with more than 70 authorised dealers around the world.

Gefran Spa has been listed on the Milan Stock Exchange since 1998 and has been traded on the Star segment of high requirement shares since 2002.



The [Gefran Drive & Motion Control Unit](#), based in Gerenzano (Varese, Italy), designs, develops and manufactures [electric drives and power regeneration systems](#) used to control motors and application systems in the main industrial sectors, including: plastics, civil lift engineering, water treatment and ventilation, as well as control architectures for renewable energy systems.

The [ADV200](#) and [AFE200](#), a complete range of solutions dedicated to the most advanced industrial automation systems, are the fruit of this experience.



The GEFRAN "SYSTEM DRIVE" range

The new generation of energy efficiency

With the new series of **ADV200 vector inverters** and **AFE200 "Active Front End" regenerative power supply units**, the GEFRAN "SYSTEM DRIVE" range meets the demands of systems integrators and machine builders, for solutions at the forefront of technology featuring high-level configurations.

A wide range with power ratings from **0.75kW up to 1.2MW** and compatibility with all **400Vac - 460Vac and 690Vac** power supplies or systems on a common DC Bus, make it possible to engineer and develop practically any kind of application architecture.

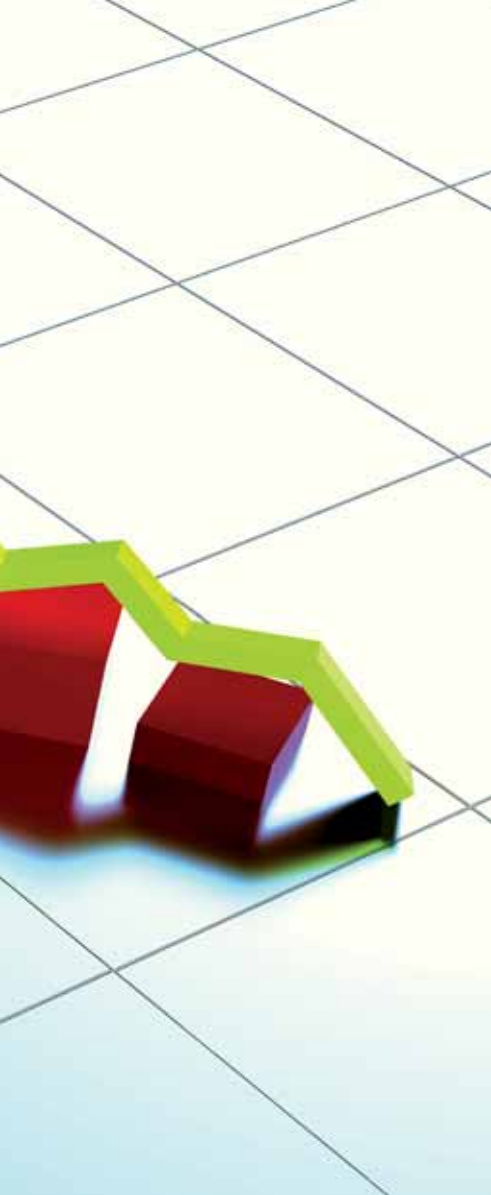
Thanks to the modular mechanical structure, compact modules and integration of accessories such as EMC filters and input chokes, the system takes up **significantly less space, wiring costs are optimised** and flexibility is assured.

Available in 7 stand alone and "parallel" configurations, the **ADV200** and **AFE200** are drives of innovative design, stemming from continuous technological research and the experience that GEFRAN has acquired in working alongside leading operators in the sector.

The **32-bit microprocessor** and **innovative control algorithms**, guarantee excellent performance, both in terms of the dynamics and precision of motor control and in terms of their advanced clean power control in power regeneration systems.

The man/machine interface is totally intuitive and "open", thanks to the powerful programming platform.

Customised menus and dedicated application software programs provide complete machine management at all levels, with the availability of specific functions and integration of the IEC61131-3 programming environment.



» **Certified quality** 
(Quality Management System complies with the requirements of ISO 9001:2008)

» **Italian Technology**

» **User Friendly Performance up to 1.2 MW**

» **All in One design with integrated EMC filters and choke**

» **"Clean Power" platform for energy efficiency of automation systems**



Overview of the "ADV200 - AFE 200 System Drive" range

Models	Power (kW)																																
	0.75	1.5	2.2	3.0	4.0	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	200	250	315	355	400	500	630	710	900	1000			
ADV200-4	Size 1					Size 2			Size 3			Size 4			Size 5			Size 6		Size 7					Parallel size 7 (*)								
ADV200-DC											Size 3		Size 4			Size 5			Size 6		Size 7					Parallel size 7 (*)							
AFE200												T.3			T.4			T.5		T.6	Size 7					Parallel size 7 (*)							
Models																75	90	110	132			250				500	630	800	1000	1200			
ADV200-6																T.6		Size 7					T.9					Size 10					



Power ratings of up to 1.5 MW to follow.

(*) Inverters of between 400 kW and 710 kW comprise one master and one slave. Inverters of over 900 kW comprise one master and two slaves.

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ADV200 - 4



ADV200-DC



ADV200 - 6



AFE200



PROGRAM.



APPENDIX

1. ADV200-4 • 400...460 Vac Power Supply

1.1 Introduction



ADV200 - 4 Vector Inverters offer technologically advanced solutions for automation systems with stand-alone drives.

The range features power ratings from **0.75 kW up to 1.2 MW** for **three-phase power supplies of 400 VAC to 460 VAC**. Integrated accessories such as the filter and mains choke enhance long-term reliability, reduce overall dimensions and lower wiring costs.

Flexible Modular Technology

The ADV200-4 is based on a fully modular hardware with power structures that can be installed side by side. Designed to facilitate installation and guarantee ease of use, project flexibility, optimisation of space and reduction of wiring costs.

The ADV200-4 is available in 7 hardware sizes

- from 0.75kW to 355kW in the stand-alone configuration
- from 400kW to 1.2MW in "parallel" configurations

Integrated reliability

The ADV200-4 features high-quality engineering solutions that guarantee long-term reliability. The integrated input choke on the DC side reduces THD by up to 40% and the mains filter ensures compliance with EMC EN61800-3.

Total ease of use

Designed with the user in mind. The mechanical structure guarantees simple and fast product management, regardless of installation and assembly conditions. All operations are simple and immediate, from accessing the extractable terminal strips to rack-mounting of options. The dedicated accessories guarantee simple wiring and cable shielding to achieve immediate, EMC-compliant start-ups.

Serial line

The RS485 serial line is incorporated as standard across the range to enable peer-to-peer or multidrop connections using Modbus RTU protocol.

Management of optional cards

The ADV200-4 uses an intelligent rack system that allows 3 optional cards to be installed at the same time.

- Fieldbus interface card
- I/O expansion card
- Interface card for feedback with single or multiple encoders (up to 3).

Back-up power supply

The ADV200-4 is compatible with a separate +24VDC external power supply. This solution makes it possible to maintain all display and drive configuration functions and manage the connected fieldbuses in the event of a power failure.

Safety Card – SIL3 Level

ADV200-4+SI models **integrate the EXP-SFTy-ADV** Safety Card (standard in parallel master drives).

The card:

- performs the STO (Safe Torque Off) function, to prevent torque on the motor by blocking IGBT commands;
- can diagnose 99% of internal faults;
- meets the latest legal requirements with the integrated "Safe Torque Off" function:
 - safety integrity level SIL 3 according to EN 61508 and EN61800-5-2 (maximum available for drives)
 - PL d according to EN13849-1

The integrated **EXP-SFTy-ADV** safety card in the ADV200-4+SI series of drives achieves "Prevention of unexpected start-up", according to EN 1037:1995 + A1 ADV: 2008 on safety of machinery.

Drives provided with the safety card are just one element in an STO safety control system, which is the system level function. All system parts and components must be chosen, applied and integrated correctly to achieve the required level of safety.

The safety function may be used to perform an "emergency stop" with the drive still connected to the power supply (stop category 0 according to EN 60204-1).

The integrated safety function replaces the external safety components. The integrated "STO" function may be used to replace the motor contactors for controlling unexpected start-ups, if covered by risk-assessment. The use of the integrated safety function depends on the type of application and applicable standards.

Ideal sizes

The ADV200-4 offers a choice of technical features so that you can choose the drive that represents the best technical and most cost-effective solution depending on the type of application and characteristics of the motor.

- Two overload modes for "**servizio pesante**" with duty cycle of 150% of In for 1 minute every 5 minutes or for "**servizio leggero**" (variable and/or quadratic torque) with duty cycle of 110% of In for 1 minute every 5 minutes
- Optimisation of **dinamica della modulazione**, according to the type of "duty" and drive temperature during duty cycles.

1.2 General Characteristics

- Power supply: 3 x 380VAC -15% ... 500VAC +5%,
50 / 60Hz ±2%
- Power ratings: from 0.75kW to 1.2MW
- Max output voltage 0.98 x Vin
- Control mode:
 - Open-loop vector control
 - Vector control with feedback
 - Open loop V / f and V / f with feedback
- Light or heavy overload control
- Integration of up to 3 options onboard the drive
- "Safety" card compliant with machine safety directives (for ADV200-...+SI models)
- GF-eXpress multi-language programming SW (5 languages)
- PLC with advanced IEC61131-3 programming environment
- IP20-rated protection (IP00 size 7 and parallel)

Fieldbus management



Performance

The ADV200 offers state-of-the-art control technology based on the use of a powerful 32-bit microprocessor able to guarantee maximum precision and performance of the motor as well as sophisticated management of the most advanced application systems.

Precision

Control mode	Speed control precision (*)	Control range
FOC with feedback	± 0.01% motor speed rating	1 : 1000
Open-loop FOC	± 30% motor slip rating	1 : 100
V/F	± 60% motor slip rating	1 : 30

(*) for standard 4-pole motor

Standard supply configuration

- Integrated KB_ADV programming keypad
- Regulation:
 - 2 bipolar analog inputs (Voltage / Current)
 - 2 bipolar analog outputs (1: Voltage / Current, 1: Voltage)
 - 6 digital inputs (PNP / NPN)
 - 2 digital outputs (PNP / NPN)
 - 2 relay outputs, single contact
 - RS485 serial line (Modbus RTU)
- Power:
 - Integrated choke DC side (up to 132 kW)
 - Integrated mains filter
 - Integrated dynamic braking module (up to 55kW)

Conformity

- Immunity / Emissions: EEC - EN 61800-3
- Programming: according to IEC 61131-3
- Safety standards: STO (Safe Torque Off): IEC 61508
SIL 3, EN 954-1 Cat. 3
EN 61508 and EN 61800-5-2

Environmental conditions

- Ambient temperature: 0 ... 40°C,
+40°C...+50°C with derating
- Altitude: Max 2000 m. (up to 1000 m without current limitations)

Markings

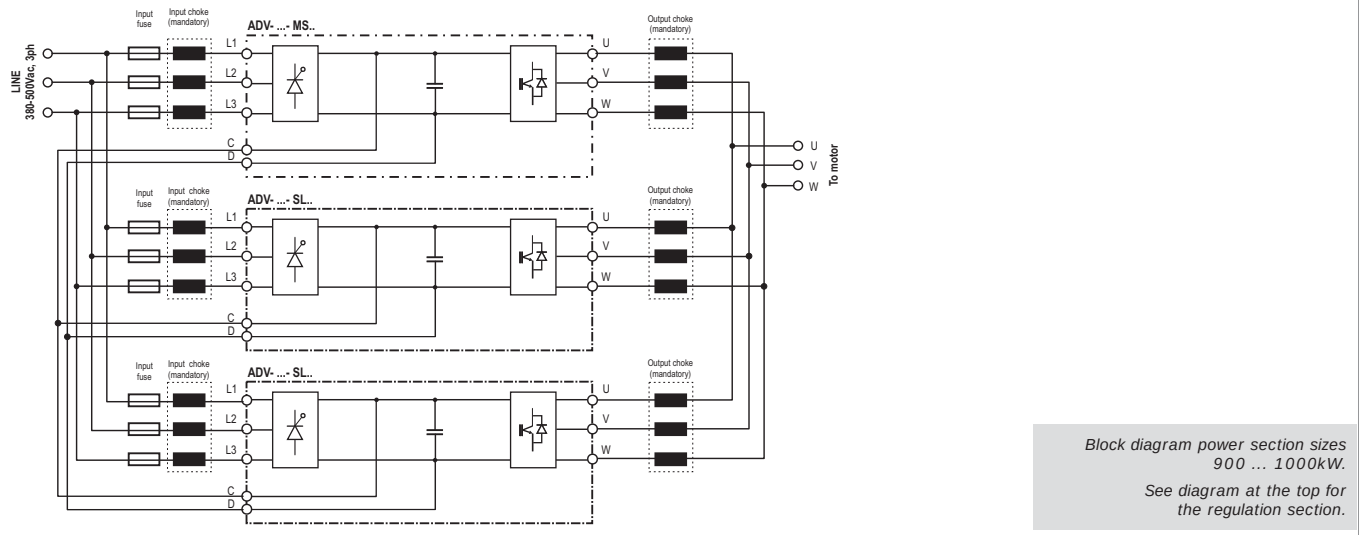
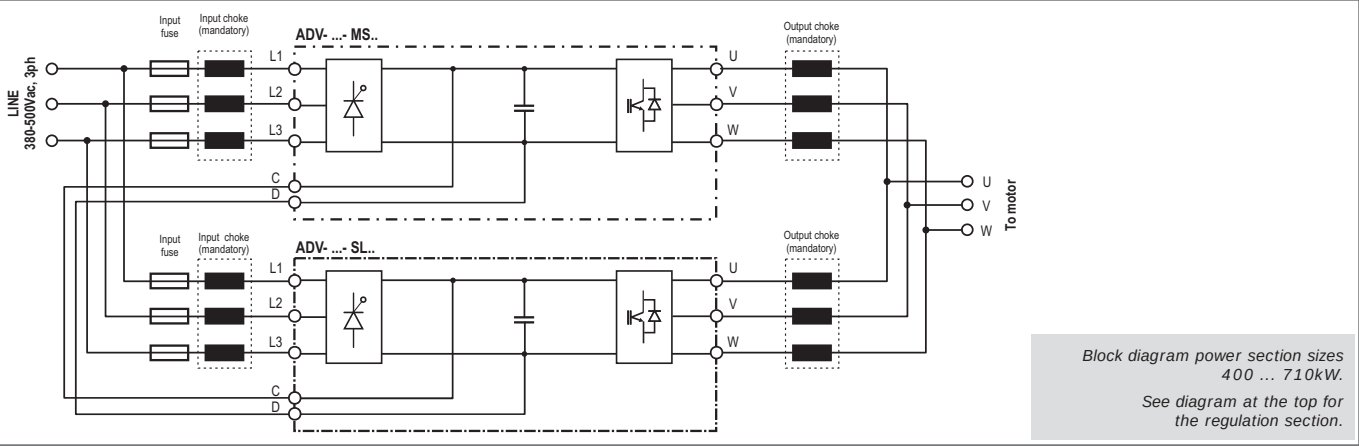
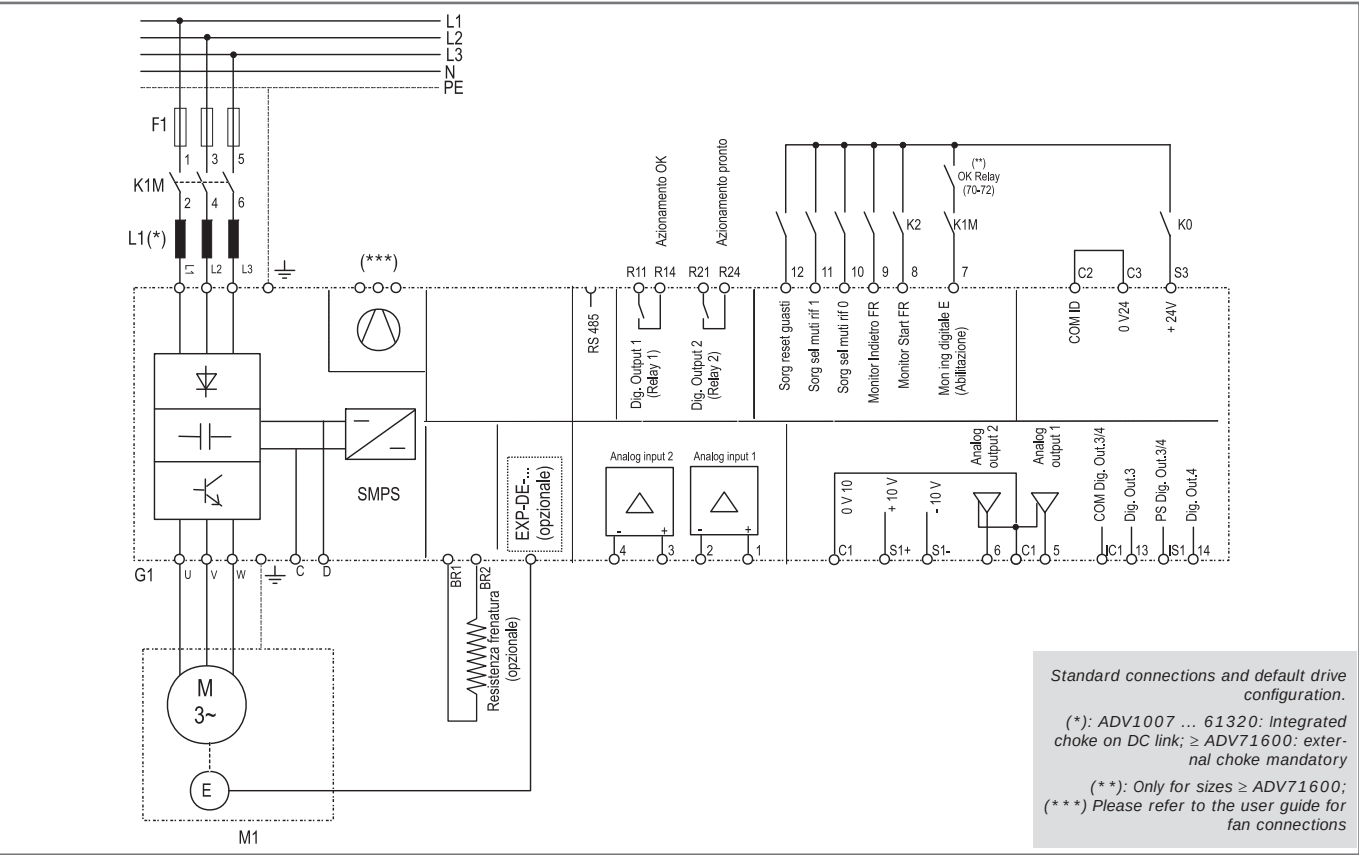


Complies with the EEC directive concerning low voltage equipment

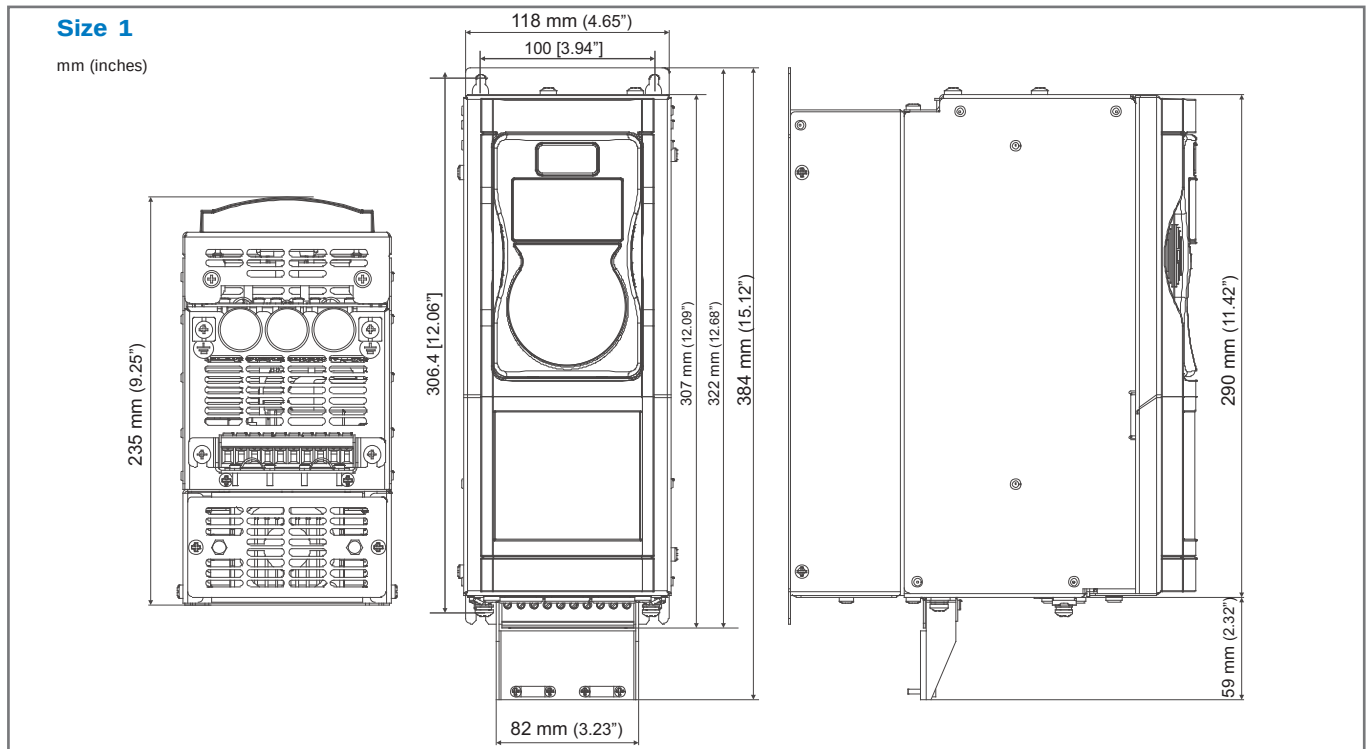


Complies with directives for the American and Canadian markets (certification pending for size 7).

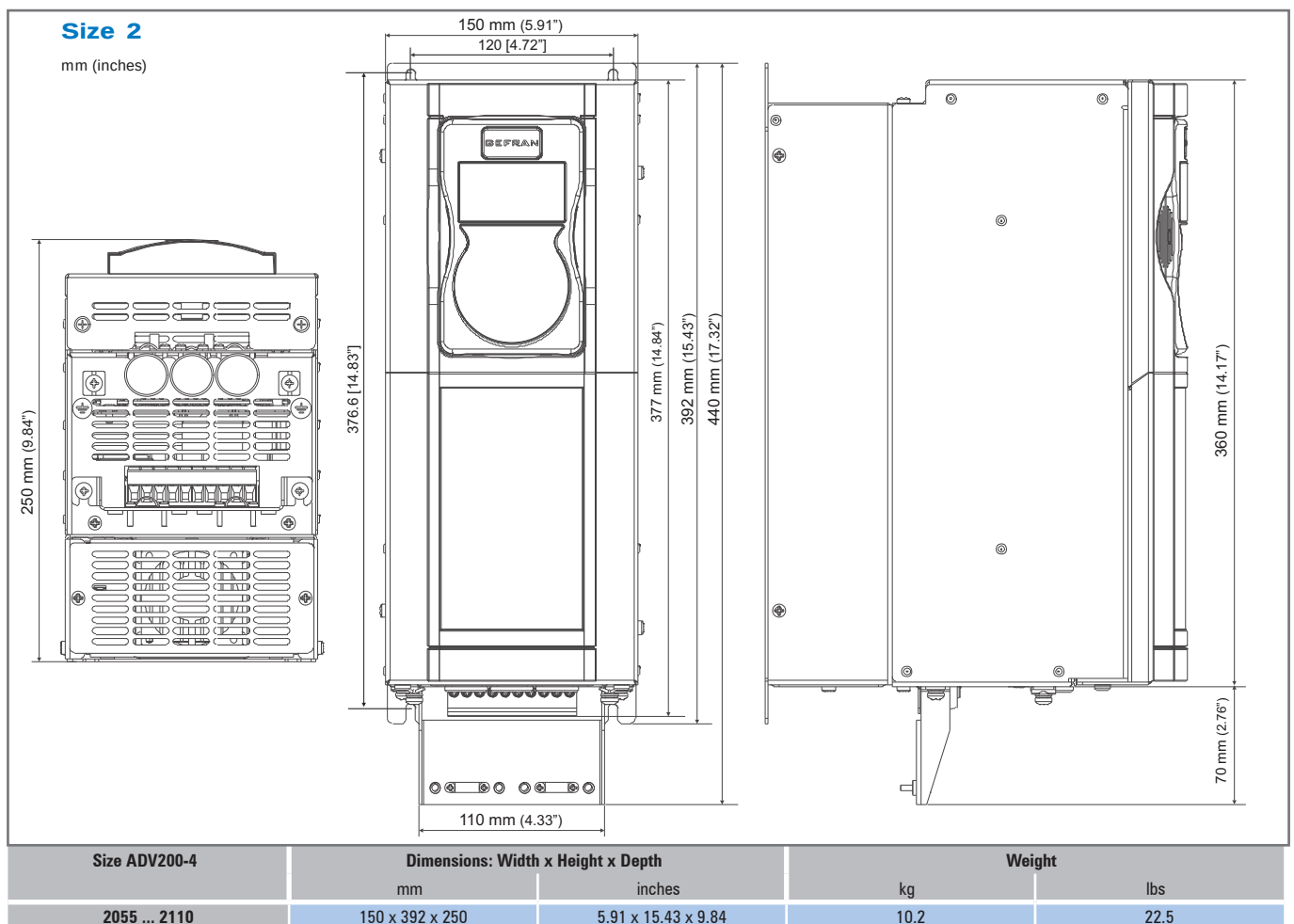
1.3 Standard connections



1.4 Weights and dimensions



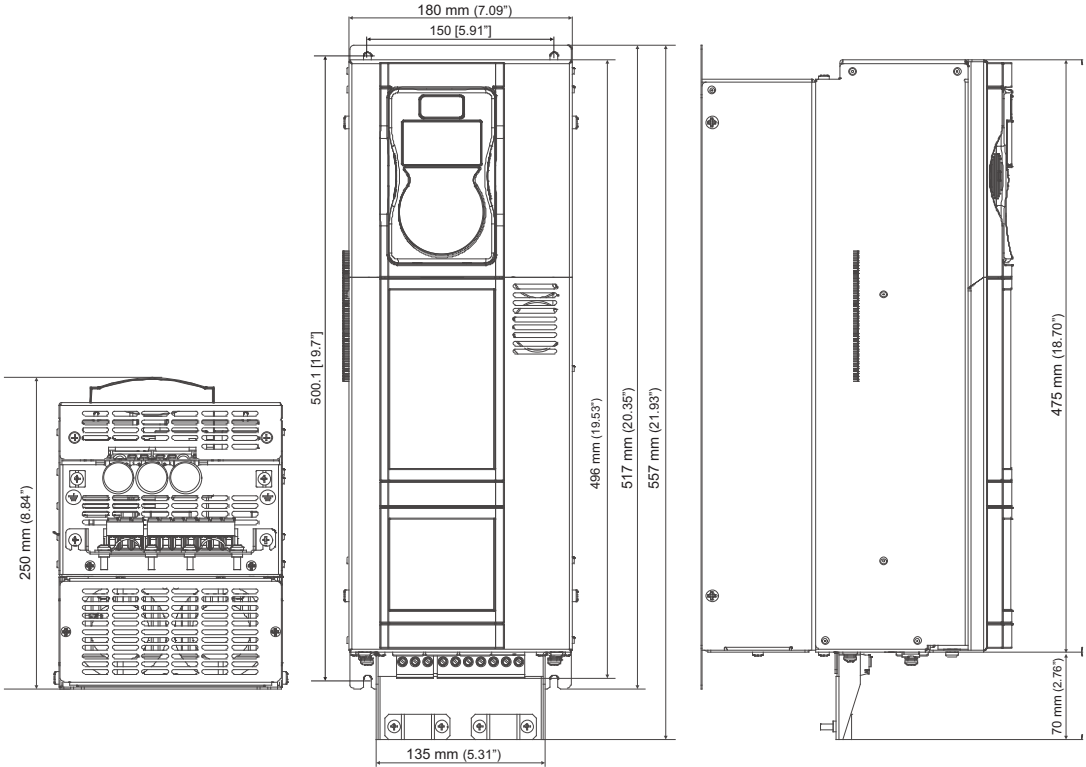
Size ADV200-4	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
1007...1040	118 x 322 x 235	4,65 x 12,7 x 9,25	5.8	12.8



Size ADV200-4	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
2055 ... 2110	150 x 392 x 250	5.91 x 15.43 x 9.84	10.2	22.5

Size 3

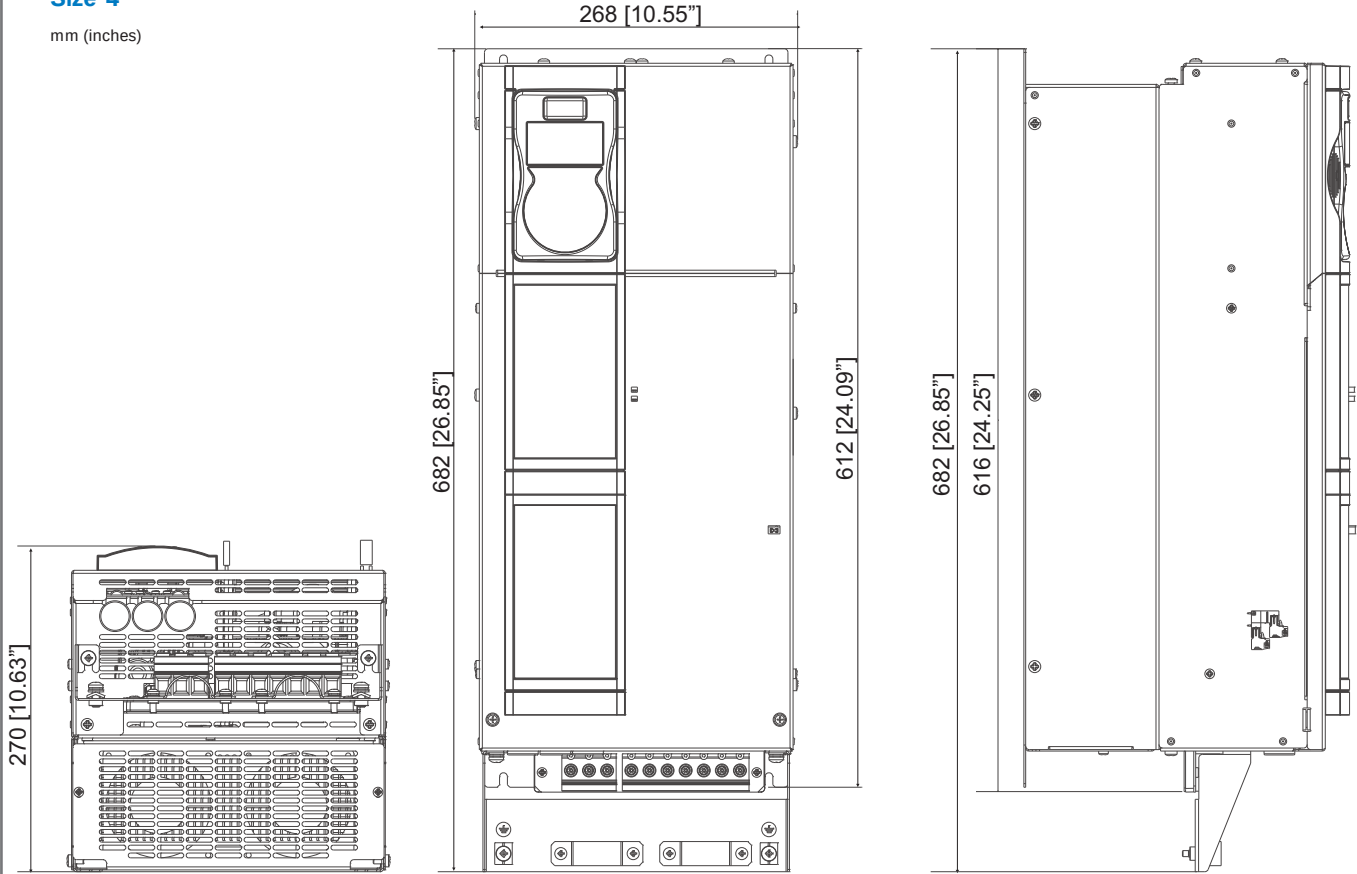
mm (inches)



Size ADV200-4	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
3150...3185	180 x 517 x 250	7.09 x 20.35 x 8.84	16.4	36.2
3220			22	48.5

Size 4

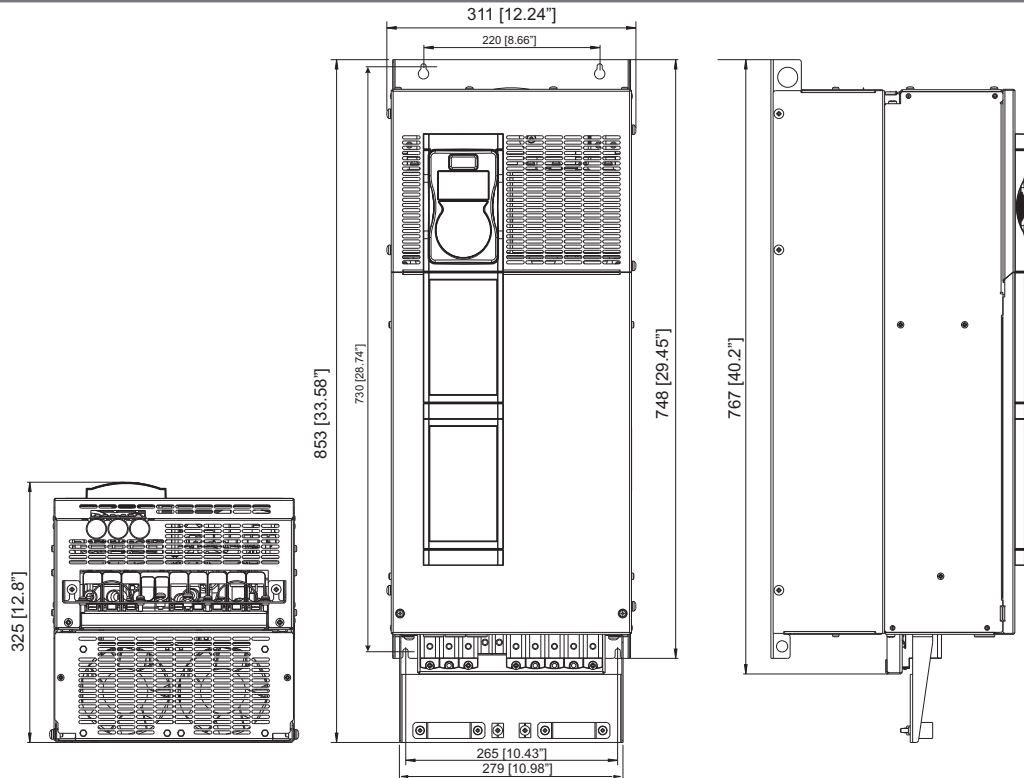
mm (inches)



Size ADV200-4	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
4300...4450	268 x 616 x 270	10.55 x 24.25 x 10.63	32	70.6

Size 5

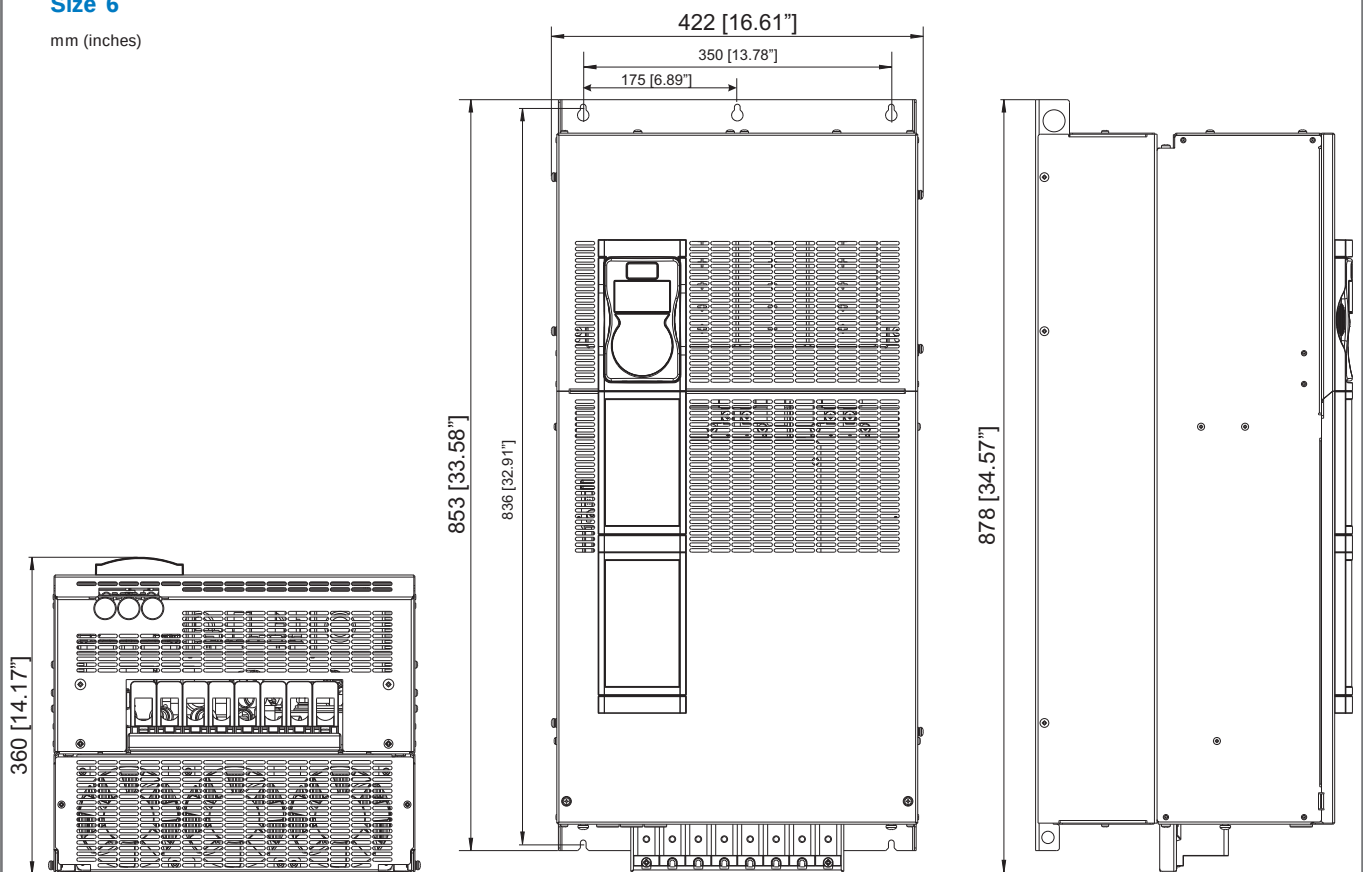
mm (inches)



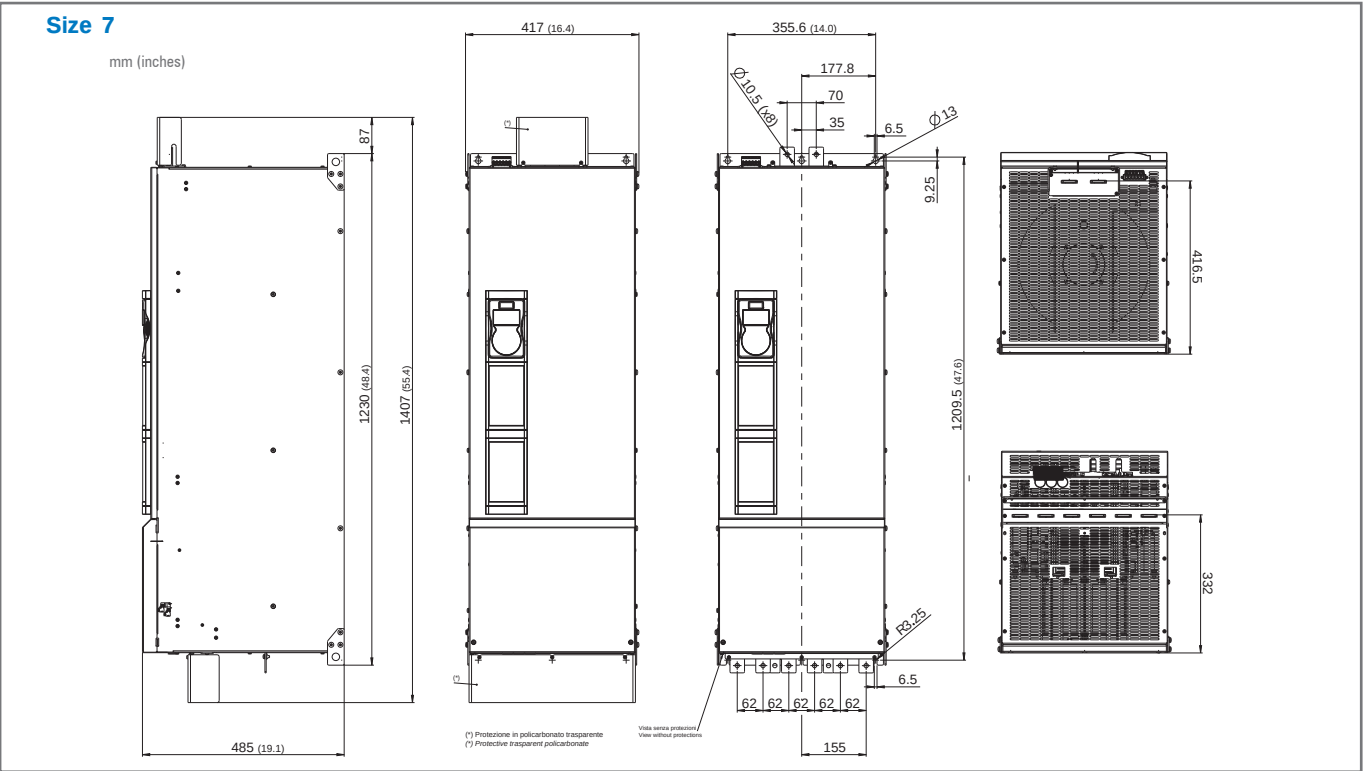
Size ADV200-4	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
5550...5900	311 x 767 x 325	12.24 x 40.2 x 12.8	60	132.3

Size 6

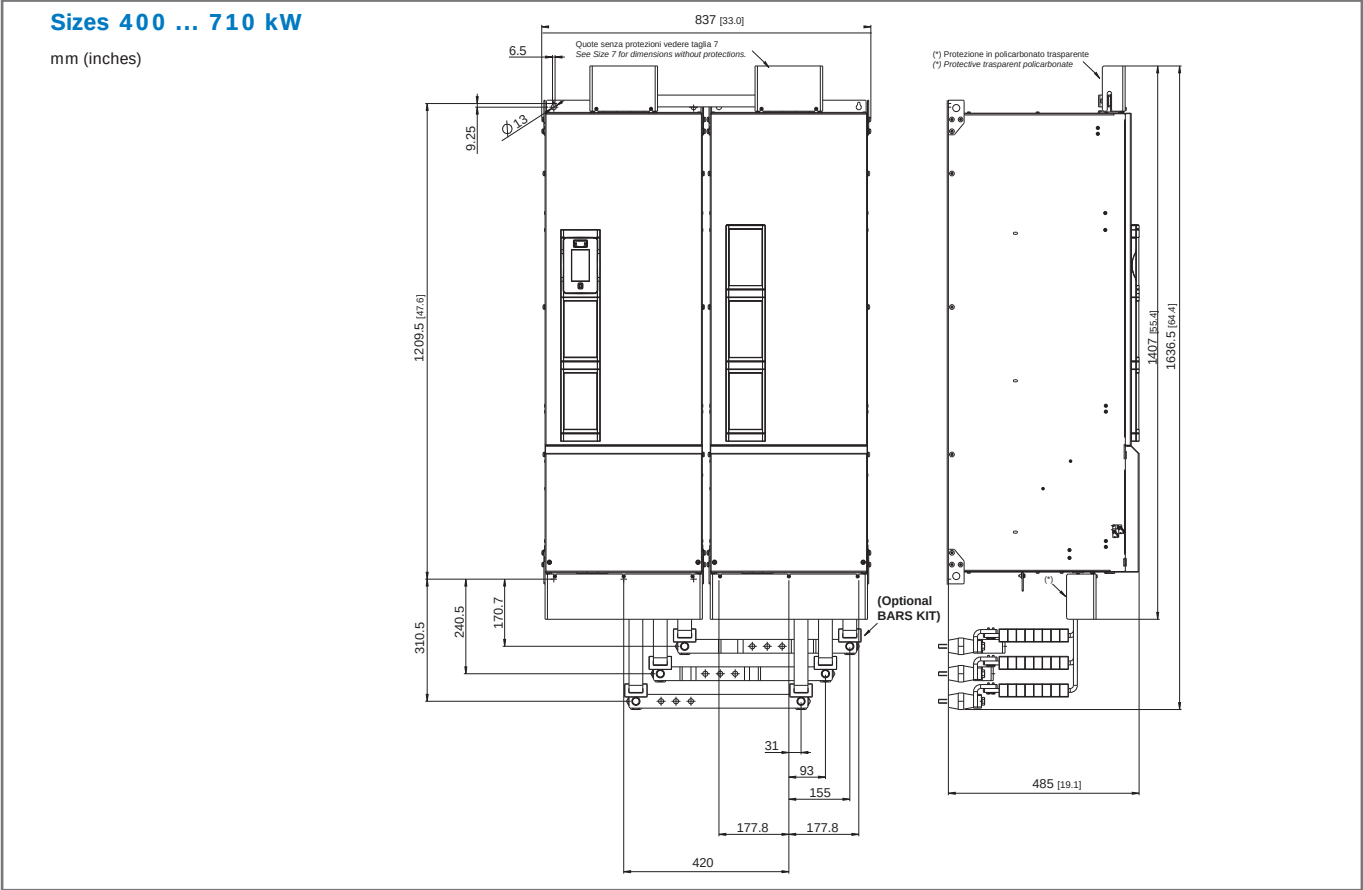
mm (inches)



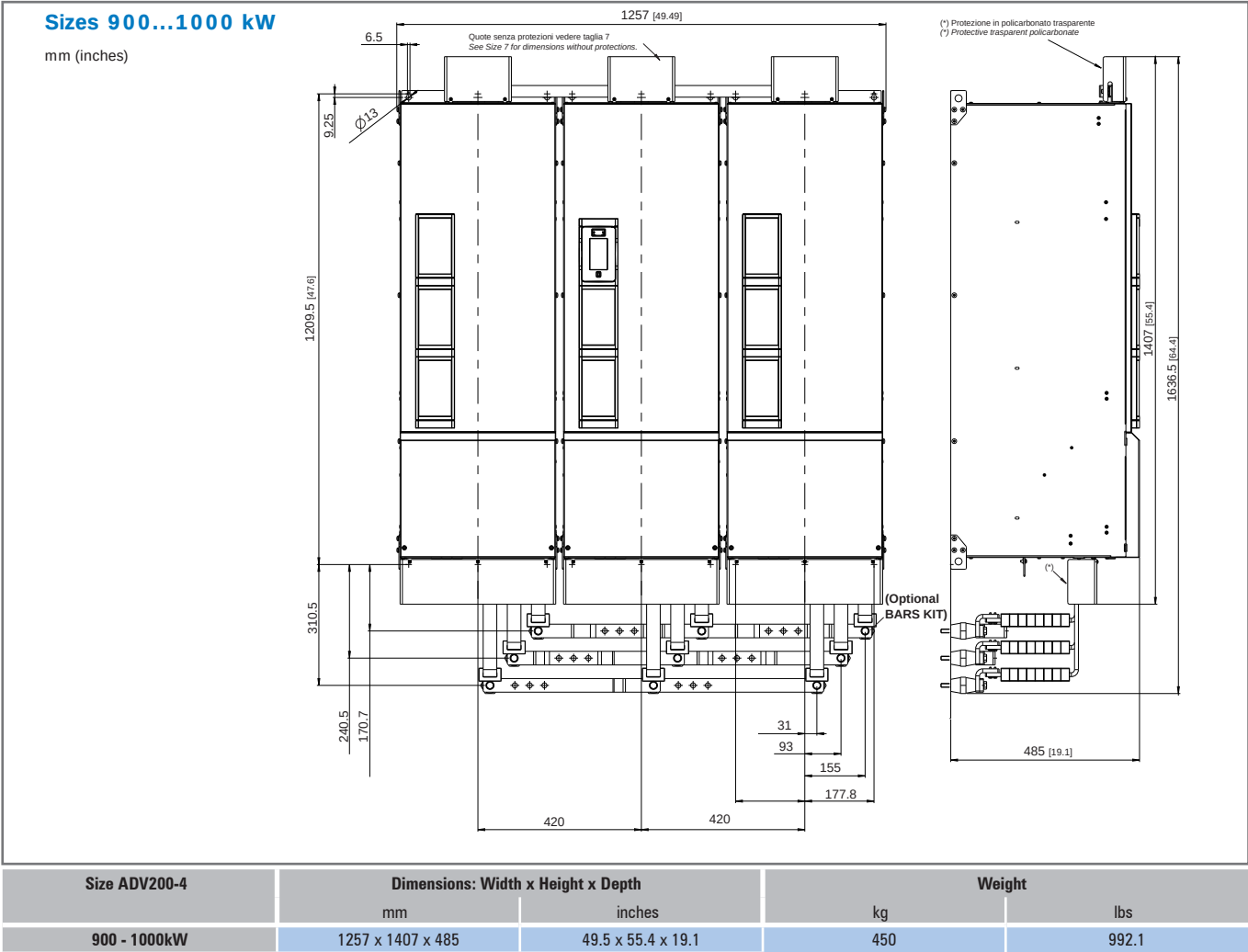
Size ADV200-4	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
61100 ... 61320	422 x 878 x 360	16.61 x 34.6 x 14.2	90	198.4



Size ADV200-4	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
71600...72000	417 x 1407 x 485	16.42 x 55.4 x 19.1	130	286.6
72500			140	308.7
73150 ... 73550			150	330.7



Size ADV200-4	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
400kW	837 x 1407 x 485	33.0 x 55.4 x 19.1	260	573.2
500kW			280	617.4
630 - 710kW			300	661.4



1.5 Choosing the Inverter

The combinations of motor power ratings and inverters listed in the table envisage the use of motors in which the voltage rating is equal to that of the mains power.

For motors with different voltage ratings the inverter must be chosen according to the current rating of the motor. The combinations listed in the table thus show the current that can be delivered by the drive during continuous operation and overload conditions, according to the mains voltage.

The same engineering criteria apply for operations with additional derating factors:

- KV Power supply voltage
- KT Ambient temperature
- Kf Switching frequency
- KALT Altitude of installation

1.6 Input Data

Sizes ADV200	Input voltage U _{LN}	Input frequency	Overvoltage threshold	Undervoltage threshold	Total harmonic distortion	AC input current for continuous operation I _N	
			(Overvoltage)	(Undervoltage)		Heavy Duty (150% overload)	Light Duty (110% overload)
	[VAC]	[Hz]	[Vdc]	[Vdc]		[THD] %	@ 400 VAC [A]
1007	Three-phase mains 380 VAC -15% ... 500 VAC +5%	50/60 Hz, ± 2%	820	380	40% Light Duty 50% Heavy Duty (at rated current)	2.1	3.7
1015						3.7	4.9
1022						4.9	6.5
1030						6.5	8.1
1040						8.1	11.1
2055						11.1	14.0
2075						14.0	19.6
2110						19.6	26.4
3150						26.4	32.3
3185						32.3	39
3220						39	53
4300						53	64
4370						64	74
4450						74	89
5550						100	143
5750						143	171
5900						171	200
61100						200	238
61320						238	285
71600						300	350
72000						350	420
72500						420	580
73150						580	640
73550						640	710
400 kW						665	800
500 kW						800	1100
630 kW	1100	1215					
710 kW	1215	1350					
900 kW	1650	1800					
1000 kW	1800	2020					

1.7 Output Data

Sizes ADV200	Inverter Output		Pn mot (Recommended motor rating, fsw = default)				Maximum output voltage U2 [V]	Maximum output frequency f2 [Hz]	IGBT braking unit
	Heavy Duty [kVA]	Light Duty [kVA]	Heavy Duty (150% overload)		Light Duty (110% overload)				
			@400 VAC [kW]	@460 VAC [HP]	@400 VAC [kW]	@460 VAC [HP]			
1007	1.7	3.0	0.75	1	1.5	2	0.98 x UIn (UIn = AC input voltage)	500	Internal (with external resistor); braking torque 150 % MAX
1015	3.0	4.0	1.5	2	2.2	3			
1022	4.0	5.3	2.2	3	3	5			
1030	5.3	6.6	3.0	5	4	5			
1040	6.6	9	4.0	5	5.5	7,5			
2055	9	11.4	5.5	7.5	7.5	10			
2075	11.4	15.9	7.5	10	11	15			
2110	15.9	21.5	11	15	15	20			
3150	21.5	26.3	15	20	18.5	25			
3185	26.3	32	18.5	25	22	30			
3220	32	43	22	30	30	40			
4300	43	52	30	40	37	50			
4370	52	60	37	50	45	60			
4450	60	73	45	60	55	75			
5550	73	104	55	75	75	100			
5750	104	125	75	100	90	125			
5900	125	145	90	125	110	150			
61100	145	173	110	150	132	175			
61320	173	208	132	175	160	200			
71600	208	267	160	200	200	250			
72000	267	319	200	250	250	300			
72500	319	409	250	300	315	400			
73150	409	450	315	400	355	450			
73550	450	506	355	450	400	500			
400 kW	506	603	400	500	500	650			
500 kW	603	776	500	650	630	850			
630 kW	776	852	630	850	710	950			
710 kW	852	956	710	950	800	1100			
900 kW	1108	1247	900	1200	1000	1300			
1000 kW	1247	1420	1000	1300	1200	1600			

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ADV200-DC

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AFE200

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Sizes ADV200	Rated output current In (fsw = default)				Switching frequency fsw		Reduction factor			
	Heavy Duty (150% overload)		Light Duty (110% overload)		Default	Higher	Kv	Kt	Kf (@ 8 kHz)	KALT
	@400 VAC [A]	@460 VAC [A]	@400 VAC [A]	@460 VAC [A]			(1)	(2)	(3)	(4)
1007	2.5	2.3	4.3	3.9	8	10, 12	0.9	0.9	-	1.2
1015	4.3	3.9	5.8	52	8	10, 12	0.9	0.9	-	1.2
1022	5.8	5.2	7.6	6.8	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
1030	7.6	6.8	9.5	8.6	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
1040	9.5	8.6	13	11.7	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
2055	13	11.7	16.5	14.9	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
2075	16.5	14.9	23	20.7	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
2110	23	20.7	31	27.9	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
3150	31	27.9	38	34.2	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
3185	38	34.2	46	41.4	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
3220	46	41.4	62	55.8	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
4300	62	55.8	75	67.5	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
4370	75	67.5	87	78.3	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
4450	87	78	105	94.5	4	6, 8	0.9	0.9	0.7	1.2
5550	105	94.5	150	135	4	6, 8	0.9	0.9	0.7	1.2
5750	150	135	180	162	4	6, 8	0.9	0.9	0.7	1.2
5900	180	162	210	189	4	6, 8	0.9	0.9	0.7	1.2
61100	210	189	250	225	4	6, 8	0.9	0.9	0.7	1.2
61320	250	225	300	270	4	6, 8	0.9	0.9	0.7	1.2
71600	300	270	385	347	4	-	0.9	0.9	-	1.2
72000	385	347	460	414	4	-	0.9	0.9	-	1.2
72500	460	414	590	531	2	-	0.9	0.9	-	1.2
73150	590	531	650	585	2	-	0.9	0.9	-	1.2
73550	650	585	730	657	2	-	0.9	0.9	-	1.2
400 kW	730	657	870	783	2	-	0.9	0.9	-	1.2
500 kW	870	783	1120	1008	2	-	0.9	0.9	-	1.2
630 kW	1120	1008	1230	1107	2	-	0.9	0.9	-	1.2
710 kW	1230	1107	1380	1242	2	-	0.9	0.9	-	1.2
900 kW	1600	1440	1800	1620	2	-	0.9	0.9	-	1.2
1000 kW	1900	1620	2050	1845	2	-	0.9	0.9	-	1.2

(1) Kv : Derating factor for mains voltage at 460Vac
 (2) Kt : Derating factor for ambient temperature of 50°C (1% every °C above 40°C)
 (3) Kf : Derating factor for higher switching frequency
 (4) KALT : Derating factor for installation at altitudes above 1000 meters a.s.l. Value to be applied = 1.2% each 100 m increase above 1000 m.
 For example: Altitude 2000 m, Kalt = 1.2% * 10 = 12% derating; In derated = (100 - 12) % = 88 % In

Sizes ADV200	Overload			Derating according to switching frequency (HD)						Overload according to output frequency			
	HD 150 % x I _n (1' ogni 5')	HD 180 % x I _n (per 0,5'')	LD 110 % x I _n (1' ogni 5')	2 kHz	4 kHz	6 kHz	8 kHz	10 kHz	12 kHz	Heavy Duty		Light Duty	
	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	K1 HD [%]	K2 HD [Hz]	K1 LD [%]	K2 LD [Hz]
1007	3.75	4.5	4.7	2.5	2.5	2.5	2.5	2.1	1.8	100	3	100	3
1015	6.5	7.7	6.4	4.3	4.3	4.3	4.3	3.7	3	100	3	75	3
1022	8.7	10.4	8.4	5.8	5.8	4.9	4.1	3.7	3	100	3	75	3
1030	11.4	13.7	10.5	7.6	7.6	6.5	5.3	4.2	3	100	3	80	3
1040	14.3	17.1	14.3	9.5	9.5	8.1	6.7	5.7	4.75	100	3	100	3
2055	19.5	23.4	18.1	13	13	11.1	9.1	7.8	6.5	100	3	100	3
2075	24.7	29.7	25.3	16.5	16.5	14.0	11.6	9.9	8.25	100	3	75	3
2110	34.5	41.4	34.1	23	23	19.6	16.1	13.8	11.5	100	3	75	5
3150	46.5	55.8	41.8	31	31	26.4	21.7	18.6	15.5	100	5	75	7
3185	57	68.4	50.6	38	38	32.3	26.6	22.8	19	100	5	85	5
3220	69	82.8	68.2	46	46	39.1	32.2	27.6	23	100	3	80	5
4300	93	111.6	82.5	62	62	52.7	43.4	37.2	31	100	3	80	3
4370	113	135	95.7	75	75	63.8	52.5	45	37.5	100	3	80	3
4450	131	157	116	87	87	74	60.9	n.a.	n.a.	100	3	80	3
5550	157	189	165	105	105	89	74	n.a.	n.a.	100	3	85	5
5750	225	270	198	150	150	128	105	n.a.	n.a.	100	5	85	5
5900	270	324	231	180	180	153	126	n.a.	n.a.	100	5	85	5
61100	315	378	275	210	210	179	147	n.a.	n.a.	100	3	100	3
61320	375	540	330	250	250	213	175	n.a.	n.a.	100	3	100	3
71600	450	540	424	300	300	n.a.	n.a.	n.a.	n.a.	100	3	80	3
72000	578	693	506	385	385	n.a.	n.a.	n.a.	n.a.	100	3	100	3
72500	690	828	649	460	n.a.	n.a.	n.a.	n.a.	n.a.	100	3	75	5
73150	885	1062	715	590	n.a.	n.a.	n.a.	n.a.	n.a.	100	3	100	3
73550	975	1170	803	650	n.a.	n.a.	n.a.	n.a.	n.a.	90	5	90	5
400 kW	1095	1314	957	730	n.a.	n.a.	n.a.	n.a.	n.a.	100	3	100	3
500 kW	1305	1566	1232	870	n.a.	n.a.	n.a.	n.a.	n.a.	100	3	75	5
630 kW	1680	2016	1353	1120	n.a.	n.a.	n.a.	n.a.	n.a.	100	3	100	3
710 kW	1845	2214	1518	1230	n.a.	n.a.	n.a.	n.a.	n.a.	90	5	90	5
900 kW	2400	2880	1980	1600	n.a.	n.a.	n.a.	n.a.	n.a.	100	3	100	3
1000 kW	2700	3240	2255	1900	n.a.	n.a.	n.a.	n.a.	n.a.	90	5	90	5

- In Light Duty mode the switching frequency is fixed at 4 kHz, and no derating factor is applied.
- If, in the Heavy Duty mode, the factory setting of Mod freq commutaz. (Switch freq. mode) PAR: 568 is changed from 0=Fixed to 1=Variable, the switching frequency is controlled by the temperature of the drive heat sink and the output frequency. For further information see the ADV200 Functions and Parameters manual, menu 4.9.

ADV200 - 4

ADV200-DC

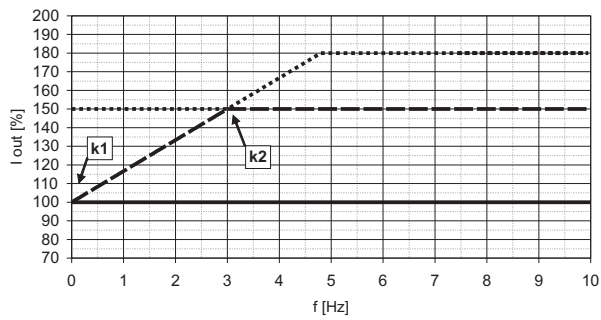
ADV200 - 6

AFE200

PROGRAM.

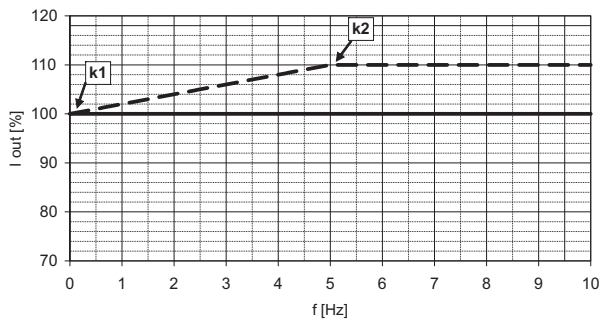
APPENDIX

Overload HD



__ I_{slow} , I_{fast} ; __ I_n

Overload LD



__ I_{slow} , __ I_n

1.8 Cooling

All inverters are equipped with internal fans.

Size		Dissipated power [W]	Fan capacity	
			Dissipator [m ³ /h]	Internal [m ³ /h]
ADV-1007		60	32	26
ADV-1015		90	32	32
ADV-1022		100	32	32
ADV-1030		120	32	32
ADV-1040		160	32	32
ADV-2055		200	32	32
ADV-2075		250	56 x 2	32
ADV-2110		300	56 x 2	32
ADV-3150		380	80 x 2	32
ADV-3185		460	80 x 2	32
ADV-3220		600	80 x 2	32
ADV-4300		900	2 x 250	2 x 50
ADV-4370		1000	2 x 250	2 x 50
ADV-4450		1290	2 x 250	2 x 50
ADV-5550		1760	2 x 285	1 x 170
ADV-5750		2150	2 x 355	2 x 170
ADV-5900		2400	2 x 355	2 x 170
ADV-61100		2850	3 x 310	2 x 170
ADV-61320		3600	3 x 310	2 x 170
ADV-71600		3900	1500	-
ADV-72000		4000	1500	-
ADV-72500		5200	1500	-
ADV-73150		6000	2000	-
ADV-73550		6500	2000	-
400 kW	ADV-72000-KXX-4-MS 04	4000	1500	-
	ADV-72000-XXX-4-SL	4000	1500	-
500 kW	ADV-72500-KXX-4-MS 05	5200	1500	-
	ADV-72500-XXX-4-SL	5200	1500	-
630 kW	ADV-731500-KXX-4-MS 06	6000	2000	-
	ADV-731500-XXX-4-SL	6000	2000	-
710 kW	ADV-735500-KXX-4-MS 07	6500	2000	-
	ADV-735500-XXX-4-SL	6500	2000	-
900 kW	ADV-731500-KXX-4-MS 09	6000	2000	-
	ADV-731500-XXX-4-SL	6000	2000	-
	ADV-731500-XXX-4-SL	6000	2000	-
1000 kW	ADV-735500-KXX-4-MS 10	6500	2000	-
	ADV-735500-XXX-4-SL	6500	2000	-
	ADV-735500-XXX-4-SL	6500	2000	-

ADV200 - 4

ADV200-DC

ADV200 - 6

AFE200

PROGRAM.

APPENDIX

1.9 Order codes

Product identification

ADV - X XXX - X X X - Y - XX YY - SI

EXP-SFTy-ADV safety card	YES = included	[empty] = not included
Only for parallel versions:	XX : MS = MASTER SL = SLAVE	YY : Inverter power in kW 04 = 400.0 kW 05 = 500.0 kW 06 = 630.0 kW 07 = 710.0 kW 09 = 900.0 kW 10 = 1000.0 kW
Rated voltage:	4 = 400 V _{AC}	4A = 460 V _{AC}
Software:	X = standard	
Braking unit:	X = not included	B = included
Keypad:	X = not included	K = included
Inverter power in kW: 007 = 0.75 kW 015 = 1.5 kW 022 = 2.2 kW 030 = 3.0 kW 040 = 4.0 kW 055 = 5.5 kW 075 = 7.5 kW 110 = 11.0 kW	150 = 15.0 kW 185 = 18.5 kW 220 = 22.0 kW 300 = 30.0 kW 370 = 37.0 kW 450 = 45.0 kW 550 = 55.0 kW 750 = 75.0 kW	900 = 90.0 kW 1100 = 110.0 kW 1320 = 132.0 kW 1600 = 160.0 kW 2000 = 200.0 kW 2500 = 250.0 kW 3150 = 315.0 kW 3550 = 355.0 kW
Mechanical dimensions of the drive: 1 = size 1 2 = size 2 3 = size 3	4 = size 4 5 = size 5 6 = size 6	7 = size 7
Inverter, ADV200 series		

Example:

ADV - 1 040 - K B X - 4 - SI

EXP-SFTy-ADV safety card	YES = included
Rated voltage:	4 = 400 V _{AC}
Software:	X = standard
Braking unit:	B = included
Keypad:	K = included
Inverter power in kW:	040 = 4.0 kW
Mechanical dimensions of the drive:	1 = size 1
Inverter, ADV200 series	

ADV200 - Standard Version

- Field-Orientated Vector Inverter
- "KB-ADV" Programming Keypad
- Power Supply 3 x 400V_{AC} (-4) - 3 x 460V_{AC} (-4A)
- HD = Heavy Duty (Overload 150%), LD = Light Duty (Overload 110%)

CODE	PRODUCT IDENTIFICATION	P _N @ 400V _{AC}		CONFIGURATION
		HD	LD	
S9001	ADV-1007-KBX-4	0.75kW	1.1kW	Integrated Braking - Integrated Filter - Integrated Choke
S9002	ADV-1015-KBX-4	1.5kW	2.2Kw	Integrated Braking - Integrated Filter - Integrated Choke
S9003	ADV-1022-KBX-4	2.2Kw	3kW	Integrated Braking - Integrated Filter - Integrated Choke
S9004	ADV-1030-KBX-4	3kW	4kW	Integrated Braking - Integrated Filter - Integrated Choke
S9005	ADV-1040-KBX-4	4kW	5.5kW	Integrated Braking - Integrated Filter - Integrated Choke
S9006	ADV-2055-KBX-4	5.5kW	7.5kW	Integrated Braking - Integrated Filter - Integrated Choke
S9007	ADV-2075-KBX-4	7.5kW	11kW	Integrated Braking - Integrated Filter - Integrated Choke
S9008	ADV-2110-KBX-4	11kW	15kW	Integrated Braking - Integrated Filter - Integrated Choke
S9009	ADV-3150-KBX-4	15kW	18.5kW	Integrated Braking - Integrated Filter - Integrated Choke
S9010	ADV-3185-KBX-4	18.5kW	22kW	Integrated Braking - Integrated Filter - Integrated Choke
S9011	ADV-3220-KBX-4	22kW	30kW	Integrated Braking - Integrated Filter - Integrated Choke
S9013	ADV-4300-KBX-4	30kW	37kW	Integrated Braking - Integrated Filter - Integrated Choke
S9015	ADV-4370-KBX-4	37kW	45kW	Integrated Braking - Integrated Filter - Integrated Choke
S9017	ADV-4450-KBX-4	45kW	55kW	Integrated Braking - Integrated Filter - Integrated Choke
S9019	ADV-5550-KBX-4	55kW	75kW	Integrated Braking - Integrated Filter - Integrated Choke
S9012	ADV-4300-KXX-4	30kW	37kW	Integrated Filter - Integrated Choke
S9014	ADV-4370-KXX-4	37kW	45kW	Integrated Filter - Integrated Choke
S9016	ADV-4450-KXX-4	45kW	55kW	Integrated Filter - Integrated Choke
S9018	ADV-5550-KXX-4	55kW	75kW	Integrated Filter - Integrated Choke
S9020	ADV-5750-KXX-4	75kW	90kW	Integrated Filter - Integrated Choke
S9021	ADV-5900-KXX-4	90kW	110kW	Integrated Filter - Integrated Choke
S9022	ADV-61100-KXX-4	110kW	132kW	Integrated Filter - Integrated Choke
S9023	ADV-61320-KXX-4	132kW	160kW	Integrated Filter - Integrated Choke
S9024	ADV-71600-KXX-4	160kW	200kW	Integrated Filter
S9025	ADV-72000-KXX-4	200kW	250kW	Integrated Filter
S9026	ADV-72500-KXX-4	250kW	315kW	Integrated Filter
S9027	ADV-73150-KXX-4	315kW	355kW	Integrated Filter (No UL Mark)
S9028	ADV-73550-KXX-4	355kW	400kW	Integrated Filter (No UL Mark)
S9029	ADV-73150-KXX-4A	315kW	355kW	Integrated Filter - Power Supply 460 Vac
S9030	ADV-73550-KXX-4A	355kW	400kW	Integrated Filter - Power Supply 460 Vac

ADV200 - Standard Version + SIL3 Safety Card

- Field-Orientated Vector Inverter
- "KB-ADV" Programming Keypad
- Power Supply 3 x 400VAC (-4) - 3 x 460VAC (-4A)
- HD = Heavy Duty (Overload 150%), LD = Light Duty (Overload 110%)

CODE	PRODUCT IDENTIFICATION	PN @ 400Vac		CONFIGURATION
		HD	LD	
S9001SI	ADV-1007-KBX-4+SI	0.75kW	1.1kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9002SI	ADV-1015-KBX-4+SI	1.5kW	2.2Kw	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9003SI	ADV-1022-KBX-4+SI	2.2Kw	3kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9004SI	ADV-1030-KBX-4+SI	3kW	4kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9005SI	ADV-1040-KBX-4+SI	4kW	5.5kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9006SI	ADV-2055-KBX-4+SI	5.5kW	7.5kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9007SI	ADV-2075-KBX-4+SI	7.5kW	11kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9008SI	ADV-2110-KBX-4+SI	11kW	15kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9009SI	ADV-3150-KBX-4+SI	15kW	18.5kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9010SI	ADV-3185-KBX-4+SI	18.5kW	22kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9011SI	ADV-3220-KBX-4+SI	22kW	30kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9013SI	ADV-4300-KBX-4+SI	30kW	37kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9015SI	ADV-4370-KBX-4+SI	37kW	45kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9017SI	ADV-4450-KBX-4+SI	45kW	55kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9019SI	ADV-5550-KBX-4+SI	55kW	75kW	Integrated Braking - Integrated Filter - Integrated Choke + Safety Card
S9012SI	ADV-4300-KXX-4+SI	30kW	37kW	Integrated Filter - Integrated Choke + Safety Card
S9014SI	ADV-4370-KXX-4+SI	37kW	45kW	Integrated Filter - Integrated Choke + Safety Card
S9016SI	ADV-4450-KXX-4+SI	45kW	55kW	Integrated Filter - Integrated Choke + Safety Card
S9018SI	ADV-5550-KXX-4+SI	55kW	75kW	Integrated Filter - Integrated Choke + Safety Card
S9020SI	ADV-5750-KXX-4+SI	75kW	90kW	Integrated Filter - Integrated Choke + Safety Card
S9021SI	ADV-5900-KXX-4+SI	90kW	110kW	Integrated Filter - Integrated Choke + Safety Card
S9022SI	ADV-61100-KXX-4+SI	110kW	132kW	Integrated Filter - Integrated Choke + Safety Card
S9023SI	ADV-61320-KXX-4+SI	132kW	160kW	Integrated Filter - Integrated Choke + Safety Card
S9024SI	ADV-71600-KXX-4+SI	160kW	200kW	Integrated Filter + Safety Card
S9025SI	ADV-72000-KXX-4+SI	200kW	250kW	Integrated Filter + Safety Card
S9026SI	ADV-72500-KXX-4+SI	250kW	315kW	Integrated Filter + Safety Card
S9027SI	ADV-73150-KXX-4+SI	315kW	355kW	Integrated Filter (No UL Mark) + Safety Card
S9028SI	ADV-73550-KXX-4+SI	355kW	400kW	Integrated Filter (No UL Mark) + Safety Card
S9029SI	ADV-73150-KXX-4A+SI	315kW	355kW	Integrated Filter + Safety Card - Power Supply 460 Vac
S9030SI	ADV-73550-KXX-4A+SI	355kW	400kW	Integrated Filter + Safety Card - Power Supply 460 Vac

ADV200 - Parallel Configurations + SIL3 Safety Card

- Field-Orientated Vector Inverter
- "KB-ADV" Programming Keypad
- Power Supply 3 x 400VAC (-4) - 3 x 460VAC (-4A)
- HD = Heavy Duty (Overload 150%), LD = Light Duty (Overload 110%)

CODE	PRODUCT IDENTIFICATION	PN @ 400Vac		CONFIGURATION
		HD	LD	
S9025M	ADV-72000-KXX-4-MS 04 -SI	400kW	500kW	Integrated EMC Filter + Integrated Safety Card
S9025S	ADV-72000-XXX-4-SL			
S9026M	ADV-72500-KXX-4-MS 05 -SI	500kW	630kW	Integrated EMC Filter + Integrated Safety Card
S9026S	ADV-72500-XXX-4-SL			
S9027M	ADV-73150-KXX-4-MS 06 -SI	630kW	710kW	Integrated EMC Filter - Integrated Safety Card (No UL Mark)
S9027S	ADV-73150-XXX-4-SL			
S9028M	ADV-73550-KXX-4-MS 07 -SI	710kW	800kW	Integrated EMC Filter - Integrated Safety Card (No UL Mark)
S9028S	ADV-73550-XXX-4-SL			
S9027M1	ADV-73150-KXX-4-MS 09 -SI	900kW	1MW	Integrated EMC Filter - Integrated Safety Card (No UL Mark)
S9027S	ADV-73150-XXX-4-SL			
S9027S	ADV-73150-XXX-4-SL			
S9028M1	ADV-73550-KXX-4-MS 10-SI	1MW	1.2MW	Integrated EMC Filter - Integrated Safety Card (No UL Mark)
S9028S	ADV-73550-XXX-4-SL			
S9028S	ADV-73550-XXX-4-SL			
S9029M	ADV-73150-KXX-4A-MS 06-SI	630kW	710kW	Integrated EMC Filter + Integrated Safety Card - Power Supply 460 Vac
S9029S	ADV-73150KXX-4A -SL			
S9030M	ADV-73550-KXX-4A- MS 07-SI	710kW	800kW	Integrated EMC Filter + Integrated Safety Card - Power Supply 460 Vac
S9030S	ADV-73550-KXX-4A- SL			
S9029M1	ADV-73150-KXX-4A-MS 09-SI	900kW	1MW	Integrated EMC Filter + Integrated Safety Card - Power Supply 460 Vac
S9029S	ADV-73150-KXX-4A -SL			
S9029S	ADV-73150-KXX-4A -SL			
S9030M1	ADV-73550-KXX-4A- MS 10-SI	1MW	1.2MW	Integrated EMC Filter + Integrated Safety Card - Power Supply 460 Vac
S9030S	ADV-73550-KXX-4A- SL			
S9030S	ADV-73550-KXX-4A- SL			

2. ADV200-DC • DC bus power supply

2.1 Introduction



ADV200-DC Vector Inverters are optimised for multi-drive or single-drive system configurations on a common DC Bus, supplied by conventional AC/DC power supply units or "Active Front End" regenerative units like the AFE200.

Power ratings range from 18.5kW to 1.2MW for three-phase external power supplies of 400 VAC...460 VAC.

Factory-set to achieve the best technical and economic performance, compared to the basic version, the ADV200-DC range does not integrate the three-phase power supply input components:

- AC/DC input rectifier stage
- EMC filter
- choke on DC side

Flexible Modular Technology

The ADV200-DC is based on a fully modular hardware and power structures that can be installed side by side. Designed to facilitate installation and guarantee ease of use, project flexibility, optimisation of space and reduction of wiring costs.

The ADV200-DC is available in 5 hardware sizes

- from 18.5kW to 355kW in the stand-alone configuration
- from 400kW to 1.2MW in "parallel" configurations

Total ease of use

Designed with the user in mind. The mechanical structure guarantees simple and fast product management, regardless of installation and assembly conditions. All operations are simple and immediate, from accessing the extractable terminal strips to rack-mounting of options. The dedicated accessories guarantee simple wiring and cable shielding to achieve immediate, EMC-compliant start-ups.

Serial line

The RS485 serial line is incorporated as standard across the range to enable peer-to-peer or multidrop connections using Modbus RTU protocol.

Management of optional cards

The ADV200-DC uses an intelligent rack system that allows up to 3 optional cards to be installed at the same time.

- Fieldbus interface card
- I/O expansion card
- Interface card for feedback with single or multiple encoders (up to 3).

Back-up power supply

The ADV200-DC is compatible with a separate +24VDC external power supply. This solution makes it possible to maintain all display and drive configuration functions and manage the connected fieldbuses in the event of a power failure.

Safety Card

ADV200-DC+SI models integrate the **EXP-SFTy-ADV** Safety Card (standard in parallel master drives).

The card:

- performs the STO (Safe Torque Off) function, to prevent torque on the motor by blocking IGBT commands.
- can diagnose 99% of internal faults.
- meets the latest legal requirements with the integrated "Safe Torque Off" function:
 - safety integrity level SIL 3 according to EN 61508 and EN61800-5-2 (maximum available for drives)
 - PL d according to EN13849-1

The integrated **EXP-SFTy-ADV** safety card in the ADV200-DC+SI series of drives is used to achieve "Prevention of unexpected start-up", according to EN 1037:1995 + A1 ADV: 2008 on safety of machinery. Drives provided with the safety card are just one element in an STO safety control system, which is the system level function. All system parts and components must be chosen, applied and integrated correctly to achieve the required level of safety.

The safety function may be used to perform an "emergency stop" with the drive still connected to the power supply (stop category 0, according to EN 60204-1).

The integrated safety function replaces the external safety components. The integrated "STO" function may be used to replace the motor contactors for controlling unexpected start-ups, if covered by risk-assessment. The use of the integrated safety function depends on the type of application and applicable standards.

Ideal sizes

The ADV200-DC offers a choice of technical features so that you can choose the drive that represents the best technical and most cost-effective solution depending on the type of application and characteristics of the motor.

- Two overload modes for "heavy duty" with duty cycle of 150% of In for 1 minute every 5 minutes or for "light duty" (variable and/or quadratic torque) with duty cycle of 110% of In for 1 minute every 5 minutes
- Optimisation of **modulation dynamics**, according to the type of "duty" and drive temperature during duty cycles.

2.2 General Characteristics

- Power supply: 450...750V_{DC}
- Power ratings: from 18.5kW to 1.2MW
- Control mode:
 - Open-loop vector control
 - Vector control with feedback
 - Open loop V/f and V/f with feedback
- Light or heavy overload control
- Integration of up to 3 options onboard the drive
- "Safety" card compliant with machine safety directives (for ADV200-...+SI models)
- GF-eXpress multi-language programming SW (5 languages)
- PLC with advanced IEC61131-3 programming environment
- IP20-rated protection (IP00 size 7 and parallel)

Fieldbus management



Performance

The ADV200-DC offers state-of-the-art control technology based on the use of a powerful 32-bit microprocessor able to guarantee maximum precision and performance of the motor as well as sophisticated management of the most advanced application systems.

Precision

Control mode	Speed control precision (*)	Control range
FOC with feedback	± 0.01% motor speed rating	1 : 1000
Open-loop FOC	± 30% motor slip rating	1 : 100
V/F	± 60% motor slip rating	1 : 30

(*) for standard 4-pole motor

Standard supply configuration

- Integrated KB_ADV programming keypad
- Regulation:
 - 2 bipolar analog inputs (Voltage / Current)
 - 2 bipolar analog outputs (1: Voltage / Current, 1: Voltage)
 - 6 digital inputs (PNP / NPN)
 - 2 digital outputs (PNP / NPN)
 - 2 relay outputs, single contact
 - RS485 serial line (Modbus RTU)

Conformity

- Immunity / Emissions: EEC - EN 61800-3
- Programming: according to IEC 61131-3
- Safety standards: STO (Safe Torque Off): IEC 61508
SIL 3, EN 954-1 Cat. 3
EN 61508 and EN 61800-5-2

Environmental conditions

- Ambient temperature: 0 ...40°C,
+40°C...+50°C with derating
- Altitude: Max 2000 m. (up to 1000 m without current limitations)

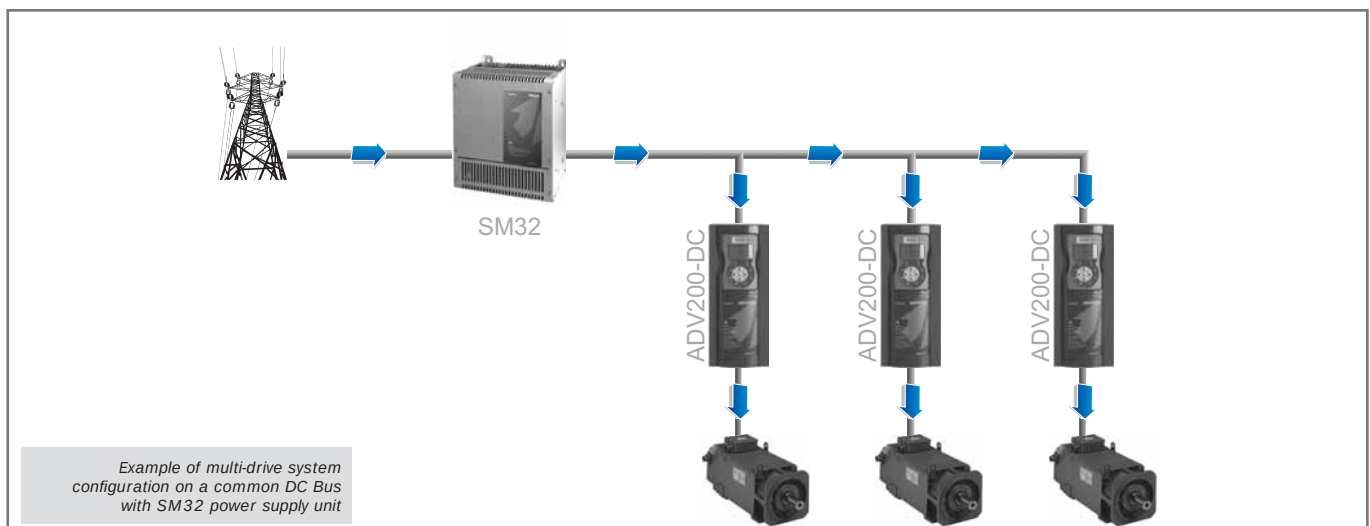
Markings



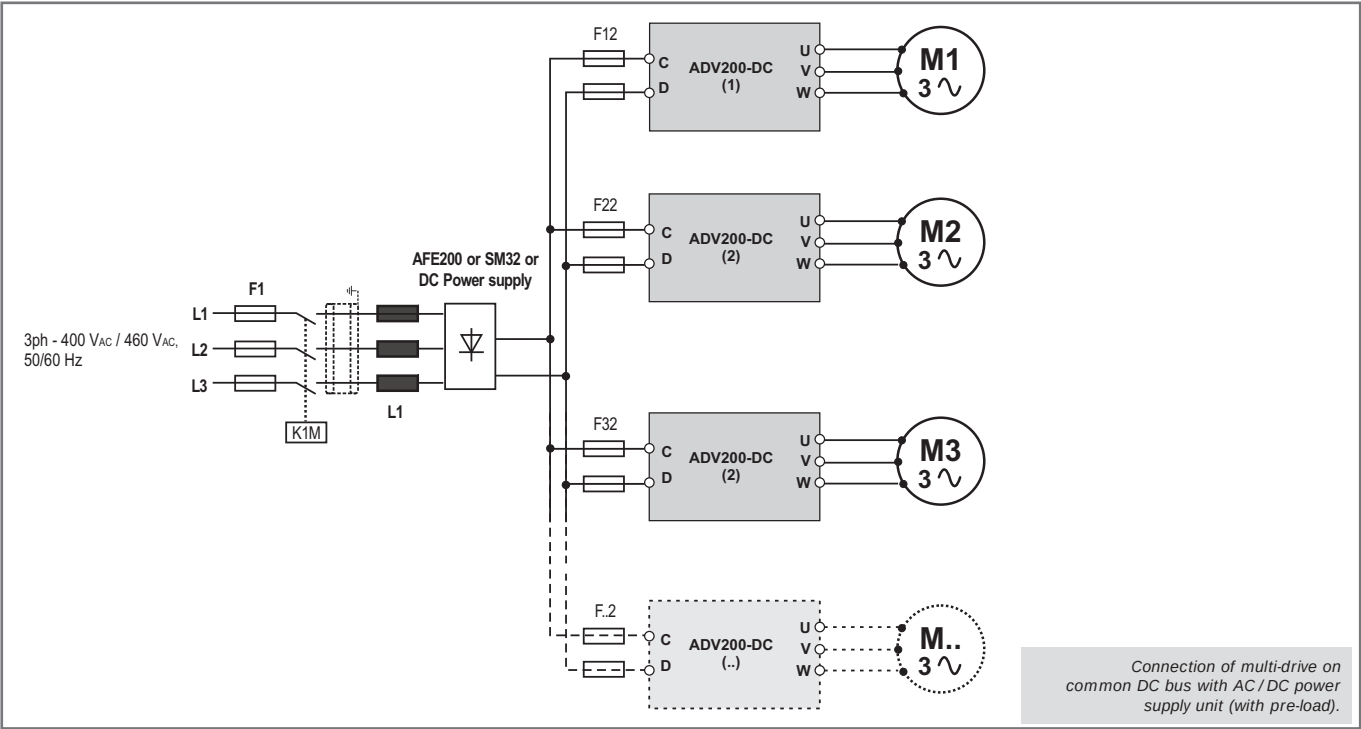
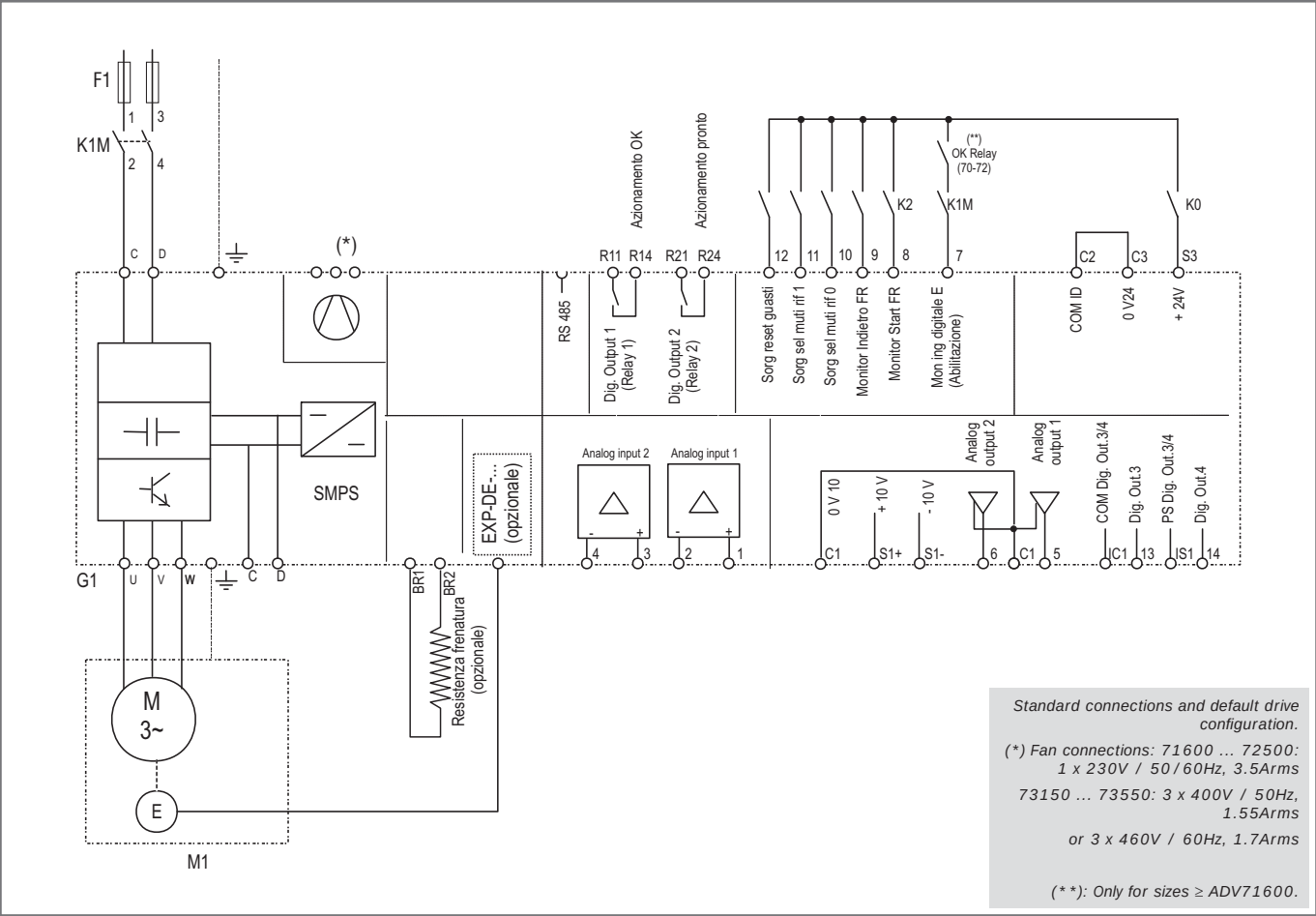
Complies with the EEC directive concerning low voltage equipment

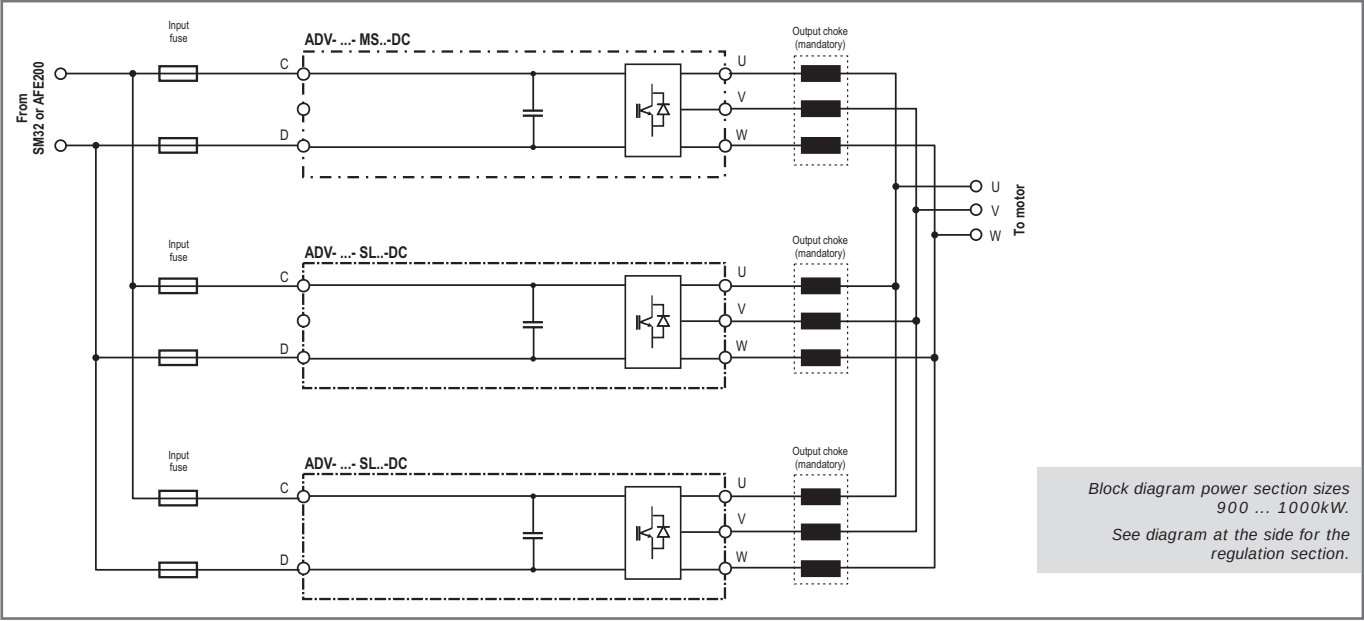
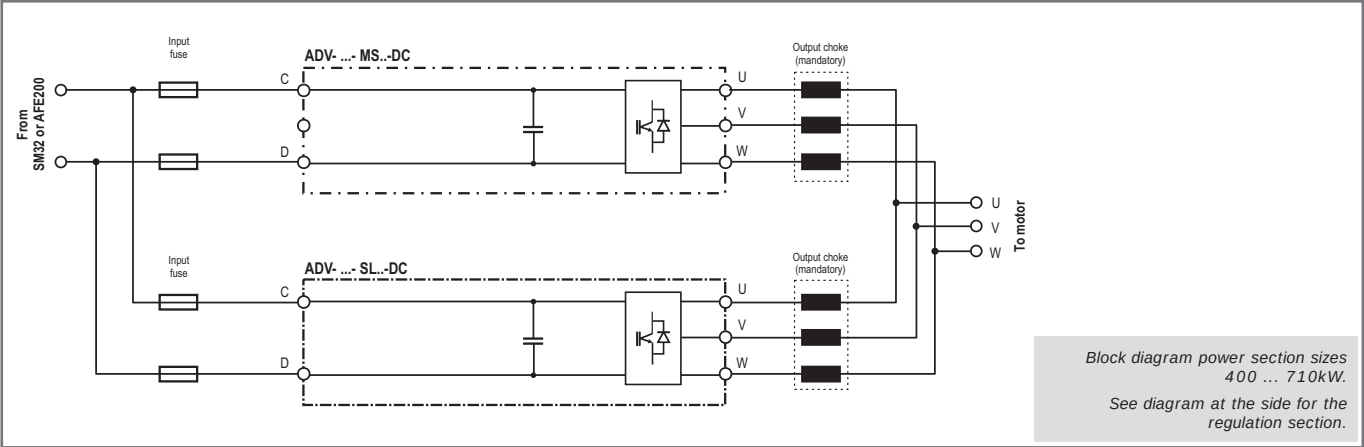


Complies with directives for the American and Canadian markets (certification pending for size 7).

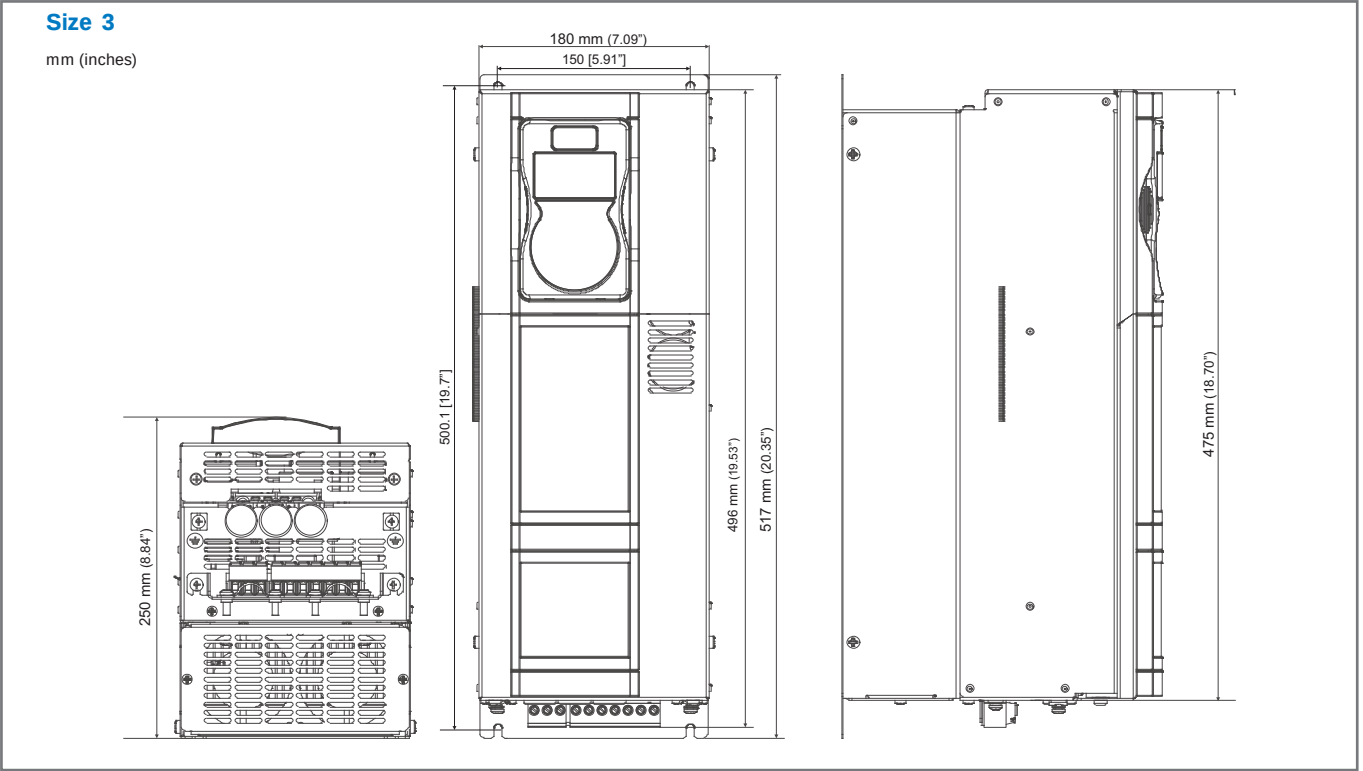


2.3 Standard connections

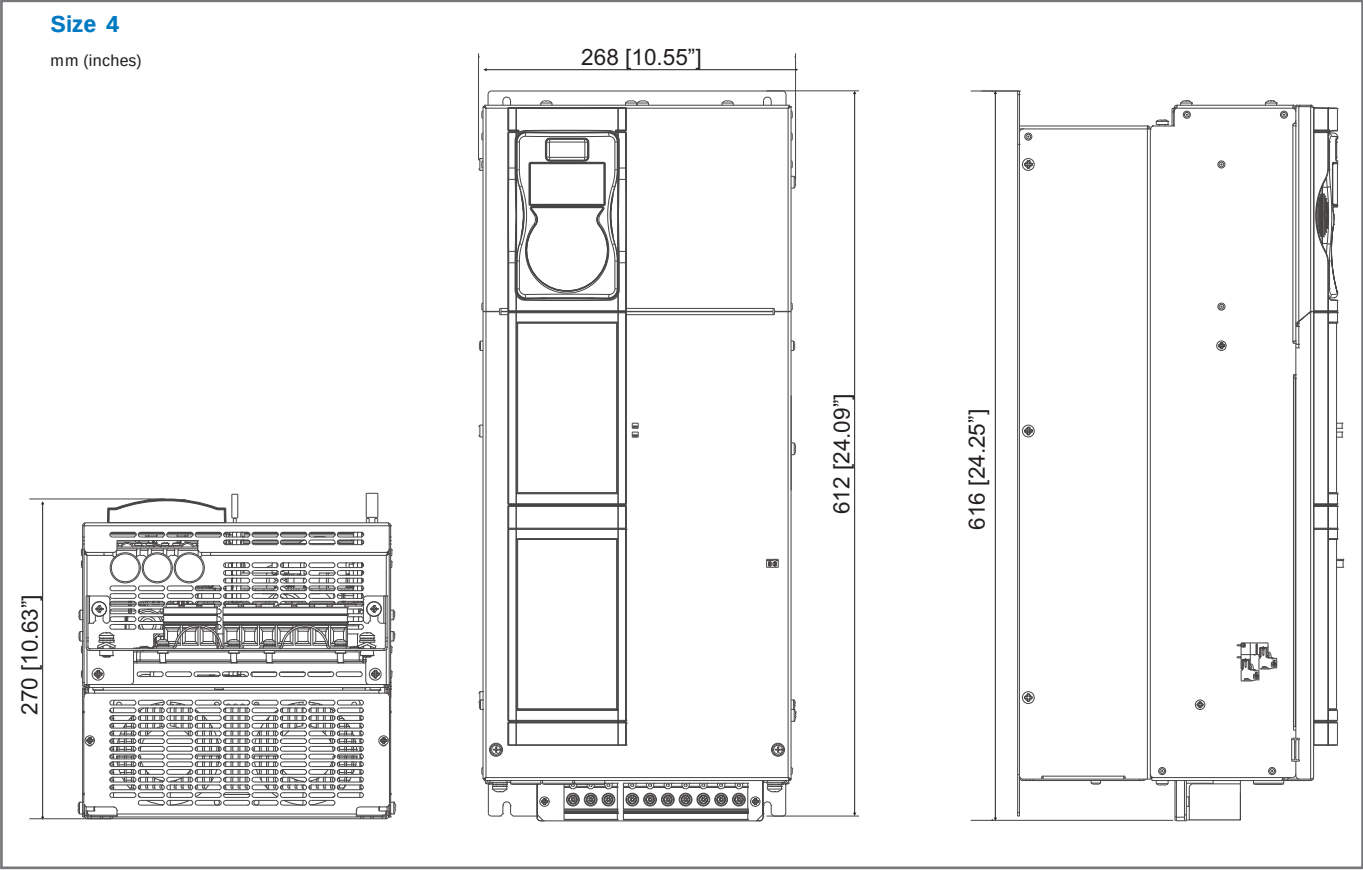




2.4 Weights and dimensions



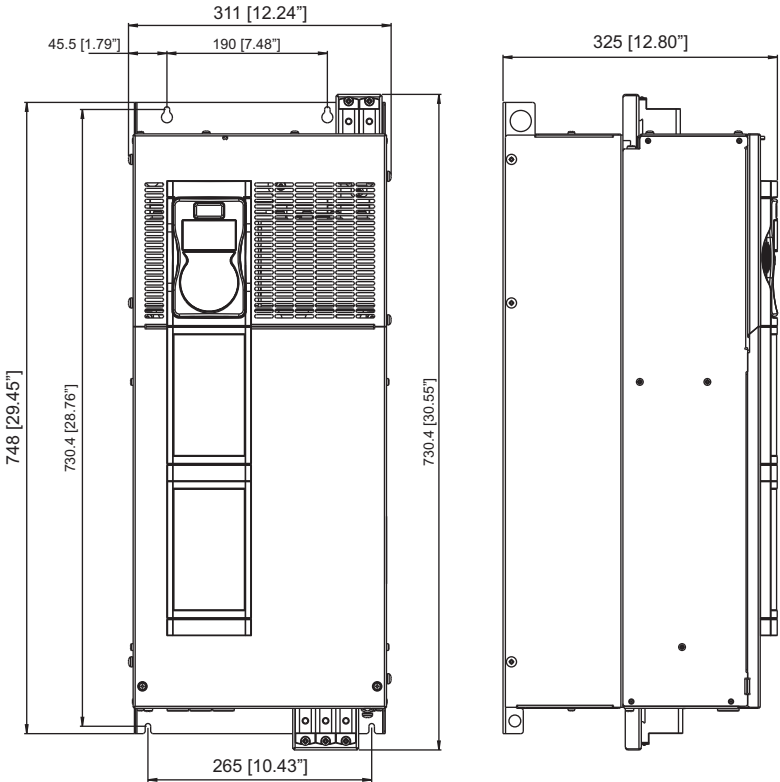
Size ADV200-DC	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
3185...3220	180 x 517 x 250.1	7.09 x 20.35 x 9.85	18	39.7



Size ADV200-DC	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
4300...4450	268 x 616 x 270	10.55 x 24.25 x 10.63	24	52.9

Size 5

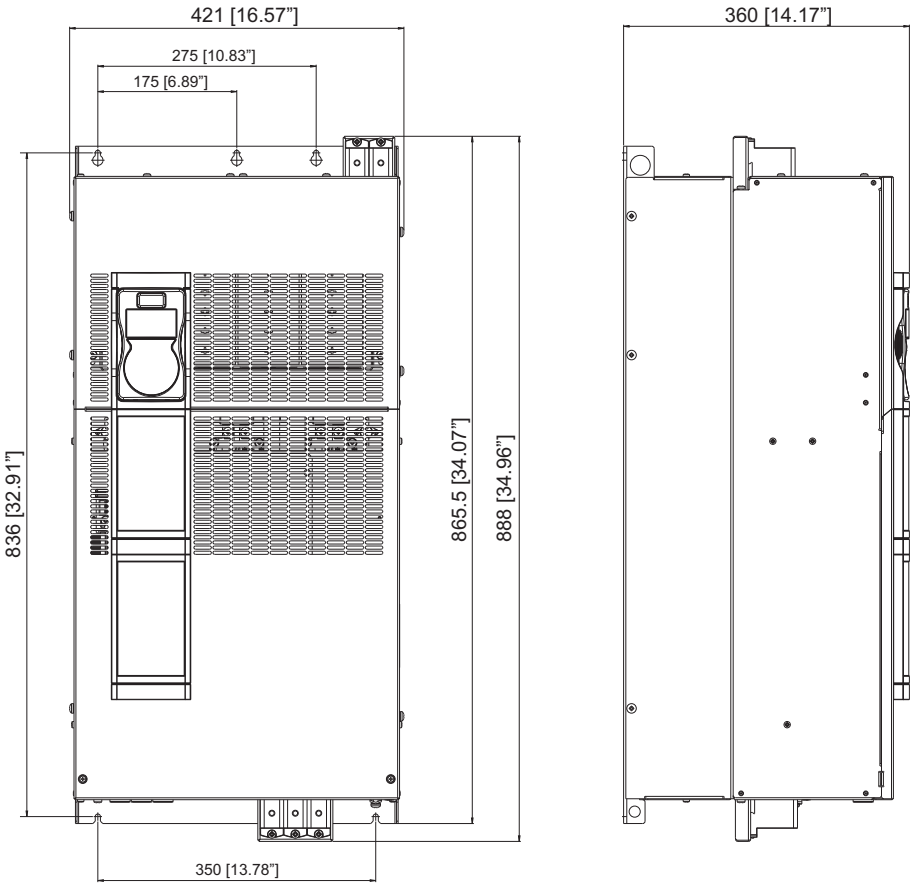
mm (inches)



Size ADV200-DC	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
5550 ... 5900	311 x 730.4 x 325	12.24 x 30.55 x 12.8	40	88.2

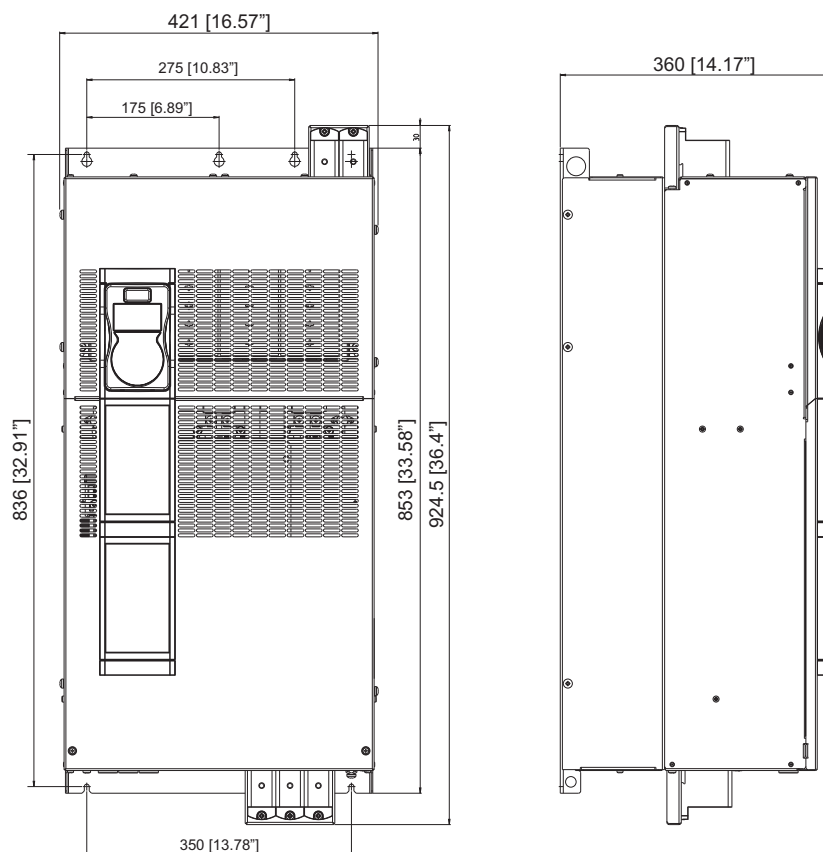
Size 61100

mm (inches)



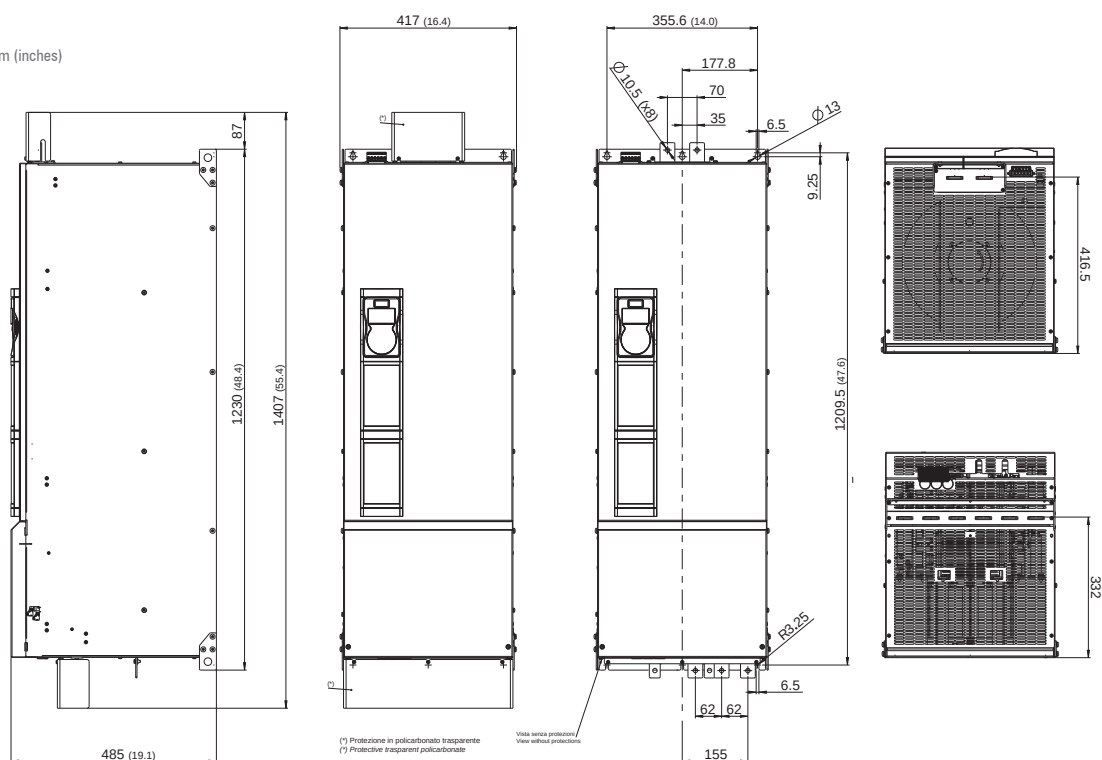
Size ADV200-DC	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
61100	421 x 924.5 x 360	16.57 x 36.4 x 14.17	68	149.9

mm (inches)



Size ADV200-DC	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
61320	421 x 924.5 x 360	16.57 x 36.4 x 14.17	68	149.9

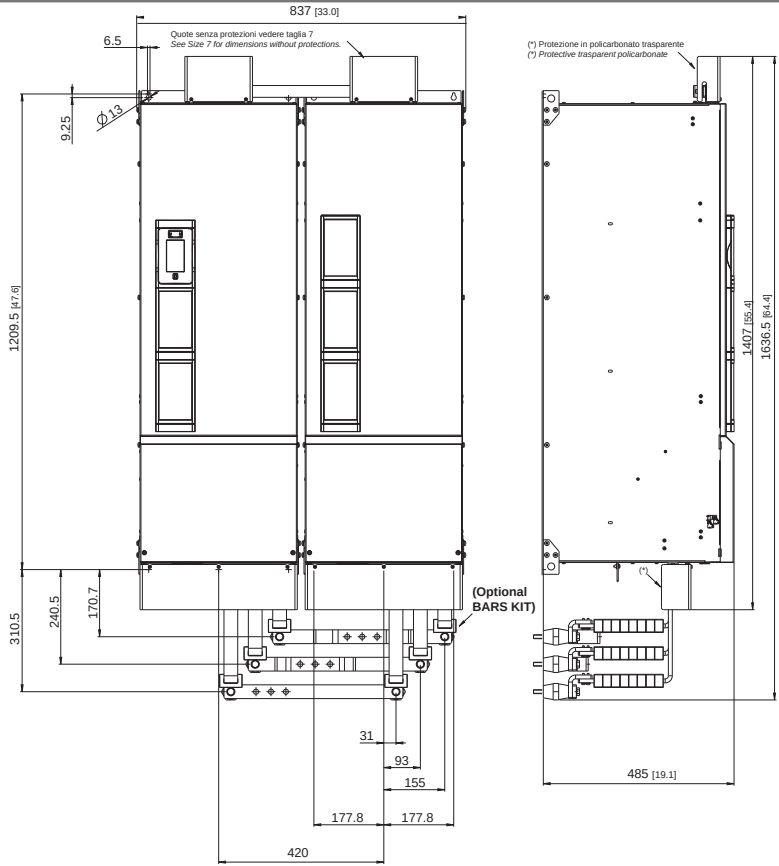
mm (inches)



Sizes ADV200-DC	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
71600...72000	417 x 1407 x 485	16.42 x 55.4 x 19.1	130	286.6
72500			140	308.7
73150 ... 73550			150	330.7

Size 400 ... 710 kW

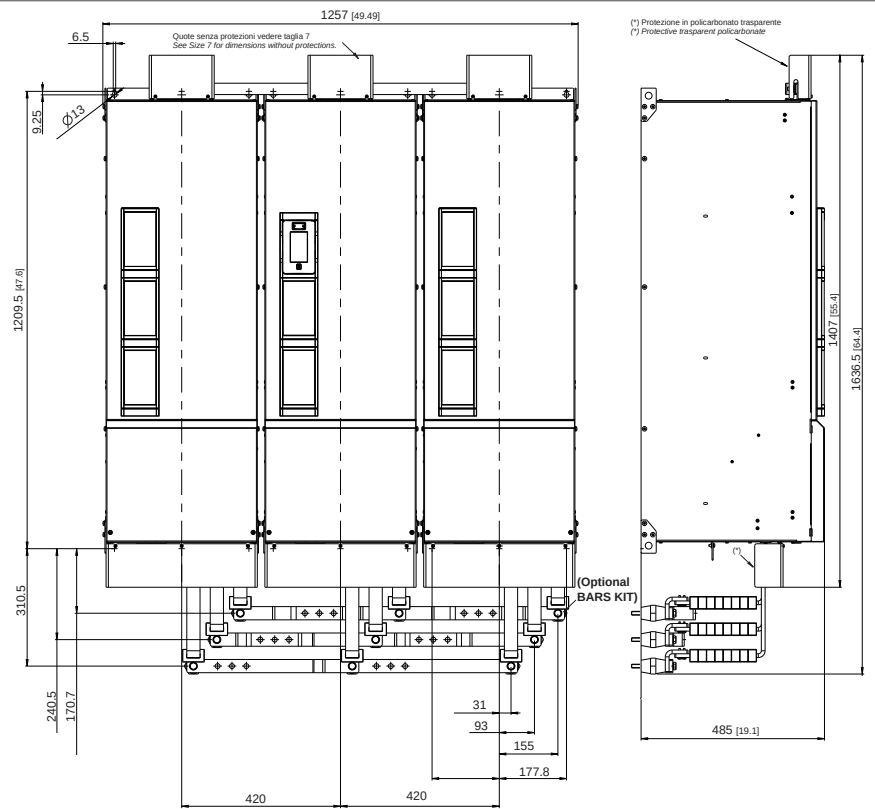
mm (inches)



Sizes ADV200-DC	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
400kW	837 x 1407 x 485	33.0 x 55.4 x 19.1	260	573.2
500kW			280	617.4
630 - 710kW			300	661.4

Size 900...1000 kW

mm (inches)



Size ADV200-DC	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
900 - 1000kW	1257 x 1407 x 485	49.5 x 55.4 x 19.1	450	992.1

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ADV200-DC

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APPENDIX

2.5 Choosing the Inverter

The combinations of motor power ratings and inverters listed in the table envisage the use of motors in which the voltage rating is equal to that of the mains power.
For motors with different voltage ratings the inverter must be chosen according to the current rating of the motor.
The combinations listed in the table thus show the current that can be delivered by the drive during continuous operation and overload conditions, according to the mains voltage.

The same engineering criteria apply for operations with additional derating factors:

- KV Power supply voltage
- KT Ambient temperature
- Kf Switching frequency
- KALT Altitude of installation

2.6 Dati in Ingresso

Sizes ADV200-DC	Input voltage ULN [Vdc]	Overvoltage threshold (Overvoltage) [Vdc]	Undervoltage threshold (Undervoltage) [Vdc]	DC input current for continuous operation In	
				Heavy Duty (150% overload) @ 540 Vdc [A]	Light Duty (110% overload) @ 540 Vdc [A]
3185	450 ... 750 Vcc	820	380	39	48
3220				48	65
4300				65	80
4370				80	90
4450				90	125
5550				125	175
5750				175	210
5900				210	240
61100				240	290
61320				290	350
71600				370	430
72000				430	510
72500				510	710
73150				710	780
73550				780	850
400 kW				815	980
500 kW				980	1350
630 kW				1350	1490
710 kW				1490	1650
900 kW				2020	2200
1000 kW				2200	2470

2.7 Output Data

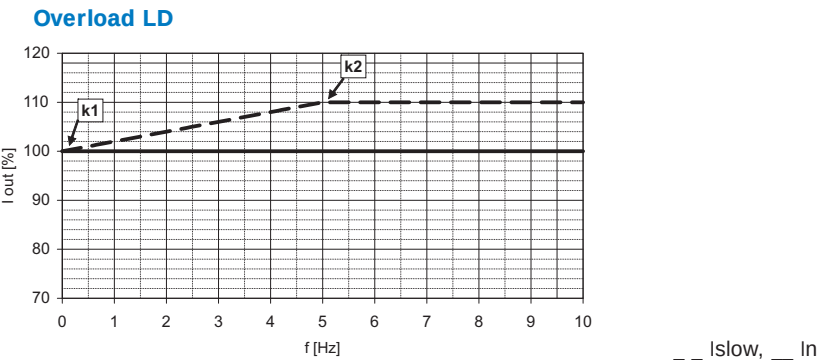
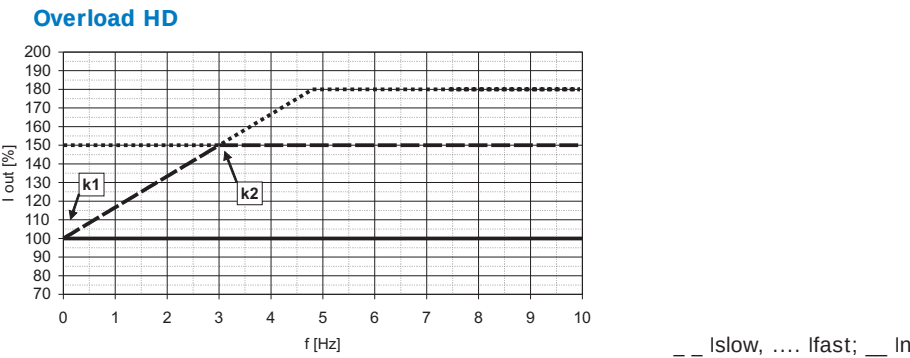
Sizes ADV200-DC	Inverter Output		Pn mot (Recommended motor rating, fsw = default)				Maximum output voltage U2	Maximum output frequency f2	IGBT braking unit
	Heavy Duty	Light Duty	Heavy Duty (150% overload)		Light Duty (110% overload)				
			@400 VAC [kW]	@460 VAC [HP]	@400 Vac [kW]	@460 Vac [HP]			
	[kVA]	[kVA]					[V]	[Hz]	
3185	26.3	32	18.5	25	22	30	0.98 x ULN (ULN = AC input voltage from separate SM32 or AFE200 power supply unit)	500	Internal standard (with external resistor); braking torque 150 % MAX
3220	32	43	22	30	30	40			
4300	43	52	30	40	37	50			
4370	52	60	37	50	45	60			
4450	60	73	45	60	55	75			
5550	73	104	55	75	75	100			
5750	104	125	75	100	90	125			
5900	125	145	90	125	110	150			
61100	145	173	110	150	132	175			
61320	173	208	132	175	160	200			
71600	208	267	160	200	200	250			
72000	267	319	200	250	250	300			
72500	319	409	250	300	315	400			
73150	409	450	315	400	355	450			
73550	450	506	355	450	400	500			
400 kW	506	603	400	500	500	650			
500 kW	603	776	500	650	630	850			
630 kW	776	852	630	850	710	950			
710 kW	852	956	710	950	800	1100			
900 kW	1108	1247	900	1200	1000	1300			
1000 kW	1247	1420	1000	1300	1200	1600			

Sizes ADV200-DC	Rated output current I _n (fsw = default)				Switching frequency fsw		Reduction factor			
	Heavy Duty (150% overload)		Light Duty (110% overload)		Default	Higher	K _v (1)	K _T (2)	K _f (@ 8 kHz) (3)	K _{ALT} (4)
	@540 Vdc [A]	@650 Vdc [A]	@540 Vdc [A]	@650 Vdc [A]						
3185	38	34.2	46	41.4	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
3220	46	41.4	62	55.8	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
4300	62	55.8	75	67.5	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
4370	75	67.5	87	78.3	4	6, 8, 10, 12	0.9	0.9	0.7	1.2
4450	87	78	105	94.5	4	6, 8	0.9	0.9	0.7	1.2
5550	105	94.5	150	135	4	6, 8	0.9	0.9	0.7	1.2
5750	150	135	180	162	4	6, 8	0.9	0.9	0.7	1.2
5900	180	162	210	189	4	6, 8	0.9	0.9	0.7	1.2
61100	210	189	250	225	4	6, 8	0.9	0.9	0.7	1.2
61320	250	225	300	270	4	6, 8	0.9	0.9	0.7	1.2
71600	300	270	385	347	4	-	0.9	0.9	-	1.2
72000	385	347	460	414	4	-	0.9	0.9	-	1.2
72500	460	414	590	531	2	-	0.9	0.9	-	1.2
73150	590	531	650	585	2	-	0.9	0.9	-	1.2
73550	650	585	730	657	2	-	0.9	0.9	-	1.2
400 kW	730	657	870	783	2	-	0.9	0.9	-	1.2
500 kW	870	783	1120	1008	2	-	0.9	0.9	-	1.2
630 kW	1120	1008	1230	1107	2	-	0.9	0.9	-	1.2
710 kW	1230	1107	1380	1242	2	-	0.9	0.9	-	1.2
900 kW	1600	1440	1800	1620	2	-	0.9	0.9	-	1.2
1000 kW	1900	1620	2050	1845	2	-	0.9	0.9	-	1.2

- (1) K_v : Derating factor for mains voltage at 650Vdc (460Vac)
(2) K_T : Derating factor for ambient temperature of 50°C (1% every °C above 40°C)
(3) K_f : Derating factor for higher switching frequency
(4) K_{ALT} : Derating factor for installation at altitudes above 1000 meters a.s.l. Value to be applied = 1.2% each 100 m increase above 1000 m.
For example: Altitude 2000 m, K_{alt} = 1.2% * 10 = 12% derating; I_n derated = (100 - 12) % = 88 % I_n

Sizes ADV200-DC	Overload			Derating according to switching frequency (HD)						SOverload according to output frequency			
	HD 150 % x In (1' every 5')	HD 180 % x In (for 0.5'')	LD 110 % x In (1' every 5')	2 kHz	4 kHz	6 kHz	8 kHz	10 kHz	12 kHz	Heavy Duty		Light Duty	
	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	K1 HD [%]	K2 HD [Hz]	K1 LD [%]	K2 LD [Hz]
3185	57	68.4	50.6	38	38	32.3	26.6	22.8	19	100	5	85	5
3220	69	82.8	68.2	46	46	39.1	32.2	27.6	23	100	3	80	5
4300	93	111.6	82.5	62	62	52.7	43.4	37.2	31	100	3	80	3
4370	113	135	95.7	75	75	63.8	52.5	45	37.5	100	3	80	3
4450	131	157	116	87	87	74	60.9	n.a.	n.a.	100	3	80	3
5550	157	189	165	105	105	89	74	n.a.	n.a.	100	3	85	5
5750	225	270	198	150	150	128	105	n.a.	n.a.	100	5	85	5
5900	270	324	231	180	180	153	126	n.a.	n.a.	100	5	85	5
61100	315	378	275	210	210	179	147	n.a.	n.a.	100	3	100	3
61320	375	540	330	250	250	213	175	n.a.	n.a.	100	3	100	3
71600	450	540	424	300	300	n.a.	n.a.	n.a.	n.a.	100	3	80	3
72000	578	693	506	385	385	n.a.	n.a.	n.a.	n.a.	100	3	100	3
72500	690	828	649	460	n.a.	n.a.	n.a.	n.a.	n.a.	100	3	75	5
73150	885	1062	715	590	n.a.	n.a.	n.a.	n.a.	n.a.	100	3	100	3
73550	975	1170	803	650	n.a.	n.a.	n.a.	n.a.	n.a.	90	5	90	5
400 kW	1095	1314	957	730	n.a.	n.a.	n.a.	n.a.	n.a.	100	3	100	3
500 kW	1305	1566	1232	870	n.a.	n.a.	n.a.	n.a.	n.a.	100	3	75	5
630 kW	1680	2016	1353	1120	n.a.	n.a.	n.a.	n.a.	n.a.	100	3	100	3
710 kW	1845	2214	1518	1230	n.a.	n.a.	n.a.	n.a.	n.a.	90	5	90	5
900 kW	2400	2880	1980	1600	n.a.	n.a.	n.a.	n.a.	n.a.	100	3	100	3
1000 kW	2700	3240	2255	1900	n.a.	n.a.	n.a.	n.a.	n.a.	90	5	90	5

- In Light Duty mode the switching frequency is fixed at 4 kHz, and no derating factor is applied.
- f, in the Heavy Duty mode, the factory setting of Mod freq commutaz, (Switch freq. mode) PAR: 568 is changed from 0=Fixed to 1=Variable, the switching frequency is controlled by the temperature of the drive heat sink and the output frequency. For further information see the ADV200 Functions and Parameters manual, menu 4.9.



2.8 Cooling

All inverters are equipped with internal fans.

Size		Dissipated power [W]	Fan capacity	
			Dissipator [m ³ /h]	Internal [m ³ /h]
ADV-3185		460	80 x 2	32
ADV-3220		600	80 x 2	32
ADV-4300		900	2 x 250	2 x 50
ADV-4370		1000	2 x 250	2 x 50
ADV-4450		1290	2 x 250	2 x 50
ADV-5550		1760	2 x 285	1 x 170
ADV-5750		2150	2 x 355	2 x 170
ADV-5900		2400	2 x 355	2 x 170
ADV-61100		2850	3 x 310	2 x 170
ADV-61320		3600	3 x 310	2 x 170
ADV-71600		3900	1500	-
ADV-72000		4000	1500	-
ADV-72500		5200	1500	-
ADV-73150		6000	2000	-
ADV-73550		6500	2000	-
400 kW	ADV-72000-KXX-4-MS 04-DC	4000	1500	-
	ADV-72000-XXX-4-SL-DC	4000	1500	-
500 kW	ADV-72500-KXX-4-MS 05-DC	5200	1500	-
	ADV-72500-XXX-4-SL-DC	5200	1500	-
630 kW	ADV-731500-KXX-4-MS 06-DC	6000	2000	-
	ADV-731500-XXX-4-SL-DC	6000	2000	-
710 kW	ADV-735500-KXX-4-MS 07-DC	6500	2000	-
	ADV-735500-XXX-4-SL-DC	6500	2000	-
900 kW	ADV-731500-KXX-4-MS 09-DC	6000	2000	-
	ADV-731500-XXX-4-SL-DC-DC	6000	2000	-
	ADV-731500-XXX-4-SL-DC-DC	6000	2000	-
1000 kW	ADV-735500-KXX-4-MS 10-DC	6500	2000	-
	ADV-735500-XXX-4-SL-DC	6500	2000	-
	ADV-735500-XXX-4-SL-DC	6500	2000	-

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APPENDIX

2.9 Order codes

Product identification

ADV - X XXX - X X X - Y - XX YY-DC - SI

EXP-SFTy-ADV safety card	YES = included	[empty] = not included
DC link power supply versions		
Only for parallel versions:	XX : MS = MASTER SL = SLAVE	YY : Inverter power in kW 04 = 400.0 kW 05 = 500.0 kW 06 = 630.0 kW 07 = 710.0 kW 09 = 900.0 kW 10 = 1000.0 kW
Fan power supply voltage:	4 = 380 Vac / 50 Hz	4A = 460 VAC / 60 Hz
Software:	X = standard	
Braking unit:	X = not included	B = included
Keypad:	X = not included	K = included
Inverter power in kW:	185 = 18.5 kW 220 = 22.0 kW 300 = 30.0 kW 370 = 37.0 kW 450 = 45.0 kW 550 = 55.0 kW 750 = 75.0 kW	900 = 90.0 kW 1100 = 110.0 kW 1320 = 132.0 kW 1600 = 160.0 kW 2000 = 200.0 kW 2500 = 250.0 kW 3150 = 315.0 kW 3550 = 355.0 kW
Mechanical dimensions of the drive:	4 = size 4 5 = size 5	6 = size 6 7 = size 7
Inverter, ADV200 series		

Example:

ADV - 3 185 - K B X - 4-DC

DC link power supply versions	
Fan power supply voltage:	4 = 380 Vac / 50 Hz
Software:	X = standard
Braking unit:	B = included
Keypad:	K = included
Inverter power in kW:	185 = 18.5 kW
Mechanical dimensions of the drive:	3 = size 3
Inverter, ADV200 series	

ADV200-DC - Common DC bus power supply

- Field-Orientated Vector Inverter
- Model with "KB-ADV" Programming Keypad
- HD = Heavy Duty (Overload 150%), LD = Light Duty (Overload 110%)

CODE	PRODUCT IDENTIFICATION	P _N @ 400Vac		CONFIGURATION
		HD	LD	
S9010DC	ADV-3185-KXX-4-DC	18.5kW	22kW	Configuration without rectifier, choke and filter
S9011DC	ADV-3220-KXX-4-DC	22kW	30kW	Configuration without rectifier, choke and filter
S9012DC	ADV-4300-KXX-4-DC	30kW	37kW	Configuration without rectifier, choke and filter
S9013DC	ADV-4370-KXX-4-DC	37kW	45kW	Configuration without rectifier, choke and filter
S9014DC	ADV-4450-KXX-4-DC	45kW	55kW	Configuration without rectifier, choke and filter
S9015DC	ADV-5550-KXX-4-DC	55kW	75kW	Configuration without rectifier, choke and filter
S9016DC	ADV-5750-KXX-4-DC	75kW	90kW	Configuration without rectifier, choke and filter
S9017DC	ADV-5900-KXX-4-DC	90kW	110kW	Configuration without rectifier, choke and filter
S9018DC	ADV-61110-KXX-4-DC	110kW	132kW	Configuration without rectifier, choke and filter
S9019DC	ADV-61132-KXX-4-DC	132kW	160kW	Configuration without rectifier, choke and filter
S9020DC	ADV-71600-KXX-4-DC	160kW	200kW	Configuration without rectifier, choke and filter
S9021DC	ADV-72000-KXX-4-DC	200kW	250kW	Configuration without rectifier, choke and filter
S9022DC	ADV-72500-KXX-4-DC	250kW	315kW	Configuration without rectifier, choke and filter
S9023DC	ADV-73150-KXX-4-DC	315kW	355kW	Configuration without rectifier, choke and filter (No UL Mark)
S9024DC	ADV-73550-KXX-4-DC	355kW	400kW	Configuration without rectifier, choke and filter (No UL Mark)
S9025DC	ADV-73150-KXX-4A-DC	315kW	355kW	Conf. without rectifier, choke and filter - 380Vac/60Hz fan power supply
S9026DC	ADV-73550-KXX-4A-DC	355kW	400kW	Conf. without rectifier, choke and filter - 380Vac/60Hz fan power supply

ADV200-DC +SI - Power supply for Common DC Bus + SIL 3 Safety Card

- Field-Orientated Vector Inverter
- Model with "KB-ADV" Programming Keypad
- HD = Heavy Duty (Overload 150%), LD = Light Duty (Overload 110%)

CODE	PRODUCT IDENTIFICATION	P _N @ 400Vac		CONFIGURATION
		HD	LD	
S9010DS	ADV-3185-KXX-4-DC + SI	18.5kW	22kW	Configuration without rectifier, choke and filter
S9011DS	ADV-3220-KXX-4-DC + SI	22kW	30kW	Configuration without rectifier, choke and filter
S9012DS	ADV-4300-KXX-4-DC + SI	30kW	37kW	Configuration without rectifier, choke and filter
S9013DS	ADV-4370-KXX-4-DC + SI	37kW	45kW	Configuration without rectifier, choke and filter
S9014DS	ADV-4450-KXX-4-DC + SI	45kW	55kW	Configuration without rectifier, choke and filter
S9015DS	ADV-5550-KXX-4-DC + SI	55kW	75kW	Configuration without rectifier, choke and filter
S9016DS	ADV-5750-KXX-4-DC + SI	75kW	90kW	Configuration without rectifier, choke and filter
S9017DS	ADV-5900-KXX-4-DC + SI	90kW	110kW	Configuration without rectifier, choke and filter
S9018DS	ADV-61110-KXX-4-DC + SI	110kW	132kW	Configuration without rectifier, choke and filter
S9019DS	ADV-61132-KXX-4-DC + SI	132kW	160kW	Configuration without rectifier, choke and filter

CODE	PRODUCT IDENTIFICATION	Pn @ 400Vac		CONFIGURATION
		HD	LD	
S9020DS	ADV-71600-KXX-4-DC+SI	160kW	200kW	Configuration without rectifier, choke and filter
S9021DS	ADV-72000-KXX-4-DC+SI	200kW	250kW	Configuration without rectifier, choke and filter
S9022DS	ADV-72500-KXX-4-DC+SI	250kW	315kW	Configuration without rectifier, choke and filter
S9023DS	ADV-73150-KXX-4-DC+SI	315kW	355kW	Configuration without rectifier, choke and filter (No UL Mark)
S9024DS	ADV-73550-KXX-4-DC+SI	355kW	400kW	Configuration without rectifier, choke and filter (No UL Mark)
S9025DS	ADV-73150-KXX-4A-DC+SI	315kW	355kW	Conf. without rectifier, choke and filter - 380Vac/60Hz fan power supply
S9026DS	ADV-73550-KXX-4A-DC+SI	355kW	400kW	Conf. without rectifier, choke and filter - 380Vac/60Hz fan power supply

ADV200-DC - Parallel Configurations + SIL3 Safety Card

- Field-Orientated Vector Inverter
- "KB-ADV" Programming Keypad in the Master version (MS)
- Power supply for Common DC Bus
- HD = Heavy Duty (Overload 150%), LD = Light Duty (Overload 110%)

CODE	PRODUCT IDENTIFICATION	PN @ 400Vac		CONFIGURATION
		HD	LD	
S9025MC	ADV-72000-KXX-4- MS 04-DC- SI	400kW	500kW	Without rectifier - choke - filter + Integrated Safety Card
S9025SC	ADV-72000-KXX-4- SL-DC			
S9025MC	ADV-72000-KXX-4- MS 04-DC- SI	500kW	630kW	Without rectifier - choke - filter + Integrated Safety Card
S9025SC	ADV-72000-KXX-4- SL-DC			
S9027MC	ADV-73150-KXX-4 -MS 06-DC-SI	630kW	710kW	Without rectifier - choke - filter + Integrated Safety Card (No UL Mark)
S9027SC	ADV-73150-KXX-4 -SL-DC			
S9028MC	ADV-73550-KXX-4- MS 07-DC-SI	710kW	800kW	Without rectifier - choke - filter + Integrated Safety Card (No UL Mark)
S9028SC	ADV-73550-KXX-4- SL-DC			
S9027M2	ADV-73150-KXX-4 -MS 09-DC-SI	900kW	1MW	Without rectifier - choke - filter + Integrated Safety Card (No UL Mark)
S9027SC	ADV-73150-KXX-4 -SL-DC			
S9027SC	ADV-73150-KXX-4 -SL-DC			
S9028M2	ADV-73550-KXX-4- MS 10-DC-SI	1MW	1,2MW	Without rectifier - choke - filter - Integrated Safety Card (No UL Mark)
S9028SC	ADV-73550-KXX-4- SL-DC			
S9028SC	ADV-73550-KXX-4- SL-DC			
S9029MC	ADV-73150-KXX-4A-MS 06-DC-SI	630kW	710kW	Without rectifier - choke - filter + Integrated Safety Card 380Vac/60Hz fan power supply
S9029SC	ADV-73150-KXX-4A -SL-DC			
S9030MC	ADV-73550-KXX-4A- MS 07-DC-SI	710kW	800kW	Without rectifier - choke - filter + Integrated Safety Card 380Vac/60Hz fan power supply
S9030SC	ADV-73550-KXX-4A- SL-DC			
S9029M2	ADV-73150-KXX-4A-MS 09-DC-SI	900kW	1MW	Without rectifier - choke - filter + Integrated Safety Card 380Vac/60Hz fan power supply
S9029SC	ADV-73150-KXX-4A -SL-DC			
S9029SC	ADV-73150-KXX-4A -SL-DC			
S9030M2	ADV-73550-KXX-4A- MS 10-DC-SI	1MW	1,2MW	Without rectifier - choke - filter + Integrated Safety Card 380Vac/60Hz fan power supply
S9030SC	ADV-73550-KXX-4A- SL-DC			
S9030SC	ADV-73550-KXX-4A- SL-DC			

3. ADV200-6 • 690 Vac Power Supply

3.1 Introduction



ADV200-6 Vector Inverters offer the best system solutions for drives with stand-alone configuration or common DC Bus power supply.

The range features power ratings of **75kW up to 1.2MW** for **three-phase power supplies of 690 VAC**. Integrated accessories such as the mains choke enhance long-term reliability, reduce overall dimensions and lower wiring costs.

Flexible Modular Technology

The ADV200-6 range reflects the philosophy of the entire ADV range and is based on a fully modular hardware with power structures that have been optimised for modern automation systems.

Designed to facilitate installation and guarantee ease of use, project flexibility, optimisation of space and reduction of wiring costs.

The ADV200-6 is available in 5 hardware sizes:

- up to 250 kW in the stand-alone configuration complete with rectifier stage
- from 500 kW to 1.2 MW in stand-alone configurations for common DC Bus input.

Integrated reliability

The ADV200-6 features high-quality engineering solutions that guarantee long-term reliability. The integrated input choke on the DC side reduces THD by up to 40% (up to size ADV-71320)

Total ease of use

Designed with the user in mind. The mechanical structure ensures simple and fast product management, regardless of installation and assembly conditions. All operations are simple and immediate, from accessing the extractable terminal strips to rack-mounting of options.

The dedicated accessories guarantee simple wiring and cable shielding to achieve immediate, EMC-compliant start-ups.

Serial line

The RS485 serial line is incorporated as standard across the range to enable peer-to-peer or multidrop connections using Modbus RTU protocol.

Management of optional cards

The ADV200-6 uses an intelligent rack system that allows 3 optional cards to be installed at the same time.

- Fieldbus interface card
- I/O expansion card
- Interface card for feedback with single or multiple encoders (up to 3).

Back-up power supply

The ADV200-6 is compatible with a separate +24Vdc external power supply. This solution makes it possible to maintain all display and drive configuration functions and manage the connected fieldbuses in the event of a power failure.

3.2 General Characteristics

- Power supply: 3 x 690VAc $\pm 10\%$; 50-60 Hz $\pm 5\%$
- Power ratings: from 500kW to 1.2MW
- Max output voltage 0.98 x Vin
- Control mode:
 - Open-loop vector control
 - Vector control with feedback
 - Open loop V/f and V/f with feedback
- Heavy overload control (136% x 1')
- Integration of up to 3 options onboard the drive
- GF-eXpress multi-language programming SW (5 languages)
- PLC with advanced IEC61131-3 programming environment
- Protection class:
 - IP20 (ADV-6750 ... ADV-92500)
 - IP00 (ADV-10500 ... ADV-1012000)

Fieldbus management



Standard supply configuration

- Integrated KB_ADV programming keypad
- Regulation:
 - 2 bipolar analog inputs (Voltage / Current)
 - 2 bipolar analog outputs (1: Voltage / Current, 1: Voltage)
 - 6 digital inputs (PNP / NPN)
 - 2 digital outputs (PNP / NPN)
 - 2 relay outputs, single contact
 - RS485 serial line (Modbus RTU)

Conformity

- Immunity / Emissions: EEC - EN 61800-3
- Programming: according to IEC 61131-3

Environmental conditions

- Ambient temperature: 0 ...40°C, +40°C... +50°C with derating
- Altitude: Max 2000 m. (up to 1000 m without current limitations)

Markings



Complies with the EEC directive concerning low voltage equipment

Performance

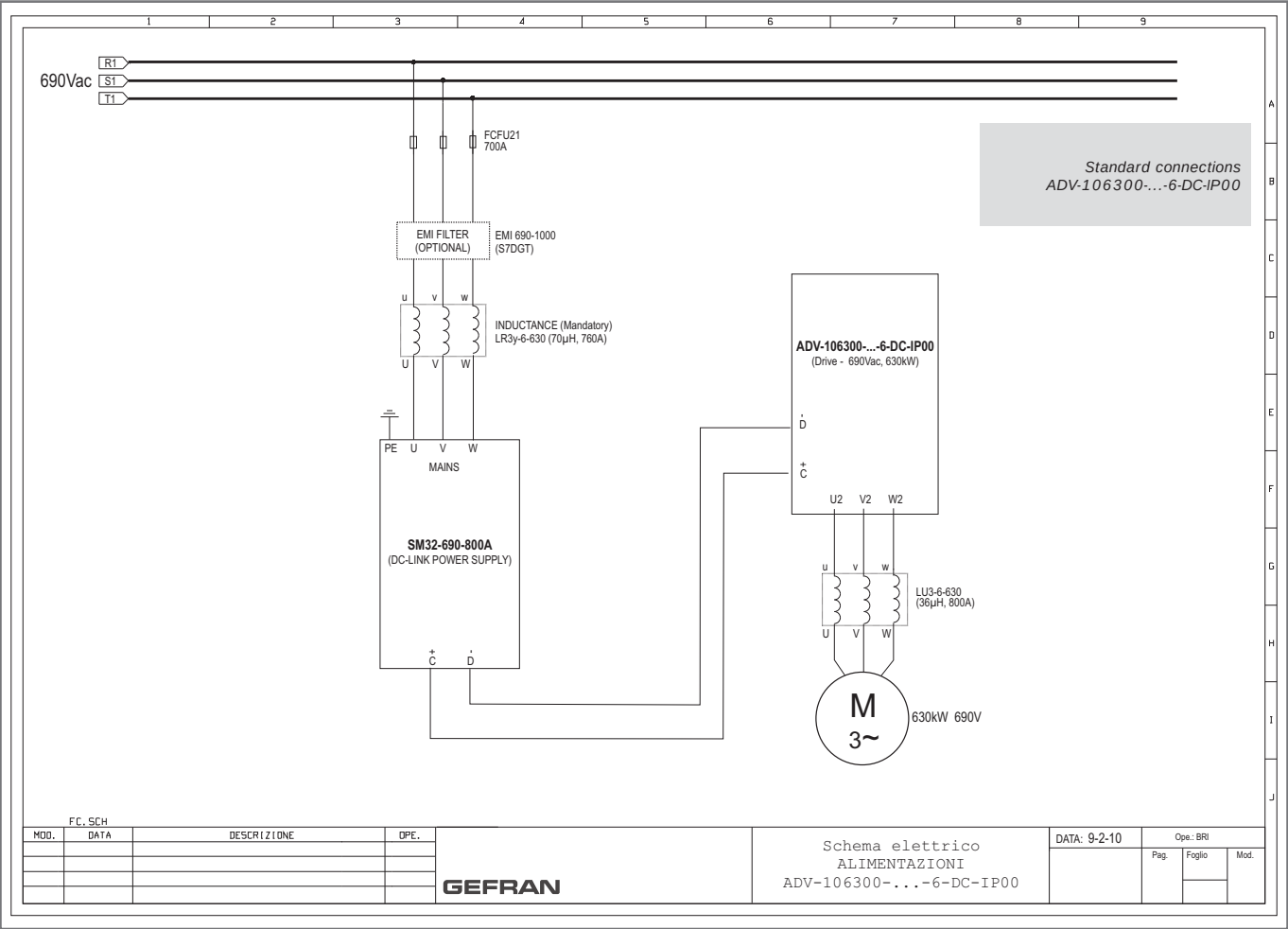
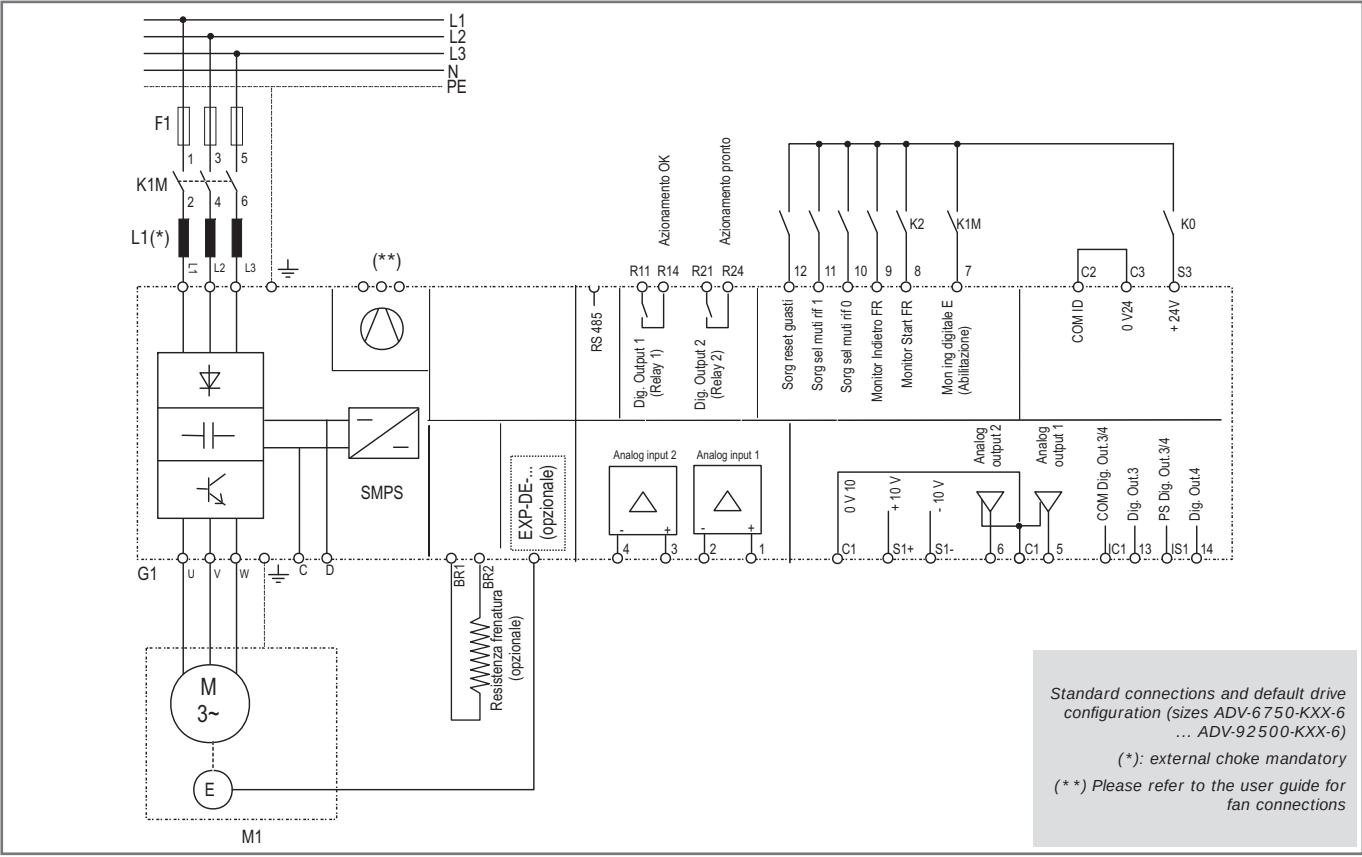
The ADV200-6 offers state-of-the-art control technology based on the use of a powerful 32-bit microprocessor able to guarantee maximum precision and performance of the motor as well as sophisticated management of the most advanced application systems.

Precision

Control mode	Speed control precision (*)	Control range
FOC with feedback	$\pm 0.01\%$ motor speed rating	1 : 1000
Open-loop FOC	$\pm 30\%$ motor slip rating	1 : 100
V/F	$\pm 60\%$ motor slip rating	1 : 30

(*) for standard 4-pole motor

3.3 Standard connections



FC, SCH		DESCRIZIONE	DPE.
MOD.	DATA		

GEFAN

Schema elettrico
 ALIMENTAZIONI
 ADV-106300-6-DC-IP00

DATA: 9-2-10

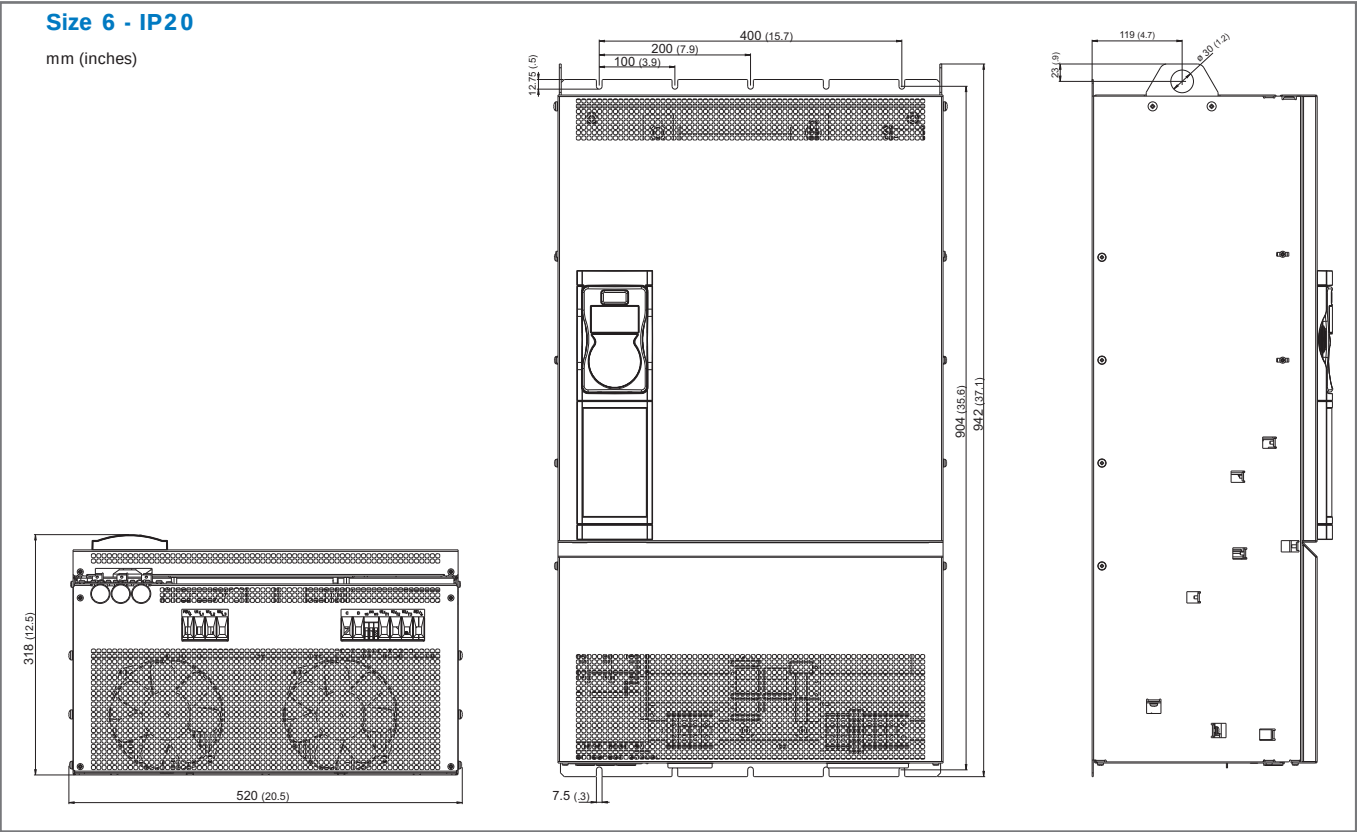
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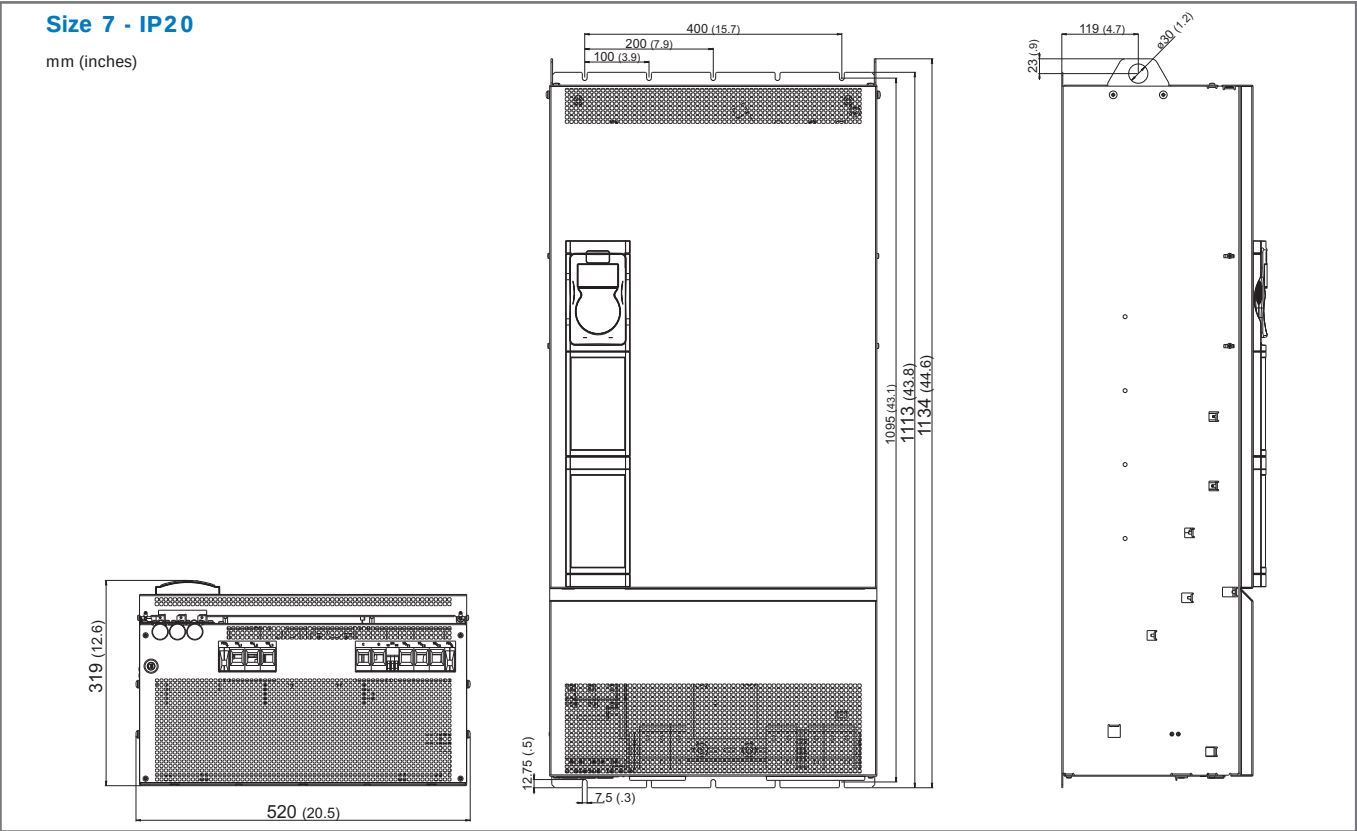
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Mod.

3.4 Weights and dimensions



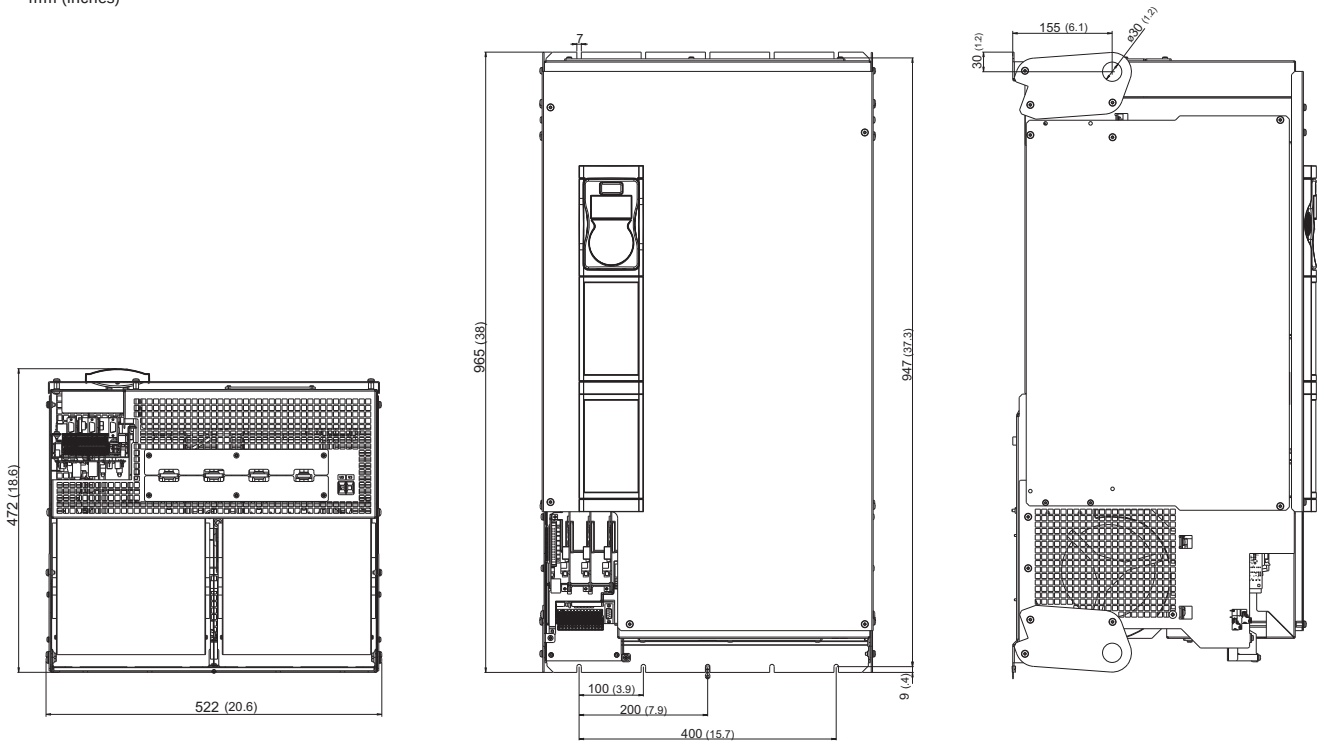
Sizes ADV200-6	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
6750	520 x 942 x 318	20.5 x 37.1 x 12.5		



Sizes ADV200-6	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
7900 - 71100 - 71320	520 x 1134 x 319	20.5 x 44.6 x 12.6		

Size 9 - IP20

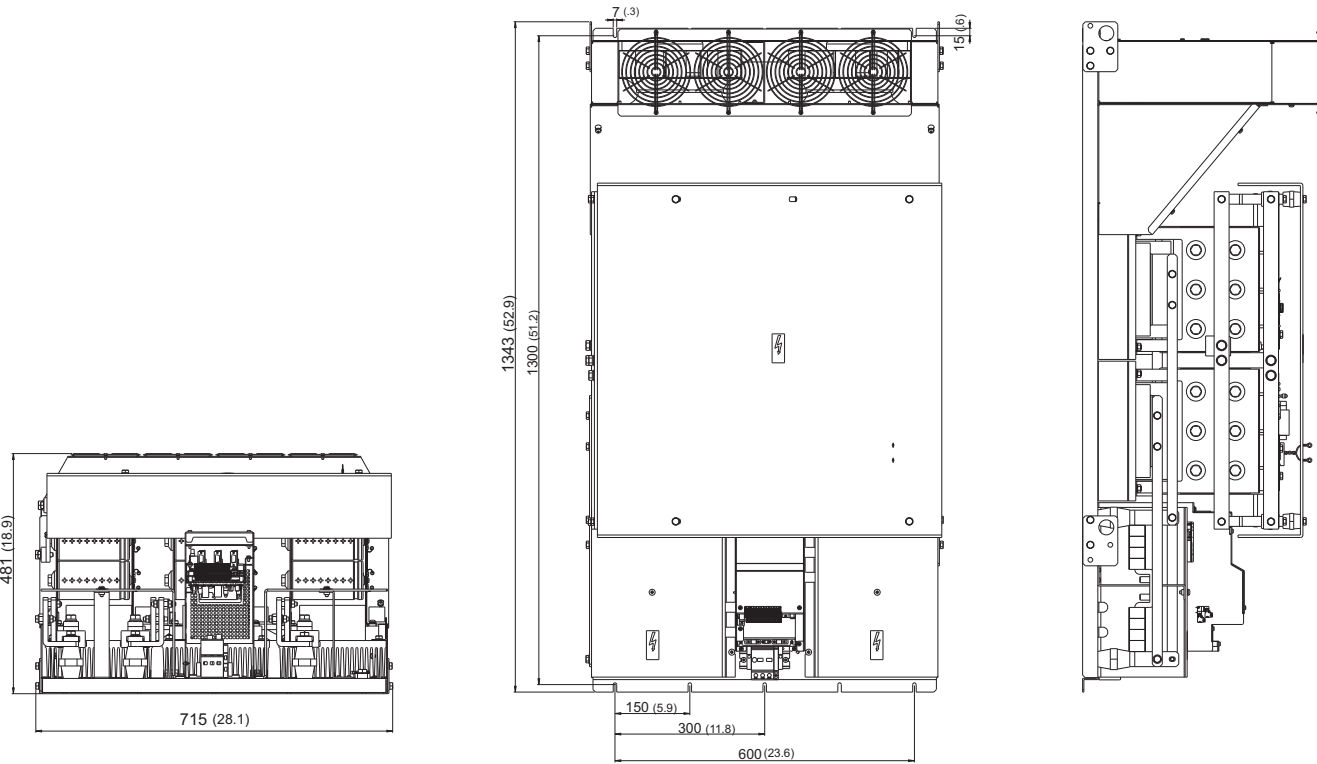
mm (inches)



Sizes ADV200-6	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
92500	522 x 965 x 472	20.6 x 38.0 x 18.6		

Taglia 10 - DC-IP00

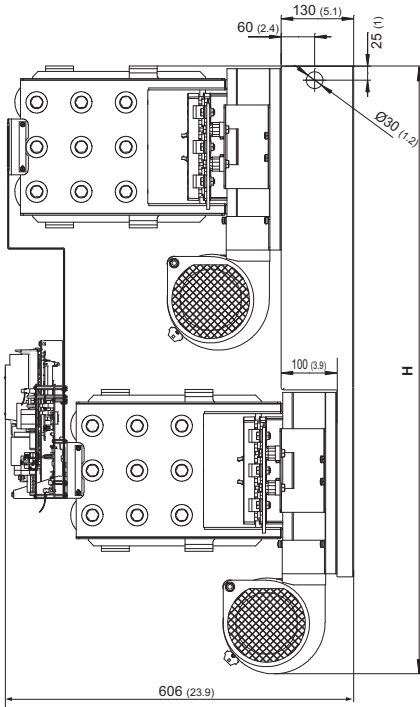
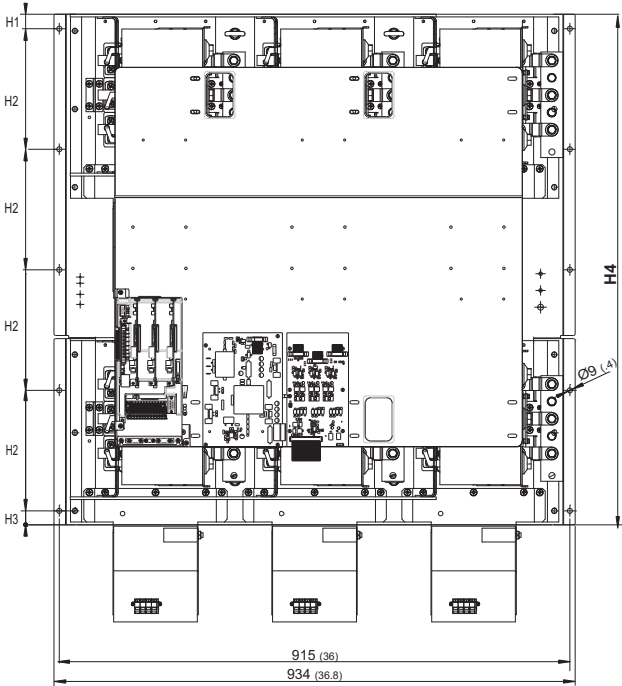
mm (inches)



Taglie ADV200-6	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
105000 - 106300	715 x 1343 x 481	28.1 x 52.9 x 18.9		

Size 10 - DC-IP00

mm (inches)



Sizes ADV200-6	Dimensions: Width x Height x Depth		H	H1	H2	H3	H4	Weight	
	mm	inches	mm	mm	mm	mm	mm	kg	lbs
108000	934 x 1084 x 606	36.77 x 42.68 x 23.86	1084	26	216	25	915	230	507
1012000	934 x 1286 x 606	36.77 x 50.63 x 23.86	1284	40	281.3	40	1050	240	529

3.5 Choosing the Inverter

The combinations of motor power ratings and inverters listed in the table envisage the use of motors in which the voltage rating is equal to that of the mains power.
For motors with different voltage ratings the inverter must be chosen according to the current rating of the motor.
The combinations listed in the table thus show the current that can be delivered by the drive during continuous operation and overload conditions, according to the mains voltage.

- The same engineering criteria apply for operations with additional derating factors:
- K_T Ambient temperature
 - K_f Switching frequency
 - K_{ALT} Altitude of installation

3.6 Input Data

Sizes ADV200-6	Input voltage ULN	Overvoltage threshold (Overvoltage)	Undervoltage threshold (Undervoltage)	Total harmonic distortion	AC short circuit current	AC input current for continuous operation I_N
	[V _{AC}]	[V _{DC}]	[V _{DC}]	[THD] %	@ 690V _{AC} [kA]	Heavy Duty (136% overload) @ 690 V _{AC} [A]
6750	Three-phase mains 690 Vac ± 10%, 50/60 Hz, ± 5% (Voltage balance 3%)	1200	675	40	5	100
7900					5	120
71100					5	140
71320					5	150
92500					18	280

Sizes ADV200-6	Input voltage ULN	Overvoltage threshold (Overvoltage)	Undervoltage threshold (Undervoltage)	Total harmonic distortion	AC Input current (SM32 side)	AC short circuit current	AC input current for continuous operation I_N
	[V _{CC}]	[V _{DC}]	[V _{DC}]	[THD] %	@ 690V _{AC} [A]	@ 690V _{AC} [kA]	Heavy Duty (136% overload) @ 930 V _{DC} [A]
105000	700 ... 1200	1200	675	40 (*)	600	20	700
106300					700	20	830
108000					800	20	930
1012000					1200	20	1400

Devices may be used on a circuit designed to supply only symmetrical amps in milliseconds as shown in the table (maximum 690 volts).
(*) with SM32-690V and mains choke.

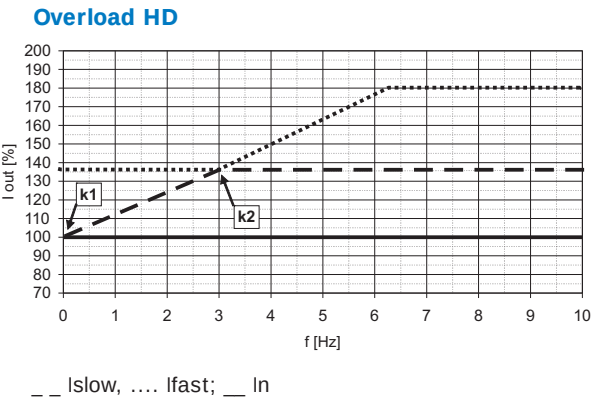
3.7 Output Data

Sizes ADV200-6	Inverter Output Heavy Duty [kVA]	Pn mot ((Recommended motor rating, fsw = default) Heavy Duty (136% overload) @690 VAC [kW]	Maximum output voltage U2 [V]	Maximum output frequency f2 [Hz]	IGBT braking unit
6750	110	75	0.98 x ULN (ULN = AC voltage input)	400	External optional (BUy...-6 series)
7900	131	90			
71100	159	110			
71320	190	132			
92500	335	250			
105000	705	500	0.98 x ULN (ULN = AC input voltage from separate SM32 power supply unit)	200	
106300	837	630			
108000	956	800			
1012000	1434	1200			

Sizes ADV200-6	Rated output current I _n (fsw = default)		Recommended motor power
	IEC 146 class 1 (continuous duty) @690 V _{AC} [A]	IEC 146 class 2 (150% x 60") @690 V _{AC} [A]	[kW]
6750	92	84	75
7900	110	100	90
71100	133	121	110
71320	159	145	132
92500	280	255	250
105000	590	537	500
106300	700	637	630
108000	800	728	800
1012000	1200	1092	1200

Sizes ADV200-6	Overload capacity		Overload		Derating according to switching frequency (HD)	
	I _{MAX}		HD 150 % x I _n (1' every 5')	HD 180 % x I _n (for 0,5'')	2 kHz	4 kHz
	[A] x 60"	[A] x 0.5"	[A]	[A]	[A]	[A]
6750	1.36 x I _{CONT}	1.83 x I _{CONT}	125	166	92	92
7900			150	198	110	110
71100			181	239	133	-
71320			216	286	159	-
92500		n.a.	381	n.a.	280	-
105000			802		590	-
106300			952		700	-
108000			1088		800	-
1012000			1632		1200	-

Sizes ADV200-6	Switching frequency f _{sw}		Reduction factor		Overload according to output frequency	
	Default	Higher	K _T	K _{ALT}	Heavy Duty	
	[kHz]	[kHz]	(2)	(4)	K1 HD [%]	K2 HD [Hz]
6750	4	n.a.	0.8	1.2	100	3
7900	4		0.8	1.2	100	3
71100	2		0.8	1.2	100	3
71320	2		0.8	1.2	100	3
92500	2		0.8	1.2	100	3
105000	2		0.8	1.2	100	3
106300	2		0.8	1.2	100	3
108000	2		0.8	1.2	100	3
1012000	2		0.8	1.2	100	3



3.8 Cooling

All inverters are equipped with internal fans.

Sizes ADV200-6	Max dissipated power [W]	Fan capacity	
		Dissipator [m ³ /h]	Internal [m ³ /h]
6750	1500	n.2 x 325 (50Hz)	-
7900	2000	n.3 x 325 (50Hz)	-
71100	2000	n.3 x 325 (50Hz)	-
71320	2400	n.3 x 325 (50Hz)	-
92500	5000	n.2 x 900 (50Hz)	-
105000	8000	n.2 x 1500 (50 Hz)	-
106300	10000	n.2 x 1500 (50 Hz)	-
108000	15000	n.6 x 600 (50 Hz)	-
1012000	20000	n.6 x 600 (50 Hz)	-

ADV200 - 4

ADV200-DC

ADV200 - 6

AFE200

PROGRAM.

APPENDIX

3.9 Order codes

Product identification

ADV - X XXX - X X X - 6 -DC -IP00

	Open versions		
	DC link power supply versions		
	Rated voltage:	6 = 690 VAc	
	Software:	X = standard	
	Braking unit:	X = not included	B = included
	Keypad:	X = not included	K = included
	Inverter power in kW:	750 = 75.0 kW 900 = 90.0 kW 1100 = 110.0 kW 1320 = 132.0 kW 2500 = 250.0 kW 5000 = 500.0 kW 6300 = 630.0 kW 8000 = 800.0 kW 12000 = 1200.0 kW	
	Mechanical dimensions of the drive:	6 = size 6 7 = size 7 9 = size 9 10 = size 10	
	Inverter, ADV200 series		

Example:

ADV - 6 750 - K X X - 6 -DC

DC link power supply versions	
Rated voltage:	6 = 690 VAc
Software:	X = standard
Braking unit:	X = not included
Keypad:	K = included
Inverter power in kW:	750 = 75.0 kW
Mechanical dimensions of the drive:	6 = size 6
Inverter, ADV200 series	

ADV200-6

- Field-Orientated Vector Inverter
- Model with "KB-ADV" Programming Keypad
- 3 x 690 Vac power supply

CODE	PRODUCT IDENTIFICATION	P _N @ 690Vac	CONFIGURATION
S9060X	ADV-6750-KXX-6	75kW	Compact IP20
S9061X	ADV-7900-KXX-6	90kW	Compact IP20
S9062X	ADV-71100-KXX-6	110kW	Compact IP20
S9063X	ADV-71320-KXX-6	132kW	Compact IP20
S9066X	ADV-92500-KXX-6	250kW	Compact IP20

ADV200-6-DC

- Field-Orientated Vector Inverter
- Model with "KB-ADV" Programming Keypad
- [Open versions](#)
- [Power supply for Common DC Bus](#)

CODE	PRODUCT IDENTIFICATION	P _N	CONFIGURATION
S9070X	ADV-105000-KXX-6-DC-IP00	500kW	Without rectifier - IP00 Open Version
S9071X	ADV-106300-KXX-6-DC-IP00	630kW	Without rectifier - IP00 Open Version
S9072X	ADV-108000-KXX-6-DC-IP00	800kW	Without rectifier - IP00 Open Version
S9073X	ADV-1012000-KXX-6-DC-IP00	1200kW	Without rectifier - IP00 Open Version

4. AFE200 • Active Front End Regenerative Power Supply Unit

4.1 Introduzione



AFE200 is the range of **regenerative power supply units** incorporating **Active Front End technology**.

Ideal for powering the batteries of drives connected on the same DC Bus or even for managing single-drive configurations.

The AFE200 offers a number of advantages:

- "Clean Power" thanks to the unit power factor and reduced harmonic distortion (<5%)
- Enhanced system dynamics during drive and regeneration
- Considerable energy savings during regeneration transients
- Improved stability of the DC Bus circuit under load changes
- Significant cost-effectiveness with the single power supply system
- Elimination of uneconomical conventional braking systems and braking resistors

The AFE200 range has power ratings of **22kW to 1,2MW** for three-phase power supplies of **400VAC to 500VAC**. Ease of use and intuitive programming make it possible for users of any level to exploit the high-level performance of Active Front End technology for a broad range of applications where there is a need for real energy saving.

Flexible Modular Technology

The AFE200 is also based on a fully modular hardware with power structures that can be installed side by side. Designed to facilitate installation and guarantee ease of use, project flexibility, optimisation of space and reduction of wiring costs.

The AFE200 is available in 5 hardware sizes

- from 22kW to 355kW in the stand-alone configuration
- from 400kW to 1.2MW in "parallel" configurations

Pre-load system

External management of the intermediate circuit pre-load is a feature of the entire range. The dedicated AFE PRE-CHARGE KITS are supplied complete with pre-wired resistors and contactors.

Total ease of use

The AFE200 is designed to enable simple, quick, economical connections to the system to be powered. All structures are extremely easy to handle and the terminal strips and optional card racks are readily accessible. The dedicated accessories guarantee simple wiring and cable shielding to achieve immediate, EMC-compliant start-ups.

Serial line

The RS485 serial line is incorporated as standard across the range to enable peer-to-peer or multidrop connections using Modbus RTU protocol.

Management of optional cards

The AFE200 uses an intelligent rack system that allows the following optional cards to be installed at the same time:

- Scheda per interfaccia bus di campo
- Scheda per espansione I/O

Back-up power supply

The AFE200 is compatible with a separate +24Vdc external power supply. This solution makes it possible to maintain all display and drive configuration functions and manage the connected fieldbuses in the event of a power failure.

Ideal sizes

The AFE200 offers a choice of technical features so that you can choose the drive best suited to the loads of the system to be controlled and specific operating conditions.

- Two overload modes for "heavy duty" with duty cycle of 150% of I_n for 1 minute every 5 minutes or for "light duty" (variable and/or quadratic torque) with duty cycle of 110% of I_n for 1 minute every 5 minutes.

4.2 General Characteristics

- Power supply: 380VAC -15% ...500VAC +5%, 50 / 60Hz
- Power ratings: from 22kW to 1.2MW
- Cosphi $\geq 0,99$
- THD $\leq 5\%$
- Overload 150% for 60 sec every 5 minutes (Heavy duty) or 110% for 60 sec every 5 minutes (Light duty)
- Integration of up to 2 options onboard the drive
- GF-eXpress multi-language programming SW (5 languages)
- IP20-rated protection (IP00 size 7 and parallel)

Fieldbus management



Modbus



CANopen[®]

EtherCAT[®]



Standard supply configuration

- Integrated KB_ADV programming keypad
- Regulation:
 - 2 bipolar analog inputs (Voltage / Current)
 - 2 bipolar analog outputs (1: Voltage / Current, 1: Voltage)
 - 6 digital inputs (PNP / NPN)
 - 2 digital outputs (PNP / NPN)
 - 2 relay outputs, single contact
 - RS485 serial line (Modbus RTU)

Options

- Input choke (mandatory)
- Pre-load kit, includes resistor and 2 pre-load contactors (mandatory)
- External EMI mains filter

Conformity

- Climatic conditions EN 60721-3-3
- Electrical safety EN 50178, EN 61800-5-1, UL508C, UL840 pollution level 2
- Vibrations EN 60068-2-6, test Fc.
- EMC EN61800-3

Environmental conditions

- Ambient temperature: 0 ...40°C, +40°C...+50°C with derating
- Altitude: Max 2000 m.

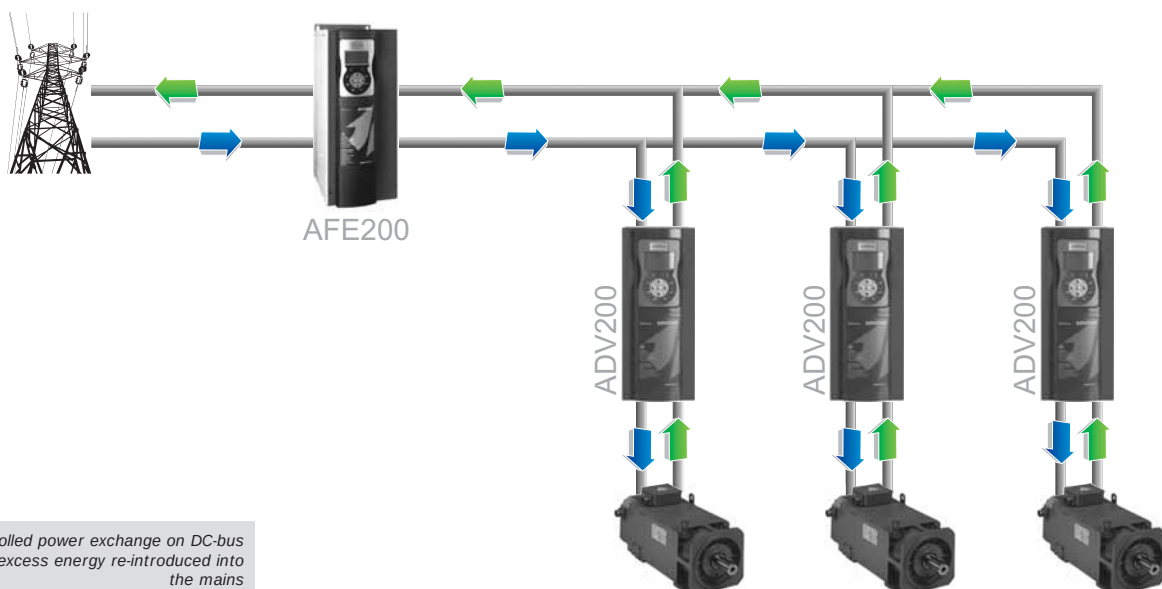
Markings



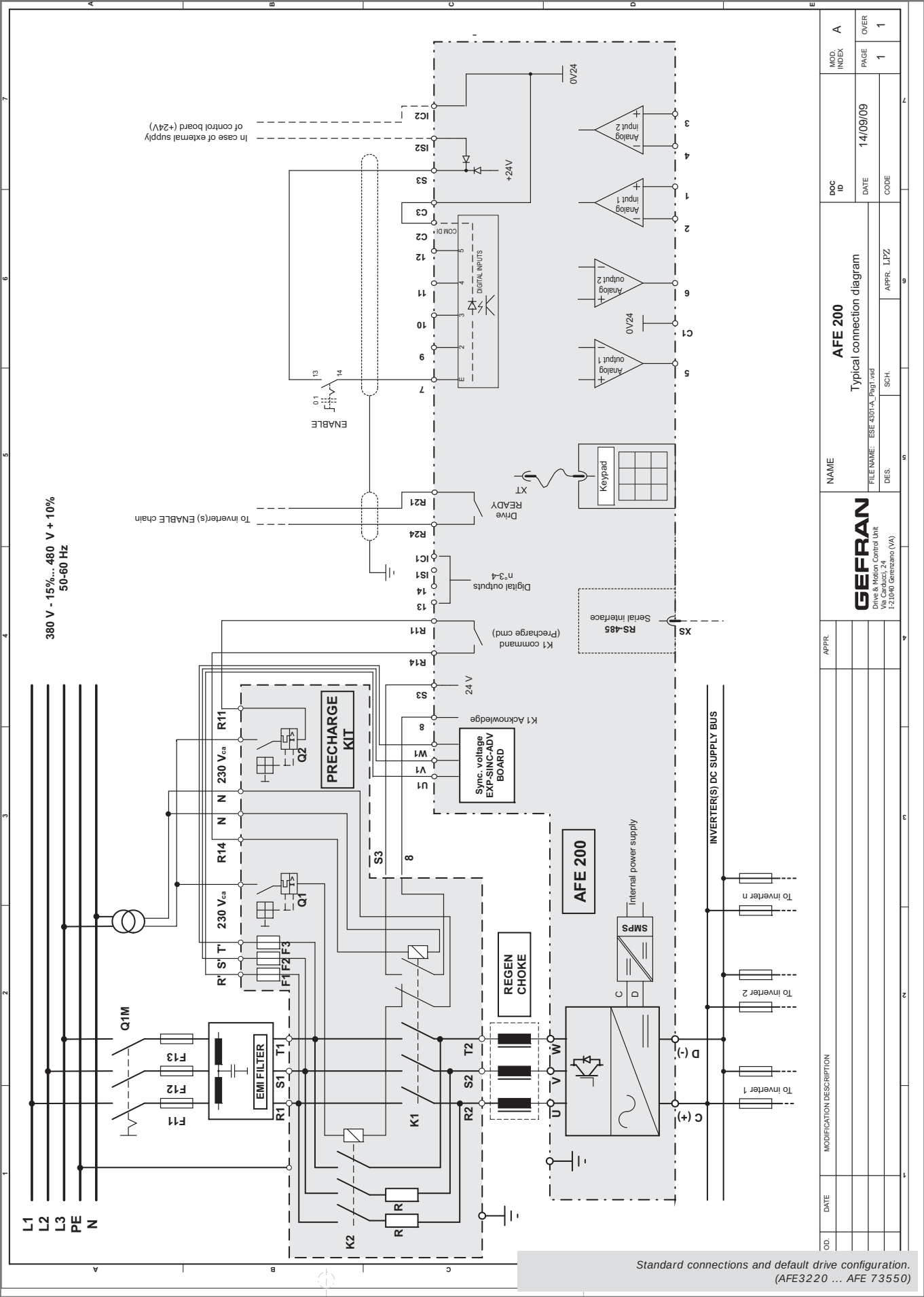
Complies with the EEC directive concerning low voltage equipment.



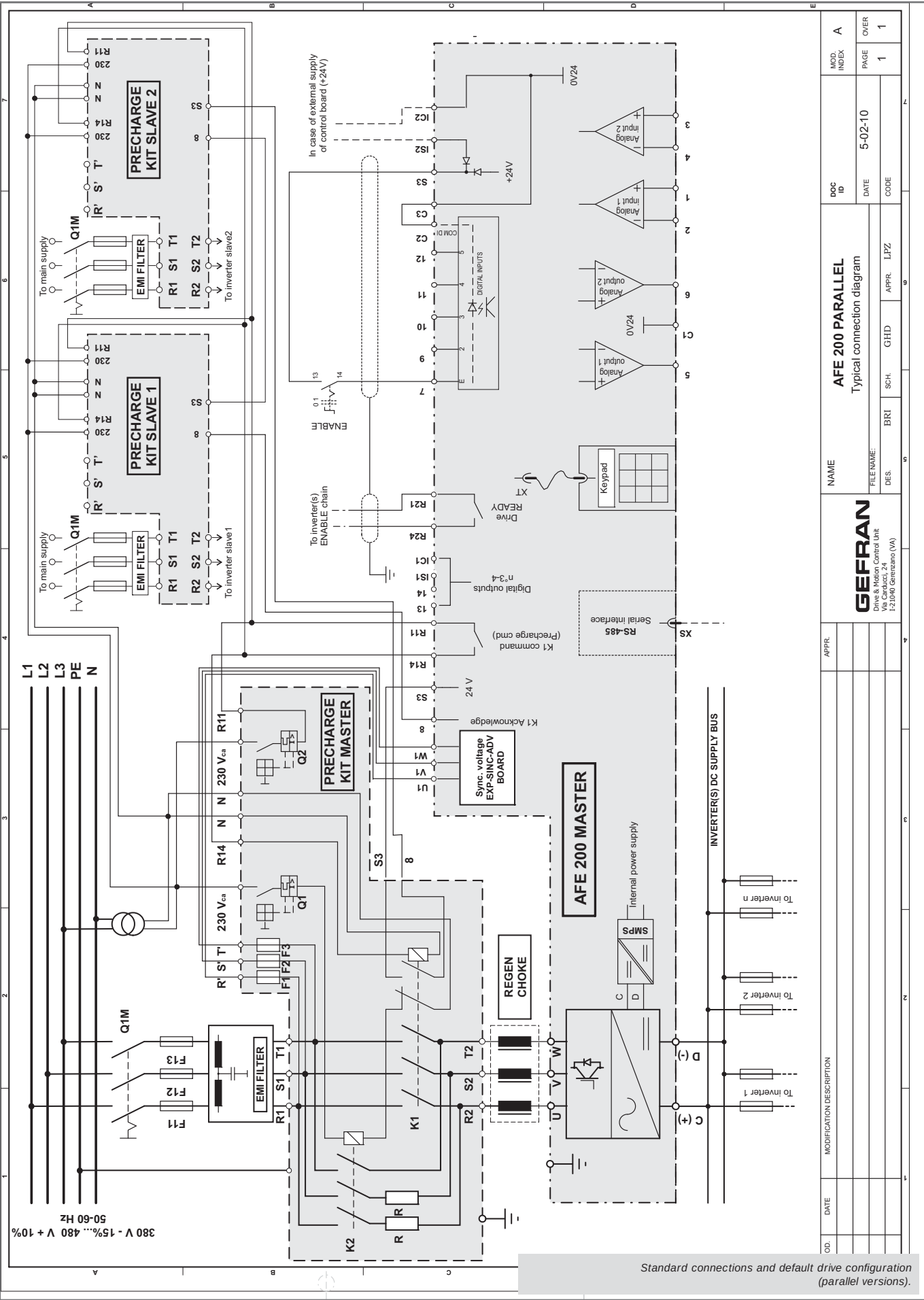
Complies with directives for the American and Canadian market (certification pending).

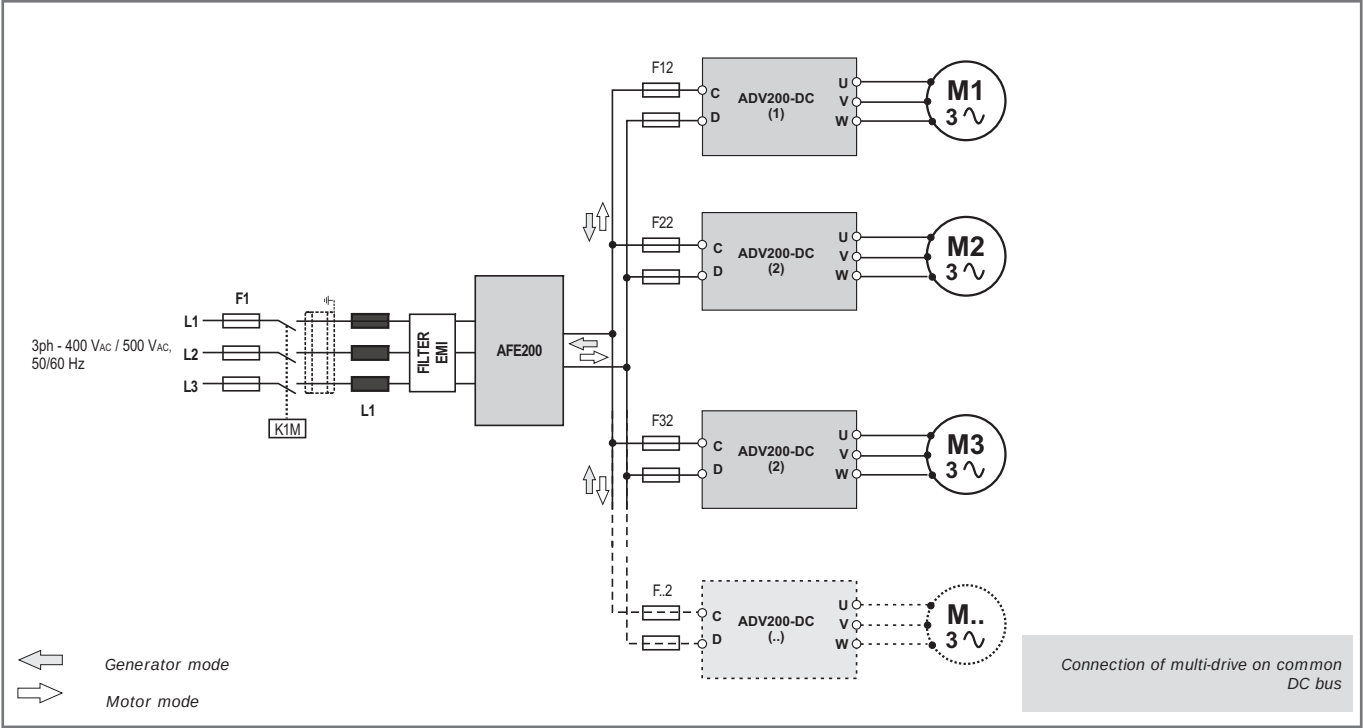


4.3 Standard connections

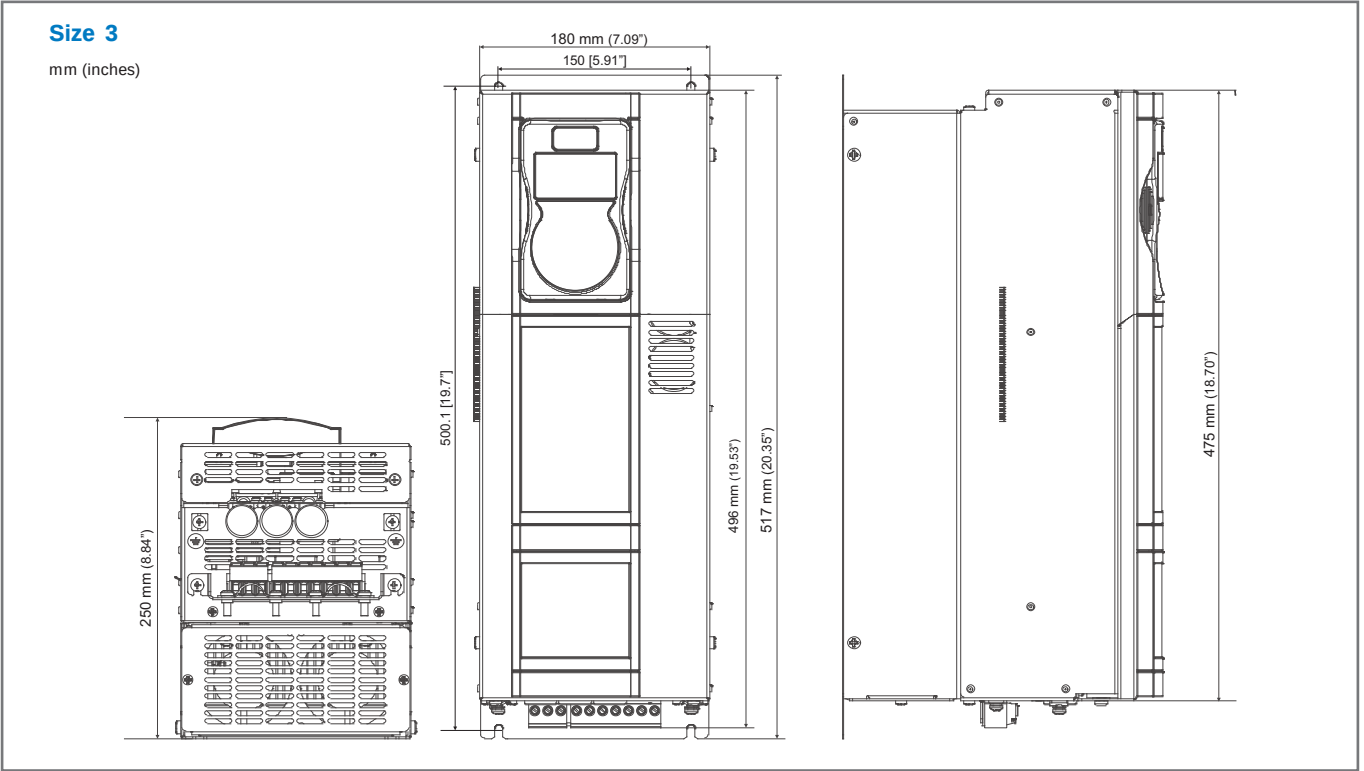


Standard connections and default drive configuration.
(AFE3220 ... AFE 73550)

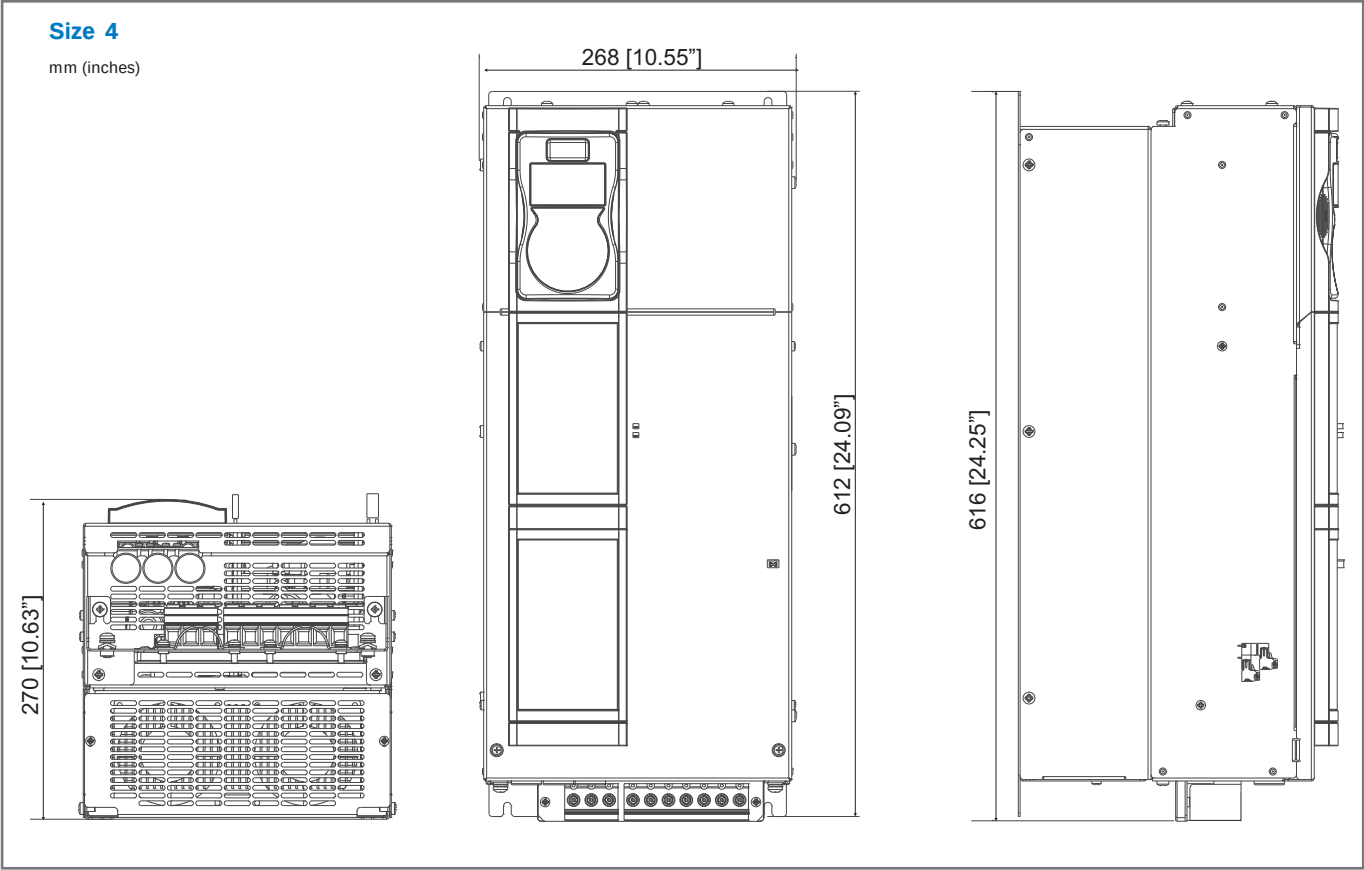




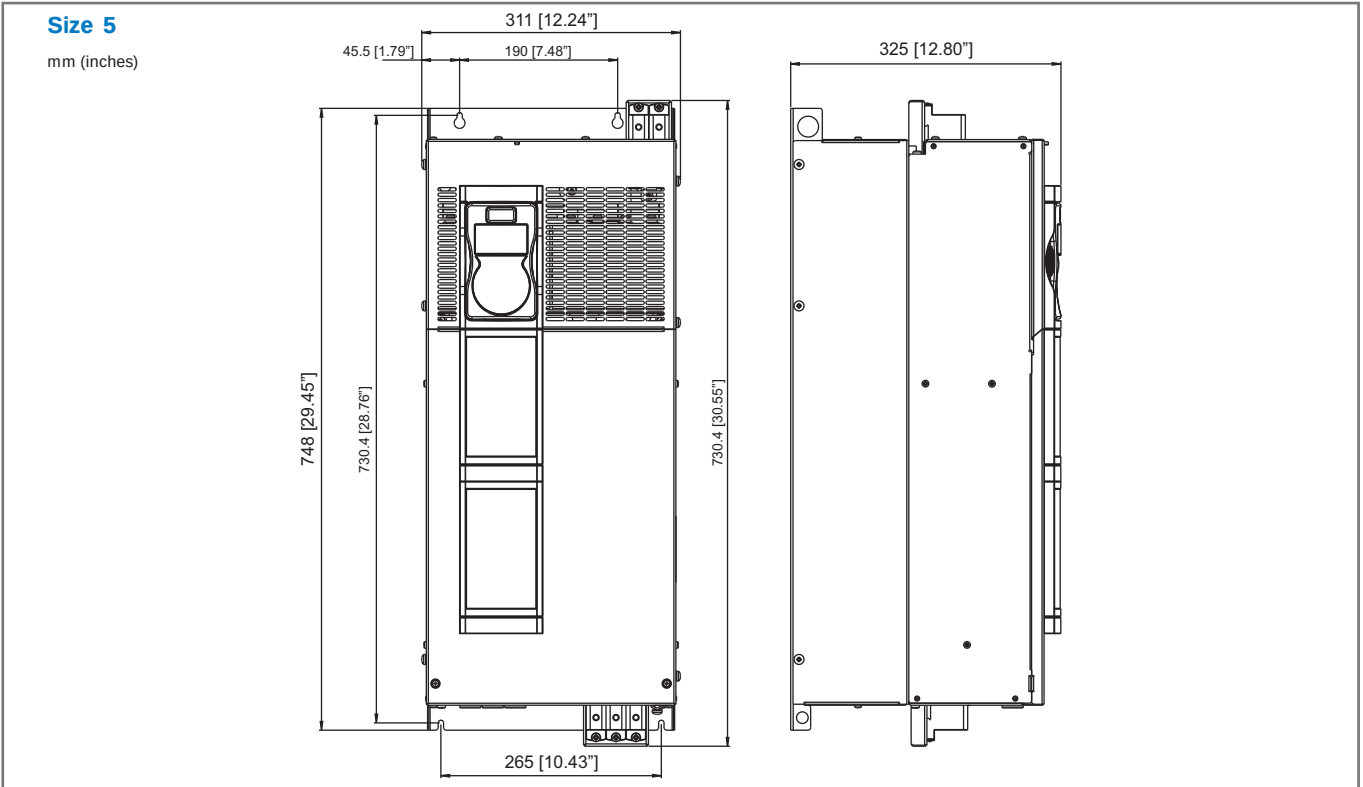
4.4 Weights and dimensions



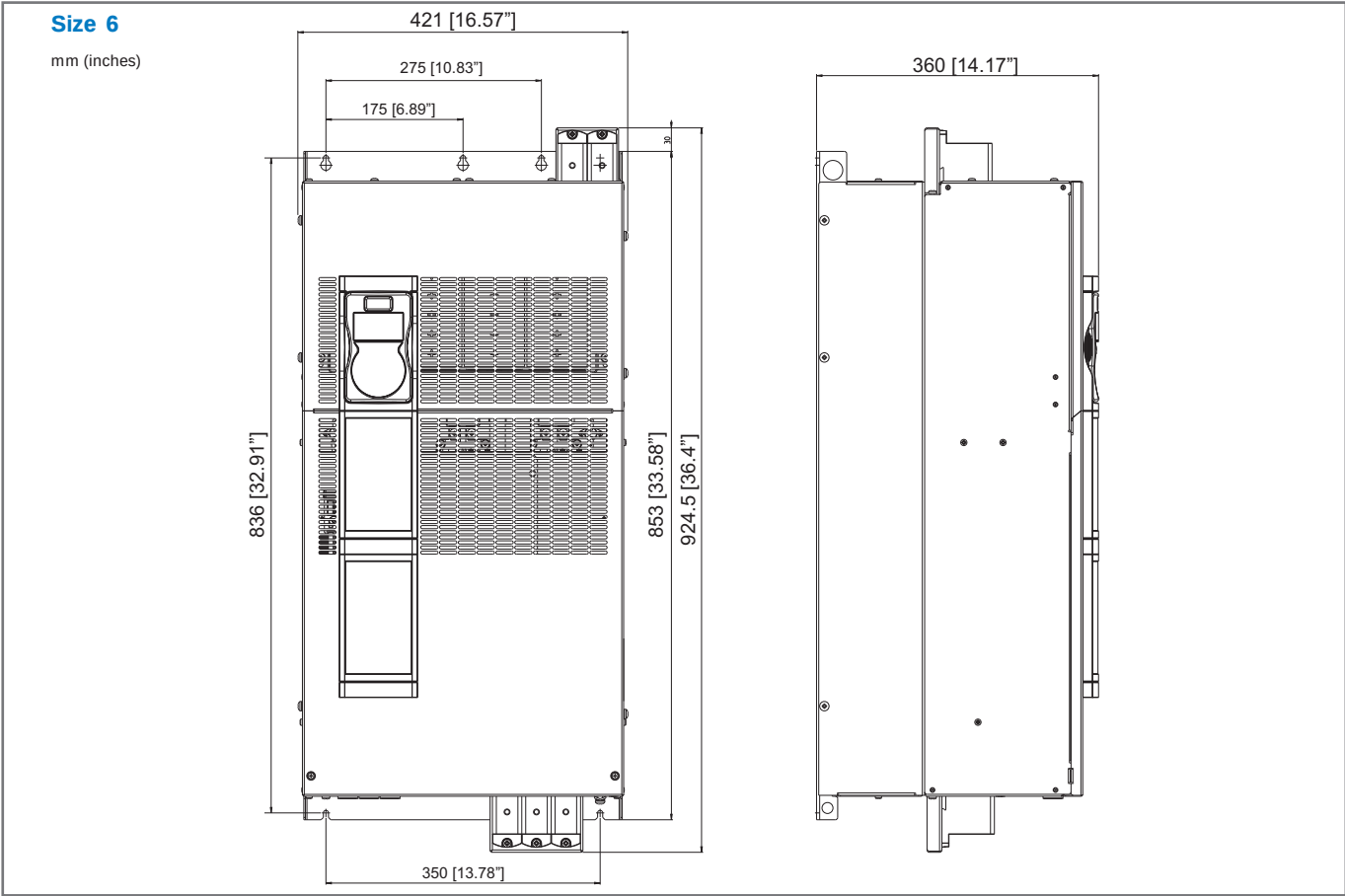
Sizes AFE200	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
3220	180 x 517 x 250.1	7.09 x 20.35 x 9.85	18	39.7



Sizes AFE200	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
4450	268 x 616 x 270	10.55 x 24.25 x 10.63	24	52.9

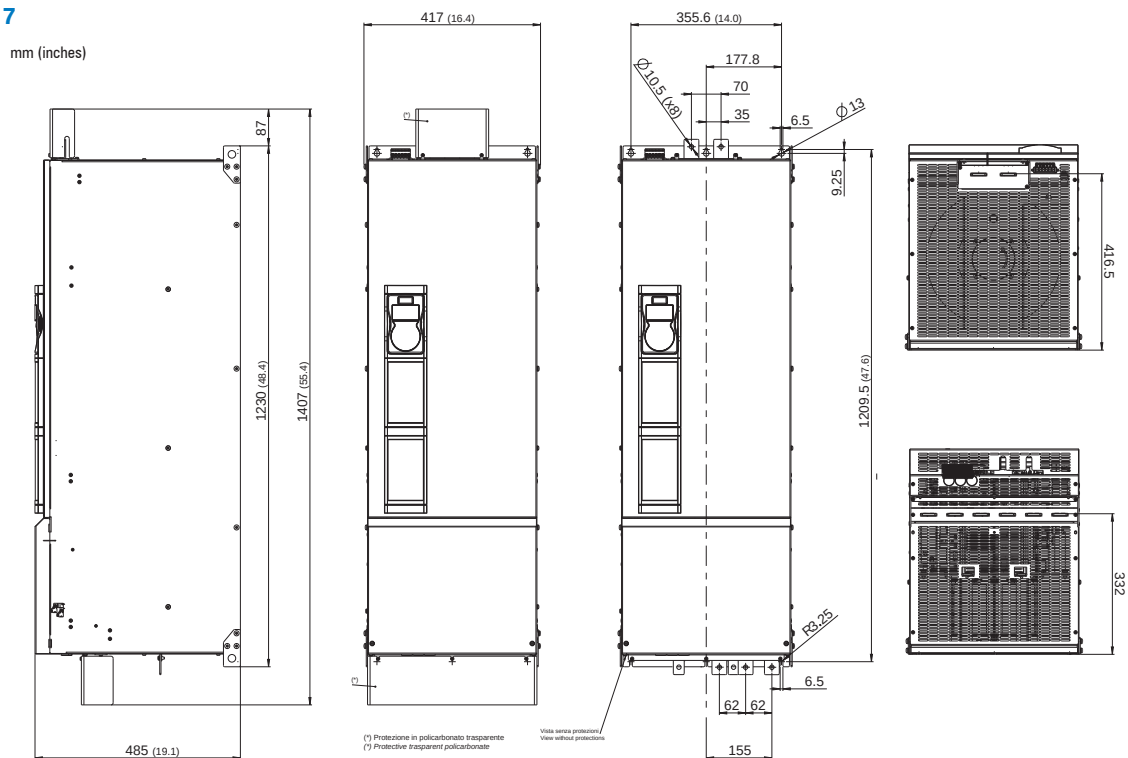


Sizes AFE200	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
5900	311 x 730,4 x 325	12.24 x 30.55 x 12.8	40	88.2



Sizes AFE200	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
61320	421 x 924,5 x 360	16.57 x 36.4 x 14.17	68	149.9

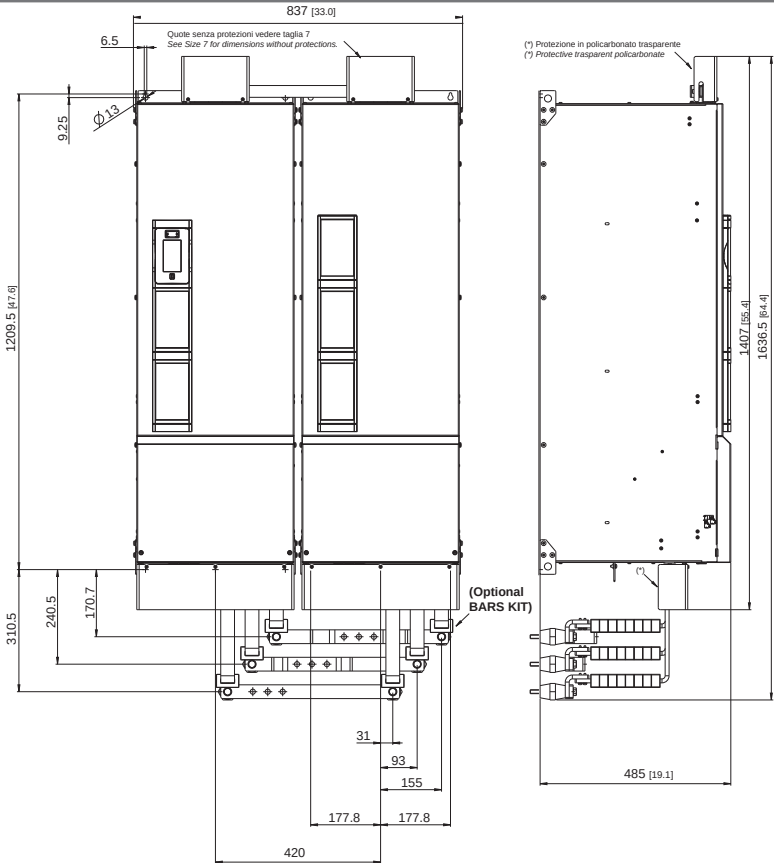
mm (inches)



Sizes AFE200	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
71600...72000	417 x 1407 x 485	16.42 x 55.4 x 19.1	130	286.6
72500			140	308.7
73150 ... 73550			150	330.7

Sizes 400 ... 710 kW

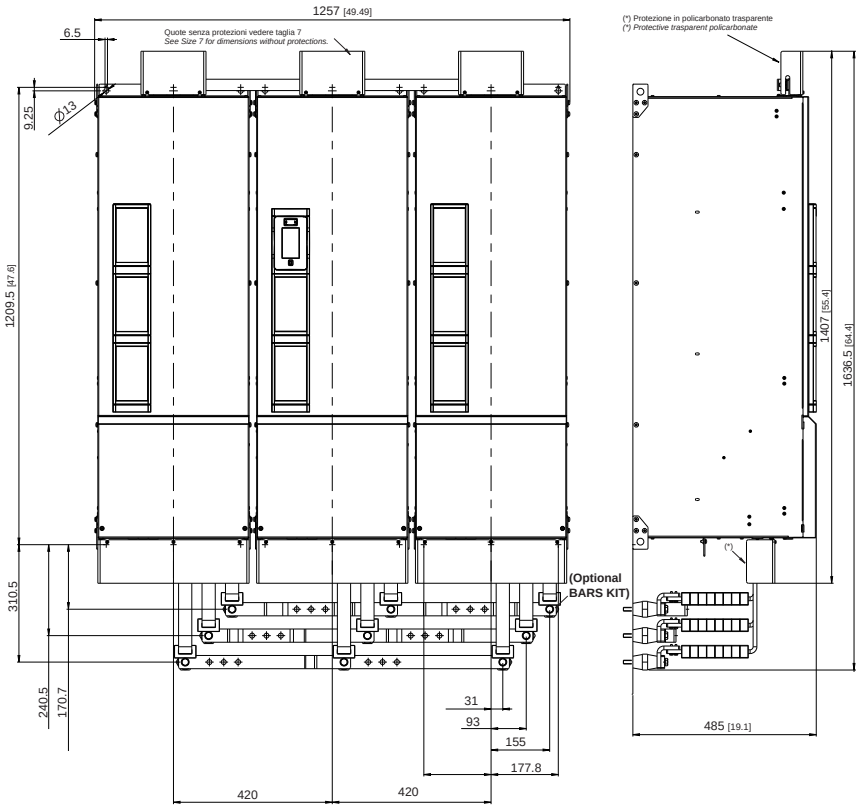
mm (inches)



Sizes AFE200	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
400kW	837 x 1407 x 485	33.0 x 55.4 x 19.1	260	573.2
500kW			280	617.4
630 - 710kW			300	661.4

Sizes 900...1000 kW

mm (inches)



Sizes AFE200	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
900 - 1000kW	1257 x 1407 x 485	49.5 x 55.4 x 19.1	450	992.1

4.5 Choosing the Inverter

Design

AFE200 drives are normally used in applications that require the re-introduction of power into the mains. They can also be used when regeneration is not required, to achieve unitary cos phi or low total harmonic distortion values (which standard inverters do not guarantee, even with a DC or line choke).

This section provides some examples of design, from the simplest, single-motor configuration to more complex ones.

As a general rule, the AFE2000 should be at least the same size as the drive, which is usually an ADV200-DC.

In certain cases the size can be chosen according to the work cycles and load profiles of each drive, in both motor or generator mode.

Another calculation to be performed is the sum of the loads connected to the DC-LINK, obtained from the total of the parallel connections.

The sum of the loads of each drive must be less than the maximum value specified in the AFE200 user guide in order to guarantee correct pre-load circuit operation.

Key to symbols

P_{OUTM}	Motor output power (continuous operation)
P_{OUTD}	Drive output power (light or heavy overload)
η_M	Typical motor efficiency
η_D	Typical drive efficiency
P_{DC}	Power requested by the DC - Link

Note!

For special applications or more accurate calculations, please contact technohelp@gefran.com.

Single-motor calculation based on motor output power

Example of calculation of a single-motor system connected to a motor having a defined power. The DC-Link input power is a function of the output power on the drive shaft. The same power is requested for the AFE200 drive output.

$$P_{DC} = \frac{P_{OUTM}}{\eta_M \cdot \eta_D}$$

Example 1:

$$\begin{aligned} P_{OUTM} &= 132\text{kW} \\ \eta_M &= 0.90 \\ \eta_D &= 0.97 \end{aligned}$$

From ADV200-DC Quick Start Guide:

Heavy overload @ 400V -> ADV-61132-...-4-DC

Light overload @ 400V -> ADV-61110-...-4-DC

Supposing the load demands a heavy overload, then: ADV-61132-...-4-DC

$$P_{DC} = \frac{132}{0.90 \cdot 0.97} = 151.2 \text{ kVA}$$

From the AFE200 user guide (size AFE200 - 61320):

Drive	Description	Code	Q.ty
ADV200-DC	ADV-61132-KXX-4-DC	S9019DC	1

Drive + components	Description	Code	
AFE regenerative	AFE200-61320-KXX-4	S9AF04	1
Line chokes	LR3-280-500-0,32	S7AL03	1
EMI filter	EMI FN3120 -480V-230A	S74EE	1
Pre-charge kit	S726401	S726401	1
Fuses mains side connection		F4G30	3

DC-Link total capacity:

AFE200-61320 with ADV-61132-...-4-DC = 13600 + 13600 = 27200 μF < 34280 μF ok

• Single-motor calculation based on drive data

The power requested by the inverter at the DC input is equal to the output power in the desired overload mode. In that case the following applies:

$$P_{DC} = \frac{P_{OUTD}}{\eta_D}$$

Example 2:

Drive ADV200-DC= ADV-61110-KXX-4-DC
η_D=0.97
With light overload @ 400V
P_{OUTD}= 132KW

P_{DC}=132/0,97=136kVA
From the AFE200 user guide (size AFE200 -5900)

Drive	Description	Code	Q.ty
ADV200- DC	ADV-61110-KXX-4-DC	S9O18DC	1

Drive + components	Description	Code	
AFE regenerative	AFE200-5900-KXX-4	S9AF03	1
Line chokes	LR3-200-350-0,45	S7AL02	1
EMI filter	EMI FN3120 -480V-230A	S74EE	1
Pre-charge kit	S728401	S728401	1
Fuses mains side connection		F4G28	3

DC-Link total capacity:
AFE200- 61320 with ADV-61110-...-4-DC = 13600 +11200 = 24800 μF < 34280 μF ok

• Calculation for multi-motor system

In a typical multi-motor application, the single inverters (e.g. ADV200-DC) control the motors following different load profiles.
At the design stage, take into account the fact that the power requested by the load is normally lower than the total power of the drives installed. The total output power of the AFE200 can be calculated by summing the power actually exchanged by each single inverter.

Example 3:

Consider a system comprising:
1 ADV200-DC 15kW configured for HD (heavy overload).
The motor being controlled (15kW) is designed so that its continuous load does not exceed 85% of its power rating.

1 ADV200-DC 4kW configured for HD (heavy overload).
The motor being controlled (15kW) is designed so that its continuous load does not exceed 85% of its power rating.

1 ADV200-DC 4kW configured for HD (heavy overload).
The motor being controlled (15kW) is designed so that its continuous load does not exceed 90% of its power rating.

1 ADV200-DC 11kW configured for HD (heavy overload).
This motor acts as a brake generating at least 10% of its power rating.

For all drives consider η_D=0,97

Calculation of total power absorbed by the DC-Link:

$$P_{DC1} = \frac{(15 \times 0.85)}{0.97} = 13.14 \text{ kVA}$$

$$P_{DC2} = \frac{(4 \times 0.85)}{0.97} = 3.5 \text{ kVA}$$

$$P_{DC3} = \frac{(4 \times 0.9)}{0.97} = 3.6 \text{ kVA}$$

$$P_{DC4} = \frac{(-11 \times 0.1)}{0.97} = -1 \text{ kVA}$$

$$P_{DC \text{ TOT}} = 13.14 + 3.5 + 3.6 - 1 = 19.24 \text{ kVA}$$

From the AFE200 user guide (size AFE200 - 3220):

Drive	Description	Code	Q.ty
ADV200-DC	ADV-61132-KXX-4-DC	S9O19DC	1

Drive + components	Description	Code	
AFE regenerative	AFE200-3220-KXX-4	S9AF01	1
Line chokes	LR3-48-150-1,5	S7AC5	1
EMI filter	EMI FN3120 -480V-50A	S7DGV	1
Pre-charge kit	S726401	S726401	1
Fuses mains side connection		F4EAF	3

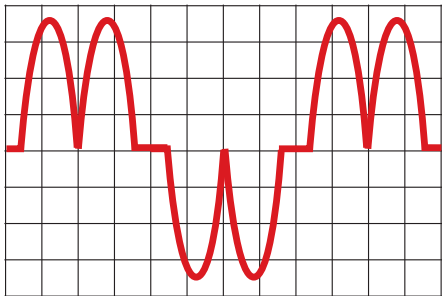
DC-Link total capacity:
(15kW) 1500 +(4kW*2) 340*2+(11kW) 830 +(AFE 22kW)
1500 = 4510 μF < 4790 μF ok

4.6 Input Data

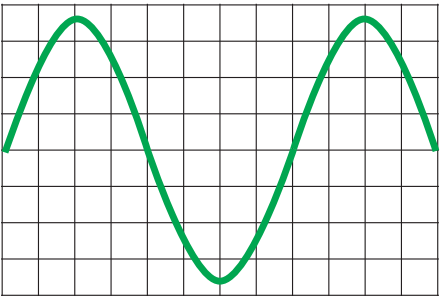
Sizes AFE200	Input voltage U _{LN} [V _{AC}]	Overvoltage threshold (Overvoltage) [V _{DC}]	Undervoltage threshold (Undervoltage) [V _{DC}]	Input current THD	Cosphi
3220	380 - 15% ... 500 V _{AC} + 5%	820	380	≤ 5%	≥ 0.99
4450					
5900					
61320					
71600					
72000					
72500					
73150					
73550					
400 kW					
500 kW					
630 kW					
710 kW					
900 kW					
1000 kW					

Input current THD

“Clean Power” Technology. The AFE200 integrates cutting-edge energy recovery and energy efficiency technology.



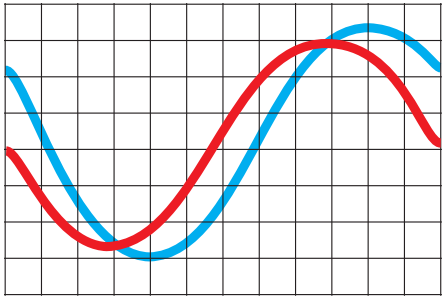
From AC inverter



From AFE200 power supply unit

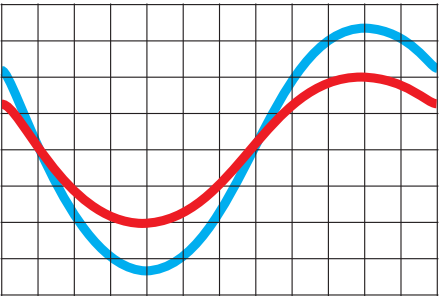
Mains input power factor

The AFE200 uses advanced control algorithms to maintain the input current in phase with voltage.



From AC inverter

— Mains voltage
— Mains current



From AFE200 power supply unit

Sizes AFE200	AC Input current for continuous operation I _N		Switching frequency f _{sw}		Reduction factor				Capacity	
	HD	LD	Default	Higher	K _v	K _t	K _f (@ 8 kHz)	K _{ALT}	Rated	Maximum (AFE+Drive)
	@400 V _{AC} [A]	@400 V _{AC} [A]			(1)	(2)	(3)	(4)	[μF]	[μF]
3220	40	60	8	-	0.9	0,9	-	1.2	1500	10000
4450	80	100	8	-	0.9	0.9	-	1.2	3400	10000
5900	160	200	4	6.8	0.9	0.9	0.7	1.2	6800	30000
61320	230	280	4	6.8	0.9	0.9	0.7	1.2	13600	30000
71600	280	340	4	-	0.9	0.9	-	1.2	16800	80000
72000	340	400	4	-	0.9	0.9	-	1.2	16800	80000
72500	400	500	4	-	0.9	0.9	-	1.2	25200	80000
73150	500	560	3	-	0.9	0.9	-	1.2	25200	80000
73550	560	600	3	-	0.9	0.9	-	1.2	25200	80000
400 kW	600	760	2	-	0.9	0.9	-	1.2	2 x 16800	2 x 80000
500 kW	760	950	2	-	0.9	0.9	-	1.2	2 x 25200	2 x 80000
630 kW	950	1060	2	-	0.9	0.9	-	1.2	2 x 25200	2 x 80000
710 kW	1060	1150	2	-	0.9	0.9	-	1.2	2 x 25200	2 x 80000
900 kW	1400	1500	2	-	0.9	0.9	-	1.2	3 x 25200	3 x 80000
1000 kW	1500	1730	2	-	0.9	0.9	-	1.2	3 x 25200	3 x 80000

HD: Heavy Duty (150% overload)
 LD: Light Duty (110% overload)
 (1) K_v : Derating factor for mains voltage at 650Vdc (460Vac)
 (2) K_t : Derating factor for ambient temperature of 50°C (1% every °C above 40°C)
 (3) K_f : Derating factor for higher switching frequency
 (4) K_{alt} : Derating factor for installation at altitudes above 1000 meters a.s.l. Value to be applied = 1.2% each 100 m increase above 1000 m.
 For example: Altitude 2000 m, K_{alt} = 1.2% * 10 = 12% derating; I_N derated = (100 - 12) % = 88 % I_N

Sizes AFE200	Overload			Derating according to switching frequency				
	Heavy Duty 150 % x I _N (1' every 5')	Heavy Duty 180 % x I _N (every 0,5')	Light Duty 110 % x I _N (1' every 5')	Heavy Duty (1) - Current rating (A)				
	[A]	[A]	[A]	2 kHz	3 kHz	4 kHz	6 kHz	8 kHz
3220	60	72	66	40	40	40	40	40
4450	120	144	110	80	80	80	80	80
5900	240	288	220	160	160	160	136	112
61320	345	414	308	230	230	230	196	161
71600	420	504	374	280	280	280	-	-
72000	510	612	440	340	340	340	-	-
72500	600	720	550	400	400	400	-	-
73150	750	900	616	500	500	-	-	-
73550	840	1008	660	560	560	-	-	-
400 kW	900	1080	836	600	-	-	-	-
500 kW	1140	1368	1045	760	-	-	-	-
630 kW	1425	1710	1166	950	-	-	-	-
710 kW	1590	1908	1265	1060	-	-	-	-
900 kW	2100	2520	1650	1400	-	-	-	-
1000 kW	2250	2700	1903	1500	-	-	-	-

(1): In Light Duty mode the switching frequency is fixed at 4 or 3 kHz, and no derating factor is applied.

4.7 Output Data

Sizes AFE200	AFE output				Output current rating In (DC) (fsw = default)				DC-link voltage rating
	Heavy Duty (150% overload)		Light Duty (110% overload)		Heavy Duty		Light Duty		
	@400 VAC [kW]	@460 VAC [kW]	@400 VAC [kW]	@460 VAC [kW]	650 VAC [A]	750 VAC [A]	650 VAC [A]	750 VAC [A]	[Vdc]
3220	28	29	42	43	43	39	64	57	650...780 Vcc
4450	55	57	69	72	85	76	107	96	
5900	110	115	139	143	171	153	213	191	
61320	159	165	194	201	245	220	298	268	
71600	194	201	236	244	298	268	363	325	
72000	236	244	277	287	363	325	426	383	
72500	277	287	346	358	426	383	532	477	
73150	346	358	388	402	532	477	597	536	
73550	388	402	416	430	597	536	640	573	
400 kW	416	430	527	545	640	551	811	699	
500 kW	527	545	658	681	811	699	1012	873	
630 kW	658	681	734	760	1012	873	1129	974	
710 kW	734	760	797	825	1129	974	1226	1058	
900 kW	970	1004	1039	1075	1492	1287	1598	1378	
1000 kW	1039	1075	1200	1242	1598	1378	1846	1592	

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AFE200

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4.8 Cooling

All inverters are equipped with internal fans.

Sizes AFE200		Max dissipated power	Fan capacity	
		[W]	Dissipator [m ³ /h]	Internal [m ³ /h]
3220		400	80 x 2	32
4450		770	2 x 250	2 x 50
5900		1420	2 x 355	2 x 170
61320		2000	3 x 310	2 x 170
71600		2700	1500	-
72000		3200	1500	-
72500		3600	1500	-
73150		3900	2000	-
73550		4200	2000	-
400 kW	AFE200-72000-KXX-4/4A-MS 04	3200	1500	-
	AFE200-72000-XXX-4/4A-SL	3200	1500	-
500 kW	AFE200-72500-KXX-4/4A-MS 05	3600	1500	-
	AFE200-72500-XXX-4/4A-SL	3600	1500	-
630 kW	AFE200-73150-KXX-4/4A-MS 06	3900	2000	-
	AFE200-73150-XXX-4/4A 4-SL	3900	2000	-
710 kW	AFE200-73550-KXX-4/4A-MS 07	4200	2000	-
	AFE200-73550-XXX-4/4A-SL	4200	2000	-
900 kW	AFE200-73150-KXX-4/4A-MS 09	3900	2000	-
	AFE200-73150-XXX-4/4A-SL	3900	2000	-
	AFE200-73150-XXX-4/4A-SL	3900	2000	-
1000 kW	AFE200-73550-KXX-4/4A-MS 10	4200	2000	-
	AFE200-73550-XXX-4/4A-SL	4200	2000	-
	AFE200-73550-XXX-4/4A-SL	4200	2000	-

4.9 Order codes

Product identification

AFE200 - X XXX - X X X - Y - XX YY

	Only for parallel versions:		XX :	YY : Inverter power in kW
			MS = MASTER	04 = 400.0 kW
			SL = SLAVE	05 = 500.0 kW
				06 = 630.0 kW
				07 = 710.0 kW
				09 = 900.0 kW
				10 = 1000.0 kW
	Rated voltage:	4 = 400 VAC	4A = 460 VAC	
	Software:	X = standard		
	Braking unit:	X = not included	B = included	
Keypad:	X = not included	K = included		
	Inverter power in kW:			
			220 = 22.0 kW	1600 = 160.0 kW
			450 = 45.0 kW	2000 = 200.0 kW
			900 = 90.0 kW	2500 = 250.0 kW
			1100 = 110.0 kW	3150 = 315.0 kW
			1320 = 132.0 kW	3550 = 355.0 kW
	Mechanical dimensions of the drive:			
			3 = size 3	6 = size 6
			4 = size 4	7 = size 7
			5 = size 5	
	Regenerative power supply unit			
	Active Front End			

Example:

AFE200 - 3 220 - K X X - 4

	Rated voltage:	4 = 400 V _{AC}
	Software:	X = standard
	Braking unit:	X = not included
	Keypad:	K = included
	Inverter power in kW:	220 = 22.0 kW
	Mechanical dimensions of the drive:	3 = size 3
	Regenerative power supply unit, serie AFE200	

AFE200

- Active Front End regenerative inverter
- Model with "KB-ADV" Programming Keypad
- Power supply 3 x 400VAc
- HD = Heavy Duty (Overload 150%), LD = Light Duty (Overload 110%)

CODE	PRODUCT IDENTIFICATION	PN @ 400Vac		CONFIGURATION
		HD	LD	
S9AF01	AFE200-3220-KXX-4	22kW	30kW	Without choke - filter
S9AF02	AFE200-4450-KXX-4	45kW	55kW	Without choke - filter
S9AF03	AFE200-5900-KXX-4	90kW	110kW	Without choke - filter
S9AF04	AFE200-61320-KXX-4	132kW	160kW	Without choke - filter
S9AF05	AFE200-71600-KXX-4	160kW	200kW	Without choke - filter
S9AF06	AFE200-72000-KXX-4	200kW	250kW	Without choke - filter
S9AF07	AFE200-72500-KXX-4	250kW	315kW	Without choke - filter
S9AF08	AFE200-73150-KXX-4	315kW	355kW	Without choke - filter
S9AF09	AFE200-73550-KXX-4	355kW	400kW	Without choke - filter

AFE200 - Parallel configurations

- Active Front End regenerative inverter
- Model with "KB-ADV" Programming Keypad
- Power Supply 3 x 400VAc (-4) - 3 x 460VAc (-4A)
- HD = Heavy Duty (Overload 150%), LD = Light Duty (Overload 110%)

CODE	PRODUCT IDENTIFICATION	PN @ 400Vac		CONFIGURATION
		HD	LD	
S9AF21M	AFE200-72000-KXX-4-MS 04	400kW	500kW	Without choke - filter
S9AF21S	AFE200-72000-XXX-4-SL			
S9AF22M	AFE200-72500-KXX-4-MS 05	500kW	630kW	Without choke - filter
S9AF22S	AFE200-72500-XXX-4-SL			
S9AF23M	AFE200-73150-KXX-4-MS 06	630kW	710kW	Without choke - filter (No UL Mark)
S9AF23S	AFE200-73150-XXX-4-SL			
S9AF24M	AFE200-73550-KXX-4-MS 07	710kW	800kW	Without choke - filter (No UL Mark)
S9AF24S	AFE200-73550-XXX-4-SL			
S9AF231	AFE200-73150-KXX-4-MS 09	900kW	1MW	Without choke - filter (No UL Mark)
S9AF23S	AFE200-73150-XXX-4-SL			
S9AF23S	AFE200-73150-XXX-4-SL			
S9AF241	AFE200-73550-KXX-4-MS 10	1MW	1.2MW	Without choke - filter (No UL Mark)
S9AF24S	AFE200-73550-XXX-4-SL			
S9AF24S	AFE200-73550-XXX-4-SL			
Upon request	AFE200-73150-KXX-4A-MS 06	630kW	710kW	Without choke - filter
Upon request	AFE200-73150-XXX-4A-SL			
Upon request	AFE200-73550-KXX-4A-MS 07	710kW	800kW	Without choke - filter
Upon request	AFE200-73550-XXX-4A-SL			

(Contd.)

CODE	PRODUCT IDENTIFICATION	P _N @ 400Vac		CONFIGURATION
		HD	LD	
Upon request	AFE200-73150-KXX-4A-MS 09			
Upon request	AFE200-73150-XXX-4A-SL	900kW	1MW	Without choke - filter
Upon request	AFE200-73150-XXX-4A-SL			
Upon request	AFE200-73550-KXX-4A-MS 10			
Upon request	AFE200-73550-XXX-4A-SL	1MW	1.2MW	Without choke - filter
Upon request	AFE200-73550-XXX-4A-SL			

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ADV200-DC

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AFE200

PROGRAM.

APPENDIX

5. Programming

5.1 "GF_eXpress" PC Configuration Tool

Applications

- Parameter configuration of Gefran devices (Instruments, Drives, Sensors)
- Tuning of control parameters with on-line tests and trends
- Management of parameter archive for multiple configuration

Features

- Guided product selection
- Simplified settings
- Multiple languages
- Parameter printout
- Creation and storing of recipes
- Network autoscan



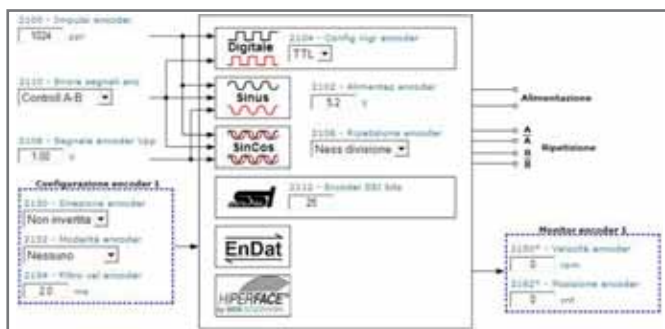
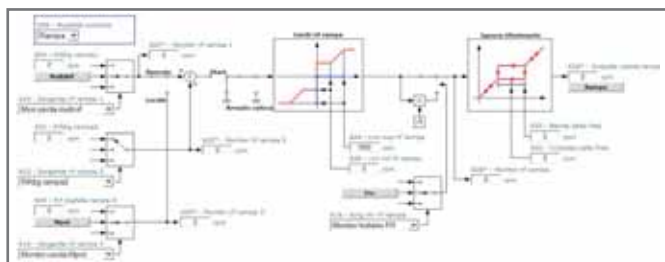
GF_eXpress is the software used to configure the parameters of the automation components, drives and sensors in the Gefran catalogue.

The procedures for selecting and configuring parameters are easy and intuitive, thanks to the graphic interface and devices are grouped according to product type and functions.

Product searches are performed by means of a context search and a visual selection from among actual images of the products.

This makes it possible to have a single library of devices for all Gefran products.

All details for configuration of each single device are set out in XML format to facilitate expansion of the catalogue and parameters.



The selected product can be configured as follows:

- using a sub-set of predefined parameters
- using a guided graphic interface with context menus

The creation of custom parameter menus with a limited sub-set of data is envisaged, to enable better and more effective device configuration.

GF_eXpress is based on HTML technology. The graphic layout and content are intuitive and easy to use.

The interface and descriptions of the configuration parameters are available in multi-language format.

The use and support of UNICODE format, for multi-language management, enables the inclusion of languages that use special characters (Chinese, Korean, Russian, etc.).

GF_eXpress also offers the following functions:

• Autoscan

Device connection parameters can be configured manually or using the Autoscan function.

The Autoscan function automatically searches for the device connected to the development PC, sending serial commands to identify the type and parameters of communication.

• Monitor Window

When the device is connected, the configuration pages display the value of the single parameter in real-time.

Besides displaying the value the Monitor Window also enables parameters to be modified in real-time.

• Recipes

Saving and archiving a list of parameters. This function is used to manage same configurations on different devices or the transfer of configurations between different users.

• Oscilloscope

Simultaneous monitoring of up to 8 curves. The reference value for the curve being displayed can be selected from among all the variables that are available for the selected device.

• Print

Prints the variables that are displayed or selected. The Print function also includes the preview.

• Technical data

Operating systems:

- Windows ® 2000, XP, Vista.

Minimum PC requirements:

- Pentium class CPU
- 512 MB of RAM
- Free space of > 200MB
- Graphic card min. VGA (1024x768)
- 1 RS232 or USB serial port
- 1 Ethernet port (for other Gefran devices, e.g. Geflex)
- CD-ROM drive

Communication protocols supported:

- Serial communication with the device (SLINK3, CANopen®, Centcal, Modbus)
- Ethernet communication with TCP Modbus devices

5.2 Programming Keypad

The KB_ADV programming keypad (supplied as standard) makes the man-machine interface simple, immediate and highly functional.

The programming software is available in 2 modes, Easy and Expert, suitable for users of any level and all programming requirements, however complex.

The powerful platform also features a menu/parameter structure that is easy to interpret and is facilitated by the keypad functions and display.

The “Wizard” tool ensures totally user-friendly **immediate start-up functions**. Standard features of the ADV200 include programming in **10 languages** (English, Italian, French, German, Spanish, Polish, Romanian, Russian, Turkish and Portuguese).



- 4 line x 21 character display
- Alphanumeric plaintext
- Complete information regarding each parameter
- Fast navigation keys
- Key for displaying the last 10 parameters that have been changed
- DISP key for rapid display of operating parameters
- Uploading-Downloading and saving of 5 complete sets of drive parameters
- Remote control from a distance of up to 10 metres



5.3 Softscope

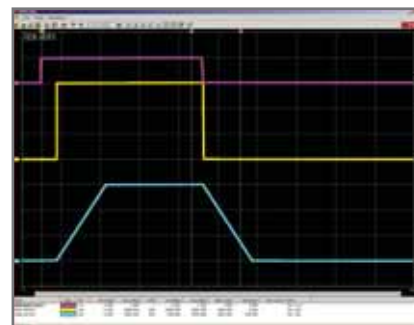
SoftScope is a software oscilloscope with synchronous sampling (buffered with a minimum sampling time of 1ms). Using SoftScope the user can easily display in a fast way some specific variables, for example commissioning variables, variables to test performance levels achieved or to tune the control loops.

SoftScope allows the definition of the following parameters:

- Trigger conditions (e.g. climbing leading edge of a specific signal)
- Recording quality (a multiple of the basic clock at 1ms)
- Recording duration period
- System sizes to be recorded.

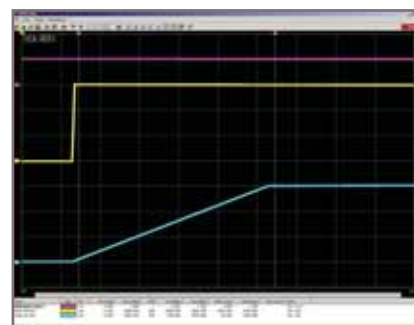
The curves can be displayed with different colours and they can be enabled/disabled. The zoom function allows enlargement of the details. The cursor allows detection of the signal peaks and duration.

The recorded data are displayed as time-based curves and therefore can be analysed. The displayed curves can be printed and stored in ASCII format and can be used with the most common data processing tools (for example Excel, Matlab).



Speed cycle
Start, ramp reference 1500 rpm, ramp output reaches 1500 rpm, Stop, ramp reference 0 rpm, ramp output reaches 0 rpm.

- 1) start command
- 2) ramp input speed reference
- 3) ramp output



Zoom
Ramp output phase from 0 rpm to 1500 rpm of the previous cycle.

- 1) start command
- 2) ramp input speed reference
- 3) ramp output

5.4 "MDPlc" advanced development environment

The Motion Drive Programmable logic controller (MDPlc) development environment is a tool for the development of industrial applications based on the SIEIDrive ADV200 series of drives.

It is an integrated tool that allows writing, compiling, downloading and debugging of the applications.

MDPlc allows complete personalisation of the drives according to the application requirements using a "friendly" and powerful graphic interface. The importance of the MDPlc's performance is particularly evident when defining advanced applications.

The primary feature of MDPlc is its ability to create an application code for the drives in assembly language, by compiling the application written in the MDPlc environment with PLC languages in compliance with the IEC 61131-3 international standard.

When using an MDPlc application with the ADV200, the drive's **basic functions** continue to be executed. Two MDPlc application programs can be stored on the drive. One of the two applications (1 or 2) is enabled via a parameter.

The languages that can be used to program specific custom applications are:

- Instruction List (IL)
- Structured Text (ST)
- Ladder Diagram (LD)
- Function Block Diagram (FBD)
- Sequential Flow Chart (SFC)

These languages can be used simultaneously within the same application so that the most suitable language is used for each application process.

The application can be structured on different levels, according to the block hierarchy and sequence. The user can also use basic library blocks or create custom blocks to be incorporated into personalised libraries.

The MDPlc editor is very efficient due to specific functions such as syntax, colouring and automatic insertion, together with the ability to include comments thereby making the program easier to be used.

The MDPlc development environment is structured on 5 "tasks" performed with different cycle times:

- Task "Boot": application boot (initialisation)
- Task "Fast": cycle at 1ms (high priority)
- Task "Slow": cycle at 8ms
- Task "Background": asynchronous execution (low priority)
- Task "Parameter": asynchronous if a parameter is modified

The user can program each task with a high degree of precision in one or more of the IEC 61131 - 3 standard languages, including those with floating-point arithmetic. Depending on the application and in order to obtain the desired performance and accuracy levels, the user can organise the program to take best advantage of the system capacities in terms of languages and calculation times. The user can also access all drive variables and parameters, including the system (processor) and DSP ones (for example, instant voltage and currents, encoder variables and parameters).

Inside the MDPlc application the user can define different variables (floating, integers, etc.) and parameters. Again, depending on the application, the user can also define some personalised drive parameter menus that can be used and modified by the GF_eXpress configurator of the drive.

The application can perform a direct data exchange using the available buses (DeviceNet, CanOpen®, Profibus-DP, Fast Link, etc.) both via the supervision PC/Plc and via the I/O remote modules. Typical situations where MDPlc applications have been developed are packaging, automatic warehouse systems, the plastic and glass industry, the textile sector and other applications requiring high reliability, accuracy, programming flexibility and short development times.



CD-ROM MDPlc per ADV200
code 1S3A56

• Debug tools



MDPic integrates a series of diagnostic tools supporting the application debug, its setting and optimisation. MDPic allows the display, both numerically and graphically, and in suitable windows of all drive and application variables which have been configured via the drag-and drop mode. The graphic curves are displayed with different colours for clarity; the different colours can be connected to configurable events and conditions (trigger). Because the synchronous acquisitions are buffered at 1ms, the variables are used with high accuracy so as to give a precise analysis of their condition.

During the application development and testing, it is possible to insert some triggers into pre-defined code points, which can be configured via a suitable window. The variables, which are read in a synchronous way with each trigger, can be displayed as numbers, as diagrams or tables. The MDPic environment supports the application debug by highlighting any programming errors, which are then displayed in a suitable window during the compiling process. The highlighted error is displayed together with its position and error cause showing a direct link to the program section to be analysed.

During the application development and testing, it is possible to insert some triggers into pre-defined code points, which can be configured via a suitable window. The variables, which are read in a synchronous way with each trigger, can be displayed as numbers, as diagrams or tables. The MDPic environment supports the application debug by highlighting any programming errors, which are then displayed in a suitable window during the compiling process. The highlighted error is displayed together with its position and error cause showing a direct link to the program section to be analysed.

• Instruction List (IL)



Instruction List is a low-level language, with a structure similar to a simple machine assembler language. It is ideal for solving small straightforward problems where there are few decision points and a limited number of changes in the program execution flow.

IL can be used when the execution time is critical, for example in the MDPic Fast Task at 1ms.

• Structured Text (ST)



Structured text is a high-level language. It has a syntax that on first appearance is very similar to Pascal language. An ST program is usually organised as continuous text. This is divided and structured into paragraphs, which represent the logic units of

the ST program.

The wide range of basic commands satisfies the needs of the data management, computation functions, complex arithmetic calculations and control structure. ST has a comprehensive range of constructs to assign values to variables, to call functions and function blocks, to create expressions, to evaluate conditions (IF, CASE) and to implement iterations and loops (WHILE, REPEAT UNTIL).

ST is recommended in the MDPic Fast Task at 1 ms, where the execution time is critical.

• Ladder Diagram (LD)



The representation of logical sequences in the form of the ladder diagram originates from the area of electrical plant engineering.

LD is based on the methods used to design relay logic. This form of representation is particularly suitable for implementing

relay switching operations in PLC programs.

• Function Block Diagram (FBD)



The basic idea behind PLC programming with the function block diagram is that the program is structured in function-oriented logical sequence cascades (networks). FBD derives from the graphic representation of flow diagrams, hence its ease of use.

FBD is based on viewing a system in terms of the flow of signals, represented in the form of electronic circuit diagrams. Within one network, the execution direction is always from left to right. All input values must always be computed and available before the execution of a function block. The execution and evaluation of a network is not completed until the output values of all elements have been calculated.

• Sequential Flow Chart (SFC)



Sequential Function Chart is a powerful graphical language for the description of the sequential behaviour of a program in terms of states and transitions

SFC describes the sequential aspects of a program and it can be used to divide a control problem

so that only relevant aspects to a specific phase are considered.

SFC can be useful for the development of programs with a well-defined "top-down" or "bottom-up" structure. Usually SFC can include functions, function blocks and programs, and also actions and transitions written with languages such as FBD, IL, LD or ST, which are more suitable for descriptions of specific parts of the program and not of the sequential flow, implemented with the SFC program.

6. Accessories

6.1 Fuses



6.1.1. External network side fuses (F1)

Size		Europe		America		ADV200-4	ADV200-DC	ADV200-6	AFE200
		Model	Code	Model	Code				
ADV-1007		GRD2/10	F4D13	A70P10	S7G49	●			
ADV-1015		GRD2/10	F4D13	A70P10	S7G49	●			
ADV-1022		GRD2/10	F4D13	A70P10	S7G49	●			
ADV-1030		GRD2/10	F4D13	A70P10	S7G49	●			
ADV-1040		GRD2/16	F4D14	A70P20-1	S7G48	●			
ADV-2055		GRD2/16	F4D14	A70P20-1	S7G48	●			
ADV-2075		GRD2/25	F4D16	A70P35	S7G86	●			
ADV-2110		GRD3/35	F4D20	A70P35	S7G86	●			
ADV-3150		GRD3/50	F4D21	A70P50	S7G53	●			
ADV-3185		GRD3/50	F4D21	A70P50	S7G53	●			
ADV-3220		S00C + /üf1/80/80A/690V	F4EAF	A70P80	S7G54	●			
ADV-4300		S00C + /üf1/80/80A/690V	F4EAF	A70P80	S7G54	●			
ADV-4370		S00C + /üf1/80/100A/690V	F4G18	A70P100	S7G55	●			
ADV-4450		S00C + /üf1/80/125A/690V	F4EAJ	A70P150	S7G56	●			
ADV-5550		S00/üf1/80/200A/690V	F4G23	A70P200	S7G58	●			
ADV-5750		S00/üf1/80/200A/690V	F4G23	A70P200	S7G58	●			
ADV-5900		S1üf1/110/250A/690V	F4G28	A70P250	S7G59	●			
ADV-61100		S1üf1/110/315A/690V	F4G30	A70P350	S7G61	●			
ADV-61320		S2üf1/110/400A/690V	F4G34	A70P400	S7G62	●			
ADV-71600		S2üf1/110/500A/690V	F4E30	A70P500	S7G63	●			
ADV-72000		S2üf1/110/630A/690V	F4E31	A70P600	S7G65	●			
ADV-72500		S2üf1/110/630A/690V	F4E31	A70P600	S7G65	●			
ADV-73150		S2üf1/110/800A/690V	F4G87	A70P800	S7813	●			
ADV-73550		S2üf1/110/800A/690V	F4G87	A70P800	S7813	●			
400 kW	ADV-72000-KXX-4-MS 04	S2üf1/110/630A/690V	F4E31	A70P600	S7G65	●			
	ADV-72000-XXX-4-SL	S2üf1/110/630A/690V	F4E31	A70P600	S7G65	●			
500 kW	ADV-72500-KXX-4-MS 05	S2üf1/110/630A/690V	F4E31	A70P600	S7G65	●			
	ADV-72500-XXX-4-SL	S2üf1/110/630A/690V	F4E31	A70P600	S7G65	●			
630 kW	ADV-731500-KXX-4-MS 06	S2üf1/110/800A/690V	F4G87	A70P800	S7813	●			
	ADV-731500-XXX-4-SL	S2üf1/110/800A/690V	F4G87	A70P800	S7813	●			
710 kW	ADV-735500-KXX-4-MS 07	S2üf1/110/800A/690V	F4G87	A70P800	S7813	●			
	ADV-735500-XXX-4-SL	S2üf1/110/800A/690V	F4G87	A70P800	S7813	●			
900 kW	ADV-731500-KXX-4-MS 09	S2üf1/110/800A/690V	F4G87	A70P800	S7813	●			
	ADV-731500-XXX-4-SL	S2üf1/110/800A/690V	F4G87	A70P800	S7813	●			
	ADV-731500-XXX-4-SL	S2üf1/110/800A/690V	F4G87	A70P800	S7813	●			
1000 kW	ADV-735500-KXX-4-MS 10	S2üf1/110/800A/690V	F4G87	A70P800	S7813	●			
	ADV-735500-XXX-4-SL	S2üf1/110/800A/690V	F4G87	A70P800	S7813	●			
	ADV-735500-XXX-4-SL	S2üf1/110/800A/690V	F4G87	A70P800	S7813	●			

Size		Europe		America		ADV200-4	ADV200-DC	ADV200-6	AFE200
		Model	Code	Model	Code				
ADV200-6									
ADV-6750		S00C +/üf1/80/160A/690V	F4EAL	A70P175	S7G57			●	
ADV-7900		S00C +/üf1/80/160A/690V	F4EAL	A70P175	S7G57			●	
ADV-71100		S00C +/üf1/80/200A/690V	F4G23	A70P200	S7G58			●	
ADV-71320		S1üf1/110/250A/690V	F4G28	A70P300	S7G60			●	
ADV-92500		S2üf1/110/400A/690V	F4G34	A70P400	S7G62			●	
ADV-105000		800A/690V						(1)	
ADV-106300		800A/690V						(1)	
ADV-108000		1250A/690V						(1)	
ADV-1012000		900A/690V						(2)	
AFE200									
AFE-3220		S00C +/üf1/80/80A/690V	F4EAF	A70P80	S7G54				●
AFE- 4450		S00C +/üf1/80/125A/690V	F4EAJ	A70P150	S7G56				●
AFE- 5900		S1üf1/110/250A/690V	F4G28	A70P250	S7G59				●
AFE- 61320		S2üf1/110/315A/690V	F4G30	A70P350	S7G61				●
AFE- 71600		S2üf2/110/400A/690V	F4G34	A70P400	S7G62				●
AFE- 72000		S2üf2/110/500A/690V	F4E30	A70P500	S7G63				●
AFE- 72500		S3üf1/110/630A/690V	F4E31	A70P600	S7G65				●
AFE- 73150		S3üf1/110/800A/690V	F4H02	A70P800	S7813				●
AFE- 73550		S3üf1/110/800A/690V	F4H02	A70P800	S7813				●
AFE- 84000	AFE- 72000-....MS	S2üf2/110/500A/690V	F4E30	A70P500	S7G63				●
	AFE- 72000-....SL	S2üf2/110/500A/690V	F4E30	A70P500	S7G63				●
AFE- 85000	AFE- 72500-....MS	S3üf1/110/630A/690V	F4E31	A70P600	S7G65				●
	AFE- 72500-....SL	S3üf1/110/630A/690V	F4E31	A70P600	S7G65				●
AFE- 86300	AFE- 73150-....MS	S3üf1/110/800A/690V	F4H02	A70P800	S7813				●
	AFE- 73150-....MS	S3üf1/110/800A/690V	F4H02	A70P800	S7813				●
AFE- 87100	AFE- 73550-....MS	S3üf1/110/800A/690V	F4H02	A70P800	S7813				●
	AFE- 73550-....SL	S3üf1/110/800A/690V	F4H02	A70P800	S7813				●
AFE- 99000	AFE- 73150-....MS	S3üf1/110/800A/690V	F4H02	A70P800	S7813				●
	AFE- 73150-....SL	S3üf1/110/800A/690V	F4H02	A70P800	S7813				●
	AFE- 73150-....SL	S3üf1/110/800A/690V	F4H02	A70P800	S7813				●
AFE- 910000	AFE- 73550-....MS	S3üf1/110/800A/690V	F4H02	A70P800	S7813				●
	AFE- 73550-....SL	S3üf1/110/800A/690V	F4H02	A70P800	S7813				●
	AFE- 73550-....SL	S3üf1/110/800A/690V	F4H02	A70P800	S7813				●

Technical data for fuses, including dimensions, weights, dissipated power, fuse blocks, etc. can be found in the manufacturers' catalogues:

Tipo M... (a coltello), GRD... , Z22... , S... Jean Müller, Eltville
A70... Ferraz
FWP... Bussmann

(1) : 3 internal fuses in the SM32-...-6 power supply unit.

(2) : 6 internal fuses in the SM32-...-6 power supply unit.

ADV200 - 4

ADV200-DC

ADV200 - 6

AFE200

PROGRAM.

APPENDIX

6.1.2. Fuses for the DC connection (F2)

Size		Europe		America		ADV200-4	ADV200-DC	ADV200-6	AFE200
		Model	Code	Model	Code				
ADV-1007		GRD2/10	F4D13	A70P10	S7G49	●			
ADV-1015		GRD2/10	F4D13	A70P10	S7G49	●			
ADV-1022		GRD2/10	F4D13	A70P10	S7G49	●			
ADV-1030		GRD2/16	F4D14	A70P20-1	S7G48	●			
ADV-1040		GRD2/20	F4D15	A70P20-1	S7G48	●			
ADV-2055		GRD2/20	F4D15	A70P30-1	S7I50	●			
ADV-2075		GRD3/35	F4D20	A70P40	S7G52	●			
ADV-2110		GRD3/50	F4D21	A70P50	S7G53	●			
ADV-3150		S00C+/üf1/80/80A/690V	F4EAF	A70P80	S7G54	●			
ADV-3185		S00C+/üf1/80/80A/690V	F4EAF	A70P80	S7G54	●	●		
ADV-3220		S00C+/üf1/80/80A/690V	F4EAF	A70P80	S7G54	●	●		
ADV-4300		S00C+/üf1/80/100A/690V	F4G18	A70P100	S7G55	●	●		
ADV-4370		S00C+/üf1/80/125A/690V	F4EAJ	A70P150	S7G56	●	●		
ADV-4450		S00C+/üf1/80/160A/690V	F4EAL	A70P150	S7G56	●	●		
ADV-5550		S00/üf1/80/200A/690V	F4G23	A70P200	S7G58	●	●		
ADV-5750		S1üf1/110/250A/690V	F4G28	A70P250	S7G59	●	●		
ADV-5900		S1üf1/110/315A/690V	F4G30	A70P350	S7G61	●	●		
ADV-61100		S2üf1/110/400A/690V	F4G34	A70P400	S7G62	●	●		
ADV-61320		S2üf1/110/500A/690V	F4E30	A70P500	S7G63	●	●		
ADV-71600		S2üf1/110/500A/690V	F4E30	A70P500	S7G63	●	●		
ADV-72000		S2üf1/110/630A/690V	F4E31	A70P600	S7G65	●	●		
ADV-72500		S3üf1/110/800A/690V	F4H02	A70P800	S7813	●	●		
ADV-73150		S3üf1/110/1000A/690V	F4H03	A70P1000	S7812	●	●		
ADV-73550		S3üf1/110/1000A/690V	F4H03	A70P1000	S7812	●	●		
400 kW	ADV-72000-KXX-4-MS 04	S2üf1/110/630A/690V	F4E31	A70P600	S7G65	●	●		
	ADV-72000-XXX-4-SL	S2üf1/110/630A/690V	F4E31	A70P600	S7G65	●	●		
500 kW	ADV-72500-KXX-4-MS 05	S3üf1/110/800A/690V	F4H02	A70P800	S7813	●	●		
	ADV-72500-XXX-4-SL	S3üf1/110/800A/690V	F4H02	A70P800	S7813	●	●		
630 kW	ADV-731500-KXX-4-MS 06	S3üf1/110/1000A/690V	F4H03	A70P1000	S7812	●	●		
	ADV-731500-XXX-4-SL	S3üf1/110/1000A/690V	F4H03	A70P1000	S7812	●	●		
710 kW	ADV-735500-KXX-4-MS 07	S3üf1/110/1000A/690V	F4H03	A70P1000	S7812	●	●		
	ADV-735500-XXX-4-SL	S3üf1/110/1000A/690V	F4H03	A70P1000	S7812	●	●		
900 kW	ADV-731500-KXX-4-MS 09	S3üf1/110/1000A/690V	F4H03	A70P1000	S7812	●	●		
	ADV-731500-XXX-4-SL	S3üf1/110/1000A/690V	F4H03	A70P1000	S7812	●	●		
	ADV-731500-XXX-4-SL	S3üf1/110/1000A/690V	F4H03	A70P1000	S7812	●	●		
1000 kW	ADV-735500-KXX-4-MS 10	S3üf1/110/1000A/690V	F4H03	A70P1000	S7812	●	●		
	ADV-735500-XXX-4-SL	S3üf1/110/1000A/690V	F4H03	A70P1000	S7812	●	●		
	ADV-735500-XXX-4-SL	S3üf1/110/1000A/690V	F4H03	A70P1000	S7812	●	●		
ADV200-6									
ADV-6750 ... ADV-92500								(1)	
ADV-105000 ... ADV-1012000								(2)	

Technical data for fuses, including dimensions, weights, dissipated power, fuse blocks, etc. can be found in the manufacturers' catalogues:
 GRD... , Z22... Jean Müller, Eltville
 A70... Ferraz
 FWP... Bussmann

(1) : Please contact the Gefran Sales Office.

(2) Internal fuses in the SM32-...-6 power supply unit.

6.2 Chokes



6.2.1. Input choke (L1 - AC)

A three-phase mains choke is mandatory for sizes of ≥ 160 kW.

Size		Output inverter	Choke rating [mH]	Current rating [A]	Current saturation [A]	Model	Code	ADV200-4	ADV200-DC	ADV200-6	AFE200
ADV-1007		HD / LD						(1)			
ADV-1015		HD / LD						(1)			
ADV-1022		HD / LD						(1)			
ADV-1030		HD / LD						(1)			
ADV-1040		HD / LD						(1)			
ADV-2055		HD / LD						(1)			
ADV-2075		HD / LD						(1)			
ADV-2110		HD / LD						(1)			
ADV-3150		HD / LD						(1)			
ADV-3185		HD / LD						(1)			
ADV-3220		HD / LD						(1)			
ADV-4300		HD / LD						(1)			
ADV-4370		HD / LD						(1)			
ADV-4450		HD / LD						(1)			
ADV-5550		HD / LD						(1)			
ADV-5750		HD / LD						(1)			
ADV-5900		HD / LD						(1)			
ADV-61100		HD / LD						(1)			
ADV-61320		HD / LD						(1)			
ADV-71600	HD		0.085	309	618	LR3-160	S7D40	●			
	LD		0.085	420	710	LR3-200	S7AE9	●			
ADV-72000	HD / LD		0.085	420	710	LR3-200	S7AE9	●			
ADV-72500	HD / LD		0.06	550	1050	LR3-315	S7D28	●			
ADV-73150	HD / LD		0.04	700	900	LR3-ADV-355	S7LR01	●			
ADV-73550	HD / LD		0.04	700	900	LR3-ADV-355	S7LR01	●			
400 kW	ADV-72000-KXX-4-MS 04	HD / LD	0.085	420	710	LR3-200	S7AE9	●			
	ADV-72000-XXX-4-SL		0.085	420	710	LR3-200	S7AE9	●			
500 kW	ADV-72500-KXX-4-MS 05	HD / LD	0.06	550	1050	LR3-315	S7D28	●			
	ADV-72500-XXX-4-SL		0.06	550	1050	LR3-315	S7D28	●			
630 kW	ADV-731500-KXX-4-MS 06	HD / LD	0.04	700	900	LR3-ADV-355	S7LR01	●			
	ADV-731500-XXX-4-SL		0.04	700	900	LR3-ADV-355	S7LR01	●			
710 kW	ADV-735500-KXX-4-MS 07	HD / LD	0.04	700	900	LR3-ADV-355	S7LR01	●			
	ADV-735500-XXX-4-SL		0.04	700	900	LR3-ADV-355	S7LR01	●			
900 kW	ADV-731500-KXX-4-MS 09	HD / LD	0.04	700	900	LR3-ADV-355	S7LR01	●			
	ADV-731500-XXX-4-SL		0.04	700	900	LR3-ADV-355	S7LR01	●			
	ADV-731500-XXX-4-SL		0.04	700	900	LR3-ADV-355	S7LR01	●			
1000 kW	ADV-735500-KXX-4-MS 10	HD / LD	0.04	700	900	LR3-ADV-355	S7LR01	●			
	ADV-735500-XXX-4-SL		0.04	700	900	LR3-ADV-355	S7LR01	●			
	ADV-735500-XXX-4-SL		0.04	700	900	LR3-ADV-355	S7LR01	●			

ADV200 - 4

ADV200-DC

ADV200 - 6

AFE200

PROGRAM.

APPENDIX

Size		Output inverter	Choke rating	Current rating	Current saturation	Model	Code	ADV200-4	ADV200-DC	ADV200-6	AFE200
			[mH]	[A]	[A]						
ADV-200-6											
ADV-6750										(1)	
ADV-7900										(1)	
ADV-71100										(1)	
ADV-71320										(1)	
ADV-92500			135	335	365	LR3y-6-250	S7AD6			●	
ADV-105000			70	580	750	LR3y-6-500	S7AF6			●	
ADV-106300			70	760	900	LR3y-6-630	S7AD7			●	
ADV-108000			55	780	1050	LR3y-6-800	S7F07			●	
ADV-1012000			40	1150	1550	LR3y-6-1200	S7F02			●	
AFE-200			[mH]	[A]	[A]						
AFE-3220		HD	1.5	48	150	LR3-4-022-AFE	S7AC5				●
		LD	1.2	60	100	LR3-4-030-AFE	S7AL01				●
AFE- 4450		HD / LD	0.715	94	290	LR3-4-045-AFE	S7AE7				●
AFE- 5900		HD / LD	0.45	200	350	LR3-4-090-AFE	S7AL02				●
AFE- 61320		HD / LD	0.32	280	500	LR3-4-160-AFE	S7AL03				●
AFE- 71600		HD	0.32	280	500	LR3-4-160-AFE	S7AL03				●
		LD	0.21	430	900	LR3-4-250-AFE	S7AL05				●
AFE- 72000		HD / LD	0.21	430	900	LR3-4-250-AFE	S7AL05				●
AFE- 72500		HD	0.21	430	900	LR3-4-250-AFE	S7AL05				●
		LD	0.18	530	1125	LR3-4-315-AFE	S7AL06				●
AFE- 73150		HD	0.18	530	1125	LR3-4-315-AFE	S7AL06				●
		LD	0.15	600	1250	LR3-4-355-AFE	S7AL04				●
AFE- 73550		HD / LD	0.15	600	1250	LR3-4-355-AFE	S7AL04				●
AFE- 84000	AFE- 72000-...-MS	HD / LD	0.21	430	900	LR3-4-250-AFE	S7AL05				●
	AFE- 72000-...-SL		0.21	430	900	LR3-4-250-AFE	S7AL05				●
AFE- 85000	AFE- 72500-...-MS	HD	0.21	430	900	LR3-4-250-AFE	S7AL05				●
	AFE- 72500-...-SL		0.21	430	900	LR3-4-250-AFE	S7AL05				●
AFE- 85000	AFE- 72500-...-MS	LD	0.18	530	1125	LR3-4-315-AFE	S7AL06				●
	AFE- 72500-...-SL		0.18	530	1125	LR3-4-315-AFE	S7AL06				●
AFE- 86300	AFE- 73150-...-MS	HD	0.18	530	1125	LR3-4-315-AFE	S7AL06				●
	AFE- 73150-...-MS		0.18	530	1125	LR3-4-315-AFE	S7AL06				●
AFE- 86300	AFE- 73150-...-MS	LD	0.15	600	1250	LR3-4-355-AFE	S7AL04				●
	AFE- 73150-...-SL		0.15	600	1250	LR3-4-355-AFE	S7AL04				●
AFE- 87100	AFE- 73550-...-MS	HD / LD	0.15	600	1250	LR3-4-355-AFE	S7AL04				●
	AFE- 73550-...-SL		0.15	600	1250	LR3-4-355-AFE	S7AL04				●
AFE- 99000	AFE- 73150-...-MS	HD	0.18	530	1125	LR3-4-315-AFE	S7AL06				●
	AFE- 73150-...-SL		0.18	530	1125	LR3-4-315-AFE	S7AL06				●
	AFE- 73150-...-SL		0.18	530	1125	LR3-4-315-AFE	S7AL06				●
AFE- 99000	AFE- 73150-...-MS	LD	0.15	600	1250	LR3-4-355-AFE	S7AL04				●
	AFE- 73150-...-SL		0.15	600	1250	LR3-4-355-AFE	S7AL04				●
	AFE- 73150-...-SL		0.15	600	1250	LR3-4-355-AFE	S7AL04				●
AFE- 910000	AFE- 73550-...-MS	HD / LD	0.15	600	1250	LR3-4-355-AFE	S7AL04				●
	AFE- 73550-...-SL		0.15	600	1250	LR3-4-355-AFE	S7AL04				●
	AFE- 73550-...-SL		0.15	600	1250	LR3-4-355-AFE	S7AL04				●

(1) : integrated choke on DC-Link
 (2) : internal choke

Refer to the Gefran Accessories catalogue (1S9I09) for choke weights and dimensions.

6.2.2. Output choke (L2) - Size 1007 ... 73550

Size	Output inverter	Choke rating	Current rating	Current saturation	Model	Code	ADV200-4	ADV200-DC	ADV200-6	AFE200
		[mH]	[A]	[A]						
ADV-1007	HD	1.4	9.5	20	LU3-003	S7FG2	●			
	LD	0.87	16	34	LU3-005	S7FG3	●			
ADV-1015	HD	1.4	9.5	20	LU3-003	S7FG2	●			
	LD	0.87	16	34	LU3-005	S7FG3	●			
ADV-1022	HD	1.4	9.5	20	LU3-003	S7FG2	●			
	LD	0.87	16	34	LU3-005	S7FG3	●			
ADV-1030	HD	1.4	9.5	20	LU3-003	S7FG2	●			
	LD	0.87	16	34	LU3-005	S7FG3	●			
ADV-1040	HD	1.4	9.5	20	LU3-003	S7FG2	●			
	LD	0.87	16	34	LU3-005	S7FG3	●			
ADV-2055	HD	0.87	16	34	LU3-005	S7FG3	●			
	LD	0.51	27	57	LU3-011	S7FG4	●			
ADV-2075	HD	0.51	27	57	LU3-011	S7FG4	●			
	LD	0.43	32	68	LU3-015	S7FM2	●			
ADV-2110	HD	0.51	27	57	LU3-011	S7FG4	●			
	LD	0.43	32	68	LU3-015	S7FM2	●			
ADV-3150	HD	0.43	32	68	LU3-015	S7FM2	●			
	LD	0.33	42	72	LU3-022	S7FH3	●	●		
ADV-3185	HD	0.33	42	72	LU3-022	S7FH3	●	●		
	LD	0.23	58	100	LU3-030	S7FH4	●	●		
ADV-3220	HD	0.23	58	100	LU3-030	S7FH4	●	●		
	LD	0.24	58	100	LU3-030	S7FH4	●	●		
ADV-4300	HD	0.24	58	100	LU3-030	S7FH4	●	●		
	LD	0.18	76	130	LU3-037	S7FH5	●	●		
ADV-4370	HD	0.18	76	130	LU3-037	S7FH5	●	●		
	LD	0.12	120	205	LU3-055	S7FH6	●	●		
ADV-4450	HD	0.12	120	205	LU3-055	S7FH6	●	●		
	LD	0.07	180	310	LU3-090	S7F10	●	●		
ADV-5550	HD	0.07	180	310	LU3-090	S7F10	●	●		
	LD	0.07	180	310	LU3-090	S7F10	●	●		
ADV-5750	HD	0.07	180	310	LU3-090	S7F10	●	●		
	LD	0.07	180	310	LU3-090	S7F10	●	●		
ADV-5900	HD	0.07	180	310	LU3-090	S7F10	●	●		
	LD	0.041	310	540	LU3-160	S7FH8	●	●		
ADV-61100	HD	0.041	310	540	LU3-160	S7FH8	●	●		
	LD	0.041	310	540	LU3-160	S7FH8	●	●		
ADV-61320	HD	0.041	310	540	LU3-160	S7FH8	●	●		
	LD	0.041	310	540	LU3-160	S7FH8	●	●		
ADV-71600	HD	0.041	310	540	LU3-160	S7FH8	●	●		
	LD	0.03	400	770	LU3-200	S7AF0	●	●		
ADV-72000	HD	0.03	400	770	LU3-200	S7AF0	●	●		
	LD	0.022	580	1100	LU3-315	S7FH9	●	●		
ADV-72500	HD	0.022	580	1100	LU3-315	S7FH9	●	●		
	LD	0.022	580	1100	LU3-315	S7FH9	●	●		

ADV200 - 4

ADV200-DC

ADV200 - 6

AFE200

PROGRAM.

APPENDIX

Size	Output inverter	Choke rating [mH]	Current rating [A]	Current saturation [A]	Model	Code	ADV200-4	ADV200-DC	ADV200-6	AFE200
ADV-73150	HD	0.015	730	1240	LU3-400	S7F08	●	●		
	LD	0.015	730	1240	LU3-400	S7F08	●	●		
ADV-73550	HD	0.015	730	1240	LU3-400	S7F08	●	●		
	LD	0.015	730	1240	LU3-400	S7F08	●	●		

Refer to the Gefran Accessories catalogue (1S9I09) for choke weights and dimensions.
Motor cables up to 80 metres in length.

6.2.3. Output choke (L2) - ADV200-6

Size		Choke rating [μH]	Current rating [A]	Current saturation [A]	Model	Code	ADV200-4	ADV200-DC	ADV200-6	AFE200
ADV-6750		280	102	125	LU3-6-75	S7AE1			●	
ADV-7900		230	148	180	LU3-6-110	S7AE2			●	
ADV-71100		230	148	180	LU3-6-110	S7AE2			●	
ADV-71320		200	160	220	LU3-6-132				●	
ADV-92500		90	350	385	LU3-6-250	S7AD8			●	
ADV-105000		36	600	800	LU3-6-500	S7AF7			●	
ADV-106300		36	800	950	LU3-6-630	S7AD9			●	
ADV-108000		20	400	550	LU3-6-800/2 *	S7F06			●	
ADV-1012000		10	600	815	LU3-6-1200/2 *	S7F01			●	

Refer to the Gefran Accessories catalogue (1S9I09) for choke weights and dimensions.
Motor cables up to 50 metres in length.

* 2 chokes for each inverter.

6.2.4. Output choke (L2) - Models with parallel connection 400... 1000 kW

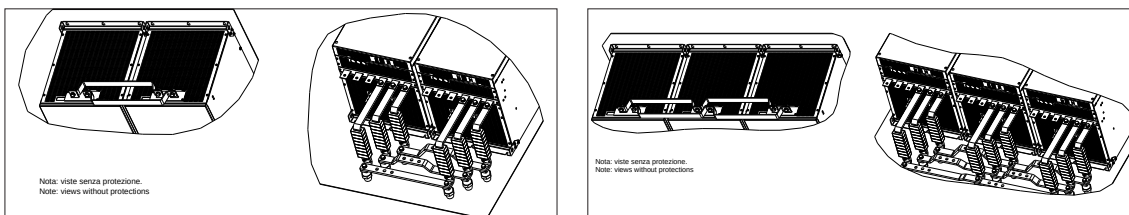
The use of output chokes is mandatory for these sizes; choose from one of the options listed below, as a function of the application/connection :

1. Current distributor output choke

Size		Output inverter	Choke rating [μH]	Current rating [A]	Current saturation [A]	Model	Code	ADV200-4	ADV200-DC	ADV200-6	AFE200
400 kW	ADV-72000-KXX-4-MS 04	HD / LD	7.5	450	675	LU3-4-500	S7FFI2	●	●		
	ADV-72000-XXX-4-SL		7.5	450	675	LU3-4-500	S7FFI2	●	●		
500 kW	ADV-72500-KXX-4-MS 05	HD	7.5	450	675	LU3-4-500	S7FFI2	●	●		
	ADV-72500-XXX-4-SL		7.5	450	675	LU3-4-500	S7FFI2	●	●		
500 kW	ADV-72500-KXX-4-MS 05	LD	5.0	730	975	LU3-4-800	S7FFI1	●	●		
	ADV-72500-XXX-4-SL		5.0	730	975	LU3-4-800	S7FFI1	●	●		
630 kW	ADV-731500-KXX-4-MS 06	HD / LD	5.0	730	975	LU3-4-800	S7FFI1	●	●		
	ADV-731500-XXX-4-SL		5.0	730	975	LU3-4-800	S7FFI1	●	●		
710 kW	ADV-735500-KXX-4-MS 07	HD / LD	5.0	730	975	LU3-4-800	S7FFI1	●	●		
	ADV-735500-XXX-4-SL		5.0	730	975	LU3-4-800	S7FFI1	●	●		
900 kW	ADV-731500-KXX-4-MS 09	HD / LD	5.0	730	975	LU3-4-800	S7FFI1	●	●		
	ADV-731500-XXX-4-SL		5.0	730	975	LU3-4-800	S7FFI1	●	●		
	ADV-731500-XXX-4-SL		5.0	730	975	LU3-4-800	S7FFI1	●	●		
1000 kW	ADV-735500-KXX-4-MS 10	HD / LD	5.0	730	975	LU3-4-800	S7FFI1	●	●		
	ADV-735500-XXX-4-SL		5.0	730	975	LU3-4-800	S7FFI1	●	●		
	ADV-735500-XXX-4-SL		5.0	730	975	LU3-4-800	S7FFI1	●	●		

Refer to the Gefran Accessories catalogue (1S9I09) for choke weights and dimensions.

2. Bus bars with integrated output chokes



Size		Output inverter	Choke rating [μH]	Current rating [A]	Current saturation [A]	Model	Code	ADV200-4	ADV200-DC	ADV200-6	AFE200
400 kW	ADV-72000-KXX-4-MS 04					EAM 2641	S72641	●	●		
	ADV-72000-XXX-4-SL										
500 kW	ADV-72500-KXX-4-MS 05					EAM 2641	S72641	●	●		
	ADV-72500-XXX-4-SL										
630 kW	ADV-731500-KXX-4-MS 06					EAM 2641	S72641	●	●		
	ADV-731500-XXX-4-SL										
710 kW	ADV-735500-KXX-4-MS 07					EAM 2641	S72641	●	●		
	ADV-735500-XXX-4-SL										

Size		Output inverter	Choke rating	Current rating	Current saturation	Model	Code	ADV200-4	ADV200-DC	ADV200-6	AFE200
			[μH]	[A]	[A]						
900 kW	ADV-731500-KXX-4-MS 09					EAM 2641_1	S726411	●	●		
	ADV-731500-XXX-4-SL										
	ADV-731500-XXX-4-SL										
1000 kW	ADV-735500-KXX-4-MS 10					EAM 2641_1	S726411	●	●		
	ADV-735500-XXX-4-SL										
	ADV-735500-XXX-4-SL										

Refer to the Gefran Accessories catalogue (1S9I09) for choke weights and dimensions.

3. Standard output chokes (with motor cables > 100 metres long)

Size		Output inverter	Choke rating	Current rating	Current saturation	Model	Code	ADV200-4	ADV200-DC	ADV200-6	AFE200
			[μH]	[A]	[A]						
400 kW	ADV-72000-KXX-4-MS 04	HD	0.03	400	770	LU3-200	S7AF0	●	●		
	ADV-72000-XXX-4-SL		0.03	400	770	LU3-200	S7AF0	●	●		
400 kW	ADV-72000-KXX-4-MS 04	LD	0.022	580	1100	LU3-315	S7FH9	●	●		
	ADV-72000-XXX-4-SL		0.022	580	1100	LU3-315	S7FH9	●	●		
500 kW	ADV-72500-KXX-4-MS 05	HD / LD	0.015	730	1240	LU3-400	S7F08	●	●		
	ADV-72500-XXX-4-SL		0.015	730	1240	LU3-400	S7F08	●	●		
630 kW	ADV-731500-KXX-4-MS 06	HD / LD	0.015	730	1240	LU3-400	S7F08	●	●		
	ADV-731500-XXX-4-SL		0.015	730	1240	LU3-400	S7F08	●	●		
710 kW	ADV-735500-KXX-4-MS 07	HD / LD	0.015	730	1240	LU3-400	S7F08	●	●		
	ADV-735500-XXX-4-SL		0.015	730	1240	LU3-400	S7F08	●	●		
900 kW	ADV-731500-KXX-4-MS 09	HD / LD	0.015	730	1240	LU3-400	S7F08	●	●		
	ADV-731500-XXX-4-SL		0.015	730	1240	LU3-400	S7F08	●	●		
	ADV-731500-XXX-4-SL		0.015	730	1240	LU3-400	S7F08	●	●		
1000 kW	ADV-735500-KXX-4-MS 10	HD / LD	0.015	730	1240	LU3-400	S7F08	●	●		
	ADV-735500-XXX-4-SL		0.015	730	1240	LU3-400	S7F08	●	●		
	ADV-735500-XXX-4-SL		0.015	730	1240	LU3-400	S7F08	●	●		

Refer to the Gefran Accessories catalogue (1S9I09) for choke weights and dimensions.

6.3 External EMC filters

Standard ADV200 inverters are provided with an internal filter to guarantee performance levels required by EN 61800-3 (for the second environment, category C3) with a shielded motor cable, maximum 20 metres in length (up to 50 metres for size 5 and bigger).
Optional external filters for different installations are listed in the table below.

Refer to the Gefran Accessories catalogue (1S9I09) for filter weights and dimensions.



Size		Heavy Duty		Light Duty		EN 61800-3 : Category / Environment / Length of motor cables	ADV200-4	ADV200-DC	ADV200-6	AFE200
		Model	Code	Model	Code					
ADV200-4 (Supply voltage 400 -15% ... 480Vac +10%)										
≥ ADV-1007		ECF3	F4ZZ2	ECF3	F4ZZ2	C4 / 2nd / 100 m	●			
ADV-1007		EMI FTF-480-7	S7GHL	EMI FTF-480-7	S7GHL	C2 / 1st / 30 m	●			
ADV-1015		EMI FTF-480-7	S7GHL	EMI FTF-480-7	S7GHL	C2 / 1st / 30 m	●			
ADV-1022		EMI FTF-480-7	S7GHL	EMI FTF-480-7	S7GHL	C2 / 1st / 30 m	●			
ADV-1030		EMI FTF-480-7	S7GHL	EMI FTF-480-16	S7GHO	C2 / 1st / 30 m	●			
ADV-1040		EMI FTF-480-16	S7GHO	EMI FTF-480-16	S7GHO	C2 / 1st / 30 m	●			
ADV-2055		EMI FTF-480-16	S7GHO	EMI FTF-480-16	S7GHO	C2 / 1st / 30 m	●			
ADV-2075		EMI FTF-480-16	S7GHO	EMI FTF-480-30	S7GHP	C2 / 1st / 30 m	●			
ADV-2110		EMI FTF-480-30	S7GHP	EMI FTF-480-30	S7GHP	C2 / 1st / 30 m	●			
ADV-3150		EMI FTF-480-30	S7GHP	EMI FTF-480-42	S7GOA	C2 / 1st / 30 m	●			
ADV-3185		EMI FTF-480-42	S7GOA	EMI FTF-480-55	S7GOB	C2 / 1st / 30 m	●			
ADV-3220		EMI FTF-480-55	S7GOB	EMI FTF-480-75	S7GOC	C2 / 1st / 30 m	●			
ADV-4300		EMI FTF-480-75	S7GOC	EMI FTF-480-75	S7GOC	C2 / 1st / 30 m	●			
ADV-4370		EMI FTF-480-75	S7GOC	EMI FTF-480-100	S7GOD	C2 / 1st / 30 m	●			
ADV-4450		EMI FTF-480-100	S7GOD	EMI FTF-480-130	S7GOE	C2 / 1st / 30 m	●			
ADV-5550		EMI FTF-480-130	S7GOE	EMI FTF-480-180	S7GOF	C3 / 2nd / 100 m	●			
ADV-5750		EMI FTF-480-180	S7GOF	EMI FTF-480-180	S7GOF	C3 / 2nd / 100 m	●			
ADV-5900		EMI FTF-480-180	S7GOF	EMI-480-250	S7DGG	C3 / 2nd / 100 m	●			
ADV-61100		EMI-480-250	S7DGG	EMI-480-250	S7DGG	C3 / 2nd / 100 m	●			
ADV-61320		EMI-480-250	S7DGG	EMI-480-320	S7DGH	C3 / 2nd / 100 m	●			
ADV-71600		EMI-480-400	S7DGI	EMI-480-400	S7DGI	C3 / 2nd / 100 m	●			
ADV-72000		EMI-480-400	S7DGI	EMI-480-600	S7DGL	C3 / 2nd / 100 m	●			
ADV-72500		EMI-480-600	S7DGL	EMI-480-600	S7DGL	C3 / 2nd / 100 m	●			
ADV-73150		EMI-480-800	S7DGM	EMI-480-800	S7DGM	C3 / 2nd / 100 m	●			
ADV-73550		EMI-480-800	S7DGM	EMI-480-800	S7DGM	C3 / 2nd / 100 m	●			
400 kW	ADV-72000-KXX-4-MS 04	EMI-480-400	S7DGI	EMI-480-600	S7DGL	C3 / 2nd / 100 m	●			
	ADV-72000-XXX-4-SL	EMI-480-400	S7DGI	EMI-480-600	S7DGL	C3 / 2nd / 100 m	●			
500 kW	ADV-72500-KXX-4-MS 05	EMI-480-600	S7DGL	EMI-480-600	S7DGL	C3 / 2nd / 100 m	●			
	ADV-72500-XXX-4-SL	EMI-480-600	S7DGL	EMI-480-600	S7DGL	C3 / 2nd / 100 m	●			
630 kW	ADV-731500-KXX-4-MS 06	EMI-480-800	S7DGM	EMI-480-800	S7DGM	C3 / 2nd / 100 m	●			
	ADV-731500-XXX-4-SL	EMI-480-800	S7DGM	EMI-480-800	S7DGM	C3 / 2nd / 100 m	●			
710 kW	ADV-735500-KXX-4-MS 07	EMI-480-800	S7DGM	EMI-480-800	S7DGM	C3 / 2nd / 100 m	●			
	ADV-735500-XXX-4-SL	EMI-480-800	S7DGM	EMI-480-800	S7DGM	C3 / 2nd / 100 m	●			
900 kW	ADV-731500-KXX-4-MS 09	EMI-480-800	S7DGM	EMI-480-800	S7DGM	C3 / 2nd / 100 m	●			
	ADV-731500-XXX-4-SL	EMI-480-800	S7DGM	EMI-480-800	S7DGM	C3 / 2nd / 100 m	●			
	ADV-731500-XXX-4-SL	EMI-480-800	S7DGM	EMI-480-800	S7DGM	C3 / 2nd / 100 m	●			
1000 kW	ADV-735500-KXX-4-MS 10	EMI-480-800	S7DGM	EMI-480-800	S7DGM	C3 / 2nd / 100 m	●			
	ADV-735500-XXX-4-SL	EMI-480-800	S7DGM	EMI-480-800	S7DGM	C3 / 2nd / 100 m	●			
	ADV-735500-XXX-4-SL	EMI-480-800	S7DGM	EMI-480-800	S7DGM	C3 / 2nd / 100 m	●			

Size		Heavy Duty		Light Duty		EN 61800-3 : Category / Environment / Length of motor cables	ADV200-4	ADV200-DC	ADV200-6	AFE200
		Model	Code	Model	Code					
ADV200-6 (Supply voltage 690 ±10%)										
ADV-6750		EMI 690-180	S7DGP			C3 / 2nd / 100 m			●	
ADV-7900		EMI 690-180	S7DGP			C3 / 2nd / 100 m			●	
ADV-71100		EMI 690-180	S7DGP			C3 / 2nd / 100 m			●	
ADV-71320		EMI 690-180	S7DGP			C3 / 2nd / 100 m			●	
ADV-92500		EMI 690-320	S7DGR			C3 / 2nd / 100 m			●	
ADV-105000		EMI 690-600	S7DGS			C3 / 2nd / 100 m			●	
ADV-106300		EMI 690-1000	S7DGT			C3 / 2nd / 100 m			●	
ADV-108000									(1)	
ADV-1012000									(1)	
AFE-200										
AFE-3220		EMI FN3120-480-50	S7DGV	EMI FN3120-480-80	S73EE	C3 / 2nd / 50 m				●
AFE-4450		EMI FN3120-480-80	S73EE	EMI FN3120-480-110	S7DGZ	C3 / 2nd / 50 m				●
AFE-5900		EMI FN3120-480-230	S74EE	EMI FN3120-480-230	S74EE	C3 / 2nd / 50 m				●
AFE-61320		EMI FN3120-480-230	S74EE	EMI FN3359-480-320	S7GOH	C3 / 2nd / 50 m				●
AFE-71600		EMI FN3359-480-320	S7GOH	EMI FN3359-480-400	S7GHY	C3 / 2nd / 50 m				●
AFE-72000		EMI FN3359-480-400	S7GHY	EMI FN3359-480-400	S7GHY	C3 / 2nd / 50 m				●
AFE-72500		EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
AFE-73150		EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
AFE-73550		EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
AFE-84000	AFE-72000-...-MS	EMI FN3359-480-400	S7GHY	EMI FN3359-480-400	S7GHY	C3 / 2nd / 50 m				●
	AFE-72000-...-SL	EMI FN3359-480-400	S7GHY	EMI FN3359-480-400	S7GHY	C3 / 2nd / 50 m				●
AFE-85000	AFE-72500-...-MS	EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
	AFE-72500-...-SL	EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
AFE-86300	AFE-73150-...-MS	EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
	AFE-73150-...-SL	EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
AFE-87100	AFE-73550-...-MS	EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
	AFE-73550-...-SL	EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
AFE-99000	AFE-73150-...-MS	EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
	AFE-73150-...-SL	EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
	AFE-73150-...-SL	EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
AFE-910000	AFE-73550-...-MS	EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
	AFE-73550-...-SL	EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●
	AFE-73550-...-SL	EMI FN3359-480-600	S7GHW	EMI FN3359-480-600	S7GHW	C3 / 2nd / 50 m				●

(1) : Please contact the Gefran Sales Office.

6.4 Braking resistors

Suggested braking resistors for use with an internal braking unit.

Refer to the Gefran Accessories catalogue (1S9I09) for resistor weights and dimensions.



Size	Model	Code	Max. overload 1" - service 10%	Max. overload 30" - service 25%	PBraking resistor power rating	Braking resistor value	Housing	ADV200-4	ADV200-DC	ADV200-6	AFE200
			Ebr (kJ)	Ebr (kJ)	Pnbr (W)	Rbr (Ω)					
ADV-1007	RF 220 T 100R	S8TOCE	1.5	11	220	100	IP44	●	●		
ADV-1015	RF 220 T 100R	S8TOCE	1.5	11	220	100	IP44	●	●		
ADV-1022	RF 300 DT 100R	S8TOCB	2.5	19	300	100	IP44	●	●		
ADV-1030	RF 300 DT 100R	S8TOCB	2.5	19	300	100	IP44	●	●		
ADV-1040	RFPD 750 DT 100R	S8SY4	7.5	38	750	100	IP44	●	●		
ADV-2055	RFPD 750 DT 68R	S8TOCD	7.5	38	750	68	IP44	●	●		
ADV-2075	RFPD 900 DT 68R	S8SY5	9	48	900	68	IP44	●	●		
ADV-2110	RFPD 1100 DT 40R	S8SY6	11	58	1100	40	IP44	●	●		
ADV-3150	RFPR 1900 D 28R	S8SZ5	19	75	1900	28	IP44	●	●		
ADV-3185	BRT4K0-15R4	S8T00G	40	150	4000	15.4	IP20	●	●		
ADV-3220	BRT4K0-15R4	S8T00G	40	150	4000	15.4	IP20	●	●		
ADV-4300	BRT4K0-11R6	S8T00H	40	150	4000	11.6	IP20	●	●		
ADV-4370	BRT4K0-11R6	S8T00H	40	150	4000	11.6	IP20	●	●		
ADV-4450	BRT8K0-7R7	S8T00I	40	150	8000	7.7	IP20	●	●		
ADV-5550	BRT8K0-7R7	S8T00I	40	150	8000	7.7	IP20	●	●		
≥ ADV-5750								(1)	(1)	(2)	

(1) External braking unit (series BUy-..., optional), for information please contact the Gefran Sales Office.

(2) External braking unit (series BUy-...-6, optional), size 6750 ... 92500 please see the Accessories catalogue (1S9I09), for bigger sizes please contact the Gefran Sales Office.

7. Options

Encoder expansion cards



Code	Option	Description	ADV200-4	ADV200-DC	ADV200-6	AFE200
S5L30	EXP-DE-I1R1F2-ADV	TTL/HTL digital encoder expansion card 1 encoder input - 1 encoder output - 2 freeze channels	●	●	●	
S5L35	EXP-DE-I2R1F2-ADV	TTL/HTL digital encoder expansion card 2 encoder inputs - 1 encoder output - 2 freeze channels	●	●	●	
S5L31	EXP-SE-I1R1F2-ADV	Sinusoidal incremental encoder expansion card 1 encoder input - 1 encoder output - 2 freeze channels	●	●	●	
S5L32	EXP-SESC-I1R1F2-ADV	Sinusoidal incremental encoder expansion card + Absolute SinCos - 1 encoder input - 1 encoder output - 2 freeze channels	●	●	●	
S5L33	EXP-EN/SSI-I1R1F2-ADV	Expansion card for Sinusoidal incremental encoder + Absolute SinCos - 1 encoder input - 1 encoder output - 2 freeze channels	●	●	●	
S5L34	EXP-HIP-I1R1F2-ADV	Expansion card for Sinusoidal incremental encoder + Absolute Hiperface - 1 encoder input - 1 encoder output - 2 freeze channels	●	●	●	

I/O expansion cards



S526L	EXP-I0-D6A4R1-ADV	4 digital inputs / 2 digital outputs / 2 analog inputs / 2 analog outputs / 2 double contact relays	●	●	●	●
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Fieldbus expansion cards

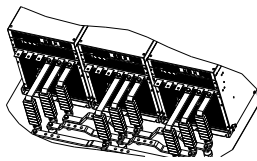
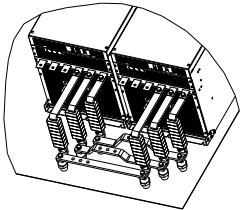


S527L	EXP-CAN-ADV	Expansion card for CANopen ® and DeviceNet interface CANopen: - Transmission speed: up to 1 Mbit/s - Data frame: 1 SDO to access all drive parameters, 4 PDO of 4 I/O words for fast access - Bus address: 1...128 DeviceNet: - Transmission speed: 125, 250, 500 kbit/s - Bus address: 1...63 - Data frame: Explicit Messaging for access to all drive parameters, 16 Polling I/O words for fast access	●	●	●	●
S530L	EXP-PDP-ADV	Expansion card for Profibus_DP interface - Transmission speed 9.6 kbit/s ... 12 Mbit/s - Bus address: 1...125 - Data frame: configuration channel for access to all drive parameters; 16 I/O fast words for fast access - Support Sync and Freeze.	●	●	●	●
-	EXP-GDNET-ADV	Expansion card for GD-net interface - For information please contact our Sales Office	●	●	●	●
-	EXP-ETHERCAT-ADV	Expansion card for Ethercat interface - For information please contact our Sales Office	●	●	●	●

Code	Option	Description	ADV200-4	ADV200-DC	ADV200-6	AFE200
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See section 6.2.4 in the Appendix for further information

Bus bar for parallel connection



S72641	OUT-PW-KIT 2P	Bus bar for 2-bridge output power - Includes fer-rite transformer	●			
S726411	OUT-PW-KIT 3P	Bus bar for 3-bridge output power - Includes fer-rite transformer	●			

Pre-charge kit (mandatory)

S726391	PRE CHARGE KIT-AFE-022-4	Pre-load kit for AFE200 22kW				●
S726392	PRE CHARGE KIT-AFE-045-4	Pre-load kit for AFE200 45kW				●
S726401	PRE CHARGE KIT-AFE-132-4	Pre-load kit for AFE200 90kW and 132kW				●
S72647	PRE CHARGE KIT-AFE-160-4	Pre-load kit for AFE200 160kW				●
S726471	PRE CHARGE KIT-AFE-200-4	Pre-load kit for AFE200 200kW				●
S726471 (x 2)	PRE CHARGE KIT-AFE-200-4 (x 2)	Pre-load kit for AFE200 400kW				●
S726472	PRE CHARGE KIT-AFE-355-4	Pre-load kit for AFE200, 250-315-355kW				●
S726472 (x 2)	PRE CHARGE KIT-AFE-355-4 (x 2)	Pre-load kit for AFE200, 500-630-710kW				●
S726472 (x 3)	PRE CHARGE KIT-AFE-355-4 (x 3)	Pre-load kit for AFE200, 900-1000kW				●

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External Braking Unit



Code	Option	Description	ADV200-4	ADV200-DC	ADV200-6	AFE200
S9D55	BUy 1020	Braking unit for 230VAc...480VAc lines In= 20Arms, UL mark	●	●		
S9D56	BUy 1050	Braking unit for 230VAc...480VAc lines In= 50Arms, UL mark	●	●		
S9D57	BUy 1085	Braking unit for 230VAc...480VAc lines In= 85Arms, UL mark	●	●		
S9D30	BUy 1065-6	Braking unit for 690VAc line In= 65Arms			●	

AC/DC power supply units



Code	Option	Description	ADV200-4	ADV200-DC	ADV200-6	AFE200
S9V73	SM32-480-185A	Semi-controlled AC/DC power supply unit (internal pre-loading) - In @ 480Vac = 185A Dimensions (L x H x d - mm): 311mm * 388mm * 270mm Weight: 18 kg		●		
S9V74	SM32-480-280A	Semi-controlled AC/DC power supply unit (internal pre-loading) - In @ 480Vac = 280A Dimensions (L x H x d - mm): 311mm * 388mm * 270mm Weight: 26 kg		●		
S9V75	SM32-480-420A	Semi-controlled AC/DC power supply unit (internal pre-loading) - In @ 480Vac = 420A Dimensions (L x H x d - mm): 311mm * 388mm * 270mm Weight: 30 kg		●		
S9V76	SM32-480-650A	Semi-controlled AC/DC power supply unit (internal pre-loading) - In @ 480Vac = 650A Dimensions (L x H x d - mm): 311mm * 388mm * 305mm Weight: 31 kg		●		
S9V72	SM32-480-1050A	Semi-controlled AC/DC power supply unit (internal pre-loading) - In @ 480Vac = 1,050A Dimensions (L x H x d - mm): 525mm * 554mm * 343mm Weight: 63 kg		●		
S9V71	SM32-480-1500A	Semi-controlled AC/DC power supply unit (internal pre-loading) - In @ 480Vac = 1,500A Dimensions (L x H x d - mm): 551mm * 686mm * 380mm Weight: 85 kg		●		
S9V63X	SM32-480-2000A	Semi-controlled AC/DC power supply unit (internal pre-loading) - In @ 480Vac = 2,000A Dimensions (L x H x d - mm): 500mm * 855mm * 420mm Weight: 75 kg		●		
S9V69	SM32-690-800	AC/DC power supply unit for power ratings of 500kW and 630kW Dimensions (L x H x d - mm [inches]): 500mm [19.69"] * 670mm [26.38"] * 400mm [15.75"] Weight: 49 kg [108.03 lbs]			●	
S9W20	SM32-690-1000A	AC/DC power supply unit for power ratings of 800kW Dimensions (L x H x d - mm [inches]): 500mm [19.69"] * 670mm [26.38"] * 400mm [15.75"] Weight: 49 kg [108.03 lbs]			●	
S9W21	SM32-690-1400A	AC/DC power supply unit for power ratings of 1200kW Dimensions (L x H x d - mm [inches]): 855mm [33.66"] * 670mm [26.38"] * 420mm [16.54"] Weight: 75 kg [165.35lbs]			●	

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Connection via serial line



Code	Option	Description	ADV200-4	ADV200-DC	ADV200-6	AFE200
S533L	OPT – RS485 – ADV	Optoisolator for RS485 for Multidrop connections	●	●	●	●
S50T6	Kit RS485 - PCI COM	Universal kit for RS485 serial line (PCI COM + connection cables)	●	●	●	●
S560T	PCI COM	Universal RS-232 / RS-485 serial interface	●	●	●	●
8S8F59	Shielded cable for PCI 485	RS-485 serial interface cable (L = 5 m)	●	●	●	●
S5A20	USB-RS232 CONVERTER	USB - RS232 serial protocol converter	●	●	●	●

Various



S576L	PTC-D01	Interface for PTC sensor	●	●	●	
S5TT0	KB-ADV Remoting Kit 5m	KB-ADV remoting kit with 5-metre cable	●	●	●	
S5TT1	KB-ADV Remoting Kit 10m	KB-ADV remoting kit with 10-metre cable	●	●	●	
8S860B	Parallel interface signal cable	Connection of parallel drive. L = 1 m. Two quick coupling male MDR connectors at the ends. Size 400...710kW = 1 cable Size 900-1000kW = 2 cables	●	●		
1S3A56	CD-ROM MDPIc	MDPIc development environment for ADV200	●	●	●	
1S9002	CD-ROM Configurator	GF-eXpress + ADV200 Instruction manuals	●	●	●	
1S9004	CD-ROM Configurator	GF-eXpress + AFE200 Instruction manuals				●

Remarks :

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- ➔ We guarantee each customer a high-quality, tailored service backed by a wealth of technical and professional expertise, which makes GEFRAN a reliable, flexible partner capable of providing specialised, global support.

“You can be assured that your plant will be backed by a wealth of professional expertise”



Our pre-sales support includes preliminary technical and commercial advice, with recommendations for professional and economically advantageous solutions. Our aim is to provide innovative products and solutions tailored to suit each individual requirement.



Installation and Start-up

Purchasing a GEFran product provides access to a global package of exclusive services.

GEFRAN has an international team of engineers who are specialised in the installation and commissioning of proprietary drives and control systems. Customers can always rely on fast, professional service and an efficient telephone support line.



After-sales Service

GEFRAN offers a highly professional after-sales service to customers worldwide.

Customers know they can rely on fast, worldwide support, limiting machine downtimes to a minimum without affecting production capacity.



Calendar of courses and education days

Training addresses internal technical and service personnel of the Gefran Group and system maintenance engineers, machine manufacturers and control system designers

- ➔ “Gefran Drive & Motion” training courses are intended to provide industrial automation sector operators with a basic grounding in SIEIDrive DC, AC and Servo-brushless drives.
- ➔ The courses are structured so that participants are able to acquire a general theoretical grounding in drives and include a detailed description of Gefran products covering theoretical/practical use of the drives.



Venue of courses

The courses are held at the Gefran S.p.A. production facility - Drive & Motion Control Unit in Gerezano (Varese), Italy.

For foreign branches, training courses can be organised at other times, directly at the branch or Gefran distributors' facilities.

Education days (on demand)

In addition to scheduled courses, problems and specific aspects of SIEIDrive products can be examined during "Education" days.

These courses, dedicated exclusively to individual requirements, are available on request and must be defined directly with sales staff at Gefran S.p.A.

The duration of "Education" days may vary according to the issues that are dealt with.

Levels

Courses are normally based on three levels of difficulty: level 1 (basic); level 2 (high) and level 3 (advanced) mainly addressing MDPIc application developers.

Frequency and number of participants

The courses planned for 2010 envisage a minimum and maximum number of participants.

The frequency of the courses shown may be changed according to demand.

Reservations

To book a place on these courses, please call us on +39 02 967601 / +39 02 96760500. This service is available at the following times: 9.00 – 12.30 / 13.30 – 17.00 or send an e-mail to: marketing@gefran.com.

Gefran S.p.A. - Drive & Motion Control Unit will book overnight hotel accommodation.





*“ High-level performance,
from the first day onwards ”*

- ➔ Faults must be detected and repaired as soon as possible in order to guarantee continuous operation of industrial production systems.
- ➔ GEFTRAN responds to this important requirement by offering a highly professional after-sales service to cover each step.



Telephone helpline

The Contact Centre helpline is available to deal with your requests and answer your technical queries.

The dedicated helpline operates from 8 am until 8 pm, from Monday to Saturday.

 **+39 02 967 60428**



Online assistance

GEFRAN also operates an online technical service.

We welcome enquiries from end users, installers and project designers. Contact us any time at technoHelp@gefran.com to receive immediate assistance in the form of technical or commercial advice.



ON-SITE assistance

With offices and service centres throughout the world, GEFran guarantees a prompt, reliable service to ensure continuous plant operation.

Repairs are carried out at our works or on-site by skilled technicians.



Inverter Warranty

GEFRAN guarantees the quality and functionality of its products when dispatched and will:

- ➔ replace faulty products with an equivalent or similar product
- or:
- ➔ repair, in good time, any parts that are found to be faulty during the warranty period.



3 years Warranty

WARRANTY terms and conditions

Products to be replaced must be returned in their original packaging or in other adequate or equivalent packaging.

The customer will be responsible for the cost of forwarding the product to GEFran (Drive & Motion Control Unit - Gerenzano (Varese), Italy), while the latter will bear all costs relating to the materials and transport charges to replace all or part of the product.

In case of assistance provided by our technical staff, work may be performed at the GEFran facility.

For repairs carried out on-site at the customer's premises, GEFran guarantees assistance within 48 working hours following receipt of the written request.

Exclusion of WARRANTY

The warranty does not apply in the following cases, in which GEFran declines all responsibility:

- work, modifications or repairs carried out on the customer's own initiative
- use of the product other than for its intended purpose, incorrect use or installation under conditions other than those described in the user guide
- damage caused by foreign bodies (smoke, corrosive substances, etc.) or damage due to unforeseeable circumstances (lightning, overvoltage, damage caused by water, earthquake, fire, war, riots, etc.)
- damage during transportation or in any case occurring after the transfer of risk and damage resulting from incorrect packaging by the customer
- inadequate ventilation
- out-of-pocket expenses (travel, transport, board and lodging) incurred by technical staff in order to carry out repairs at the customer's premises are excluded.

Solutions

GEFRAN system technology

- ➔ GEFran applies its application experience to the design and development of specific automation systems for a broad range of industrial sectors.
- ➔ Innovative technological solutions based on an extensive range of process control products and 45 years of experience, acquired in working alongside leading sector operators.
- ➔ GEFran offers Drive Cabinet Solutions with the standard “**plug and play**” protocol or, upon request, in the “**clean power energy**” featuring the use of Active Front End regenerative power supply units with IGBT technology.
- ➔ “**Custom-built**” single or multiple-drive control systems to individual specifications and hardware and software system architecture for automation systems to control the very latest machines.

Configurations GEFRAN “Drive Cabinet”:



GEFRAN's Power Electronic Drive solutions have always been used with success in the various plastic processing industries.

GEFRAN has acquired a technological know-how in the control of all-electric and hybrid injection presses and of equipment used for blowing, extrusion, film processing, mixing, etc., to consolidate its undisputed leadership in terms of product and sector.



GEFRAN's Power Electronic Drive platforms, used in sheet metal, metal wire and metal processing, guarantee system efficiency and offer energy-saving technology for high power industrial machinery.

With its technological products and dedicated application programs, GEFRAN develops complete control systems based on the highly specialised System Drive platform.



GEFRAN's Power Electronic Drive platforms offer dedicated application solutions for the air-conditioning and water treatment industries. The availability of specific power structures for variable or quadratic loads results in the best possible design in terms of technology and cost-effectiveness.

Clean power technology also guarantees better power control with real energy-saving benefits. Specific SW functions enable control of highly optimised systems.

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Remarks :

If you have any suggestions that you think might help us to improve this catalogue, please do not hesitate to contact us at techdoc@gefran.com.

GEFRAN S.p.A. reserves the right to make changes and variations to products, data, dimensions at any time without the obligation of prior notice.

The data indicated are provided for the sole purpose of describing the product and must not be considered as legally binding characteristics.



Certificate No. FM 38167

Gefran S.p.A. (Drive & Motion Control Unit - Gerenzano, Varese, Italy), operates a Quality Management System which complies with the requirements of ISO 9001:2008



The company operates a UNI EN ISO 9001:2008-certified quality system. Our primary corporate goal is customer satisfaction: it is from this that mutual collaboration, maximum trust in the company and a consolidated long-standing partnership role stem.

Gefran ensures total support through its technical services (from design and start-up right up to onstream assistance), which are more highly specialised than those which large multisector companies are able to offer. GEFran always meets the demands of high-tech users with the certainty of total quality.

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