SIEIDrive Drive & Motion products



Drive Overview









Regenerative power supply unit

Inverter LIFT

Servodrive

Digital DC drive

GEFRAN

English





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.

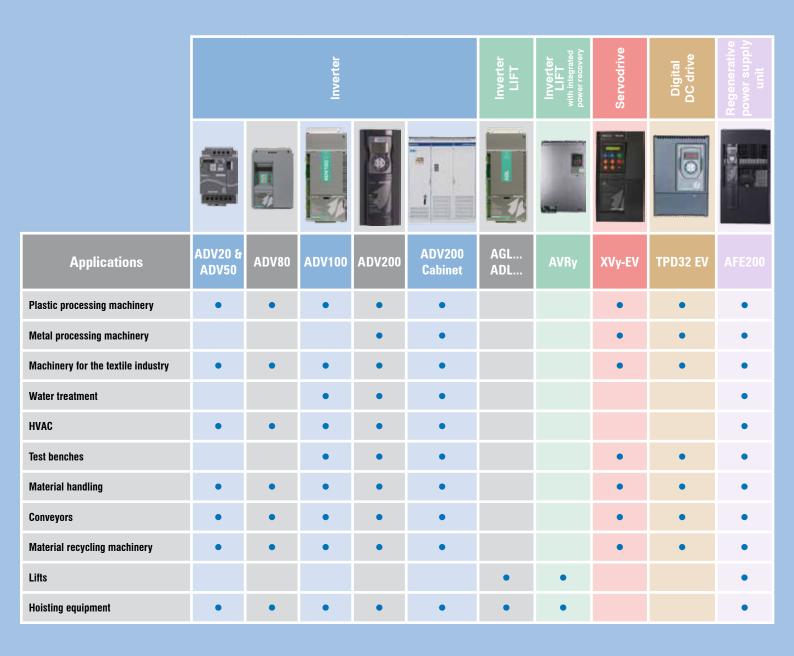


The Gefran Drive & Motion Control Unit, based in Gerenzano (Varese, Italy), designs, develops and manufactures electric drives and power regeneration systems used to control motors and application systems in the main industrial sectors, including: plastics, civil lift engineering, water treatment and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

In particular, by specialising in the civil hoisting-equipment sector and working together with leading lift manufacturers on an international scale, it has contributed to the production of dedicated, well-thoughtout, lines to satisfy the most varied types of systems.





Inverter









Model	ADV20 & ADV50	ADV80	ADV100	ADV200
Control mode	V/f control (ADV20) V/f & Sensorless vector (ADV50)	Torque vector	Field Oriented Control	Field Oriented Control
Power	0.4 3.7kW [0.5 5.0 Hp] (ADV20) 0.4 11kW [0.5 15 Hp] (ADV50)	0.37 22kW (0.5 30Hp)	4 90kW (5 125Hp)	0.75kW1.2MW [11600Hp] (-4 models) 75kW1.2MW [1001600HP] (-6 models) 18.5kW1.2MW [251600HP] (-DC models)
Voltage	1 x 100120 Vac (ADV20), 50/60Hz 1 x 200240 Vac, 50/60Hz 3 x 200240 Vac (ADV50), 50/60Hz 3 x 380480 Vac, 50/60Hz	3 x 400 V –15% 480 V +10%	3 x 230500Vac, 50/60Hz	3 x 380500Vac, 50/60Hz (-4 models) 3 x 690Vca, 50/60Hz (-6 models) 450750Vcc (-DC models)
Speed control (precision)	$0.5\% \\ 0.02\% \text{ with digital encoder (ADV50)}$	0.1%	± 0.01% Motor rated speed ⁽¹⁾	± 0.01% Motor rated speed (1)
Analog inputs	1 (ADV20), 2 (ADV50) (current or voltage)	2 two-pole (Voltage/Current)	2 two-pole (Voltage/Current)	2 two-pole (Voltage/Current)
Analog outputs	ADV20: 1 (PWM) ADV50: 1 (voltage)	2 two-pole (Voltage/Current)	2 two-pole (1 voltage or current, 1 voltage)	2 two-pole (1 voltage or current, 1 voltage)
Digital inputs	6	5	6 (+ 1 Enable)	6 (PNP / NPN)
Digital outputs	1 (relay) - (ADV20) 2 (1 static and 1 relay)- (ADV50)	2 (1 static and 1 relay)	2 (relay)	4 (PNP / NPN), (2 static and 2 relay)
Overload	150% * In (for 1 minute)	150% * In (for 1 minute)	150% * In (1 ' every 5') 180% * In (0.5 " every 5')	Heavy: 150% * In (1' every 5'); 180% * In (0.5" every 5') Light: 110% * In (1' every 5') (3)
Max output frequency	600Hz	500Hz	500Hz	500Hz
EMI filter	Integrated (230 V single-phase and 400-460 V three-phase models)	Optional	Integrated (sizes ≥ 30kW)	Integrated
Choke	Optional	Optional	Integrated DC side (sizes ≥ 30kW)	Integrated DC side (up to 132 kW)
Braking unit	Integrated (ADV50 only): ≥ 1.5kW (230V) ≥ 2.2kW (400V)	Integrated	Integrated (up to 55kW) External optional (≥75kW)	Integrated (up to 55kW) External optional(>75kW)
Options for integration onboard drive	1 (ADV20) 2 (ADV50)	None	2	3
PLC	no (ADV20) yes (ADV50)	по	yes (Motion Drive Programmable Logic Controller, standard IEC61131-3)	yes (Motion Drive Programmable Logic Controller, standard IEC61131-3)
Safety Card	no	no	no	yes (models ADV200SI)
Functions	Self-tuning of motor parameters Auto-torque/slip compensation Automatic Voltage Regulation (AVR) Multispeed selection from 0 to 15 independent ramp times for acceleration/deceleration Jog function and motor potentiometer S-shape accel./decel. curve Overvoltage/overcurrent stall prevention Integrated PID control Energy saving function Restart after temporary power loss Selection of NPN/PNP inputs Fan speed control Configuration of 4 motors.	Self-tuning of motor parameters Predefined and programmable V/f curves 4 independent programmable ramps 16 programmable speeds Auto-capture function Mains loss detection with controlled stop Programmable auto restart PID application block Energy saving function Skipping of critical frequency bands Motor thermal cutout switch Integrated virtual or remote I/O management Areas with programmable logic.	Self-tuning of speed-current-flux regulators and identification of motor data with motor idle or rotating Torque control Quick startup menu Instant overload up to 180% 12t thermal protection for motor Energy saving PID control 16 multispeeds and 4 multiramp settings (linear, jerk, independent and S-shape) Dedicated energy saving function PID with value settings in engineering units Control of electromechanical parking brake mounted on motor SD card kit (ADV100C models) Programming menu in 5 languages.	(3) • Self-tuning of speed-current-flux regulators and identification of motor data with motor idle or rotating • Torque control • Quick startup menu • Instant overload up to 180% • Double overload • 12t thermal protection for motor, drive and braking resistor • 16 programmable multispeeds and 4 multiramp settings (linear, jerk, independent and S-shape) • Motor potentiometer function • Motor auto-capture function • Droop function • Dual motor management • PID function block (application pre-loaded) • Mains loss detection with: controlled stop and/or power optimisation • Variable switching frequency
Serial communication	RS-485 (RJ-45) with Modbus protocol. Optional: DeviceNet, Profibus, LonWorks, CANopen.	RS485 (2), Modbus RTU. -C models: DeviceNet and CANopen integra- ted. External optional: Profibus DP	RS232 ⁽²⁾ , Modbus RTU. Optional: DeviceNet, CANopen.	RS485 ⁽²⁾ , Modbus RTU. Optional: DeviceNet, Profibus DP, CANopen, GDNet, Ethercat.
Protection class	IP20	IP20	IP20	IP20 (IP00 size 7 and parallel)
Markings	CE, UL and cUL	CE, UL and cUL	CE, UL and cUL	CE, UL and cUL

⁽¹⁾ for standard 4-pole motors
(2) the serial port is used for programming (PC) and control (Modbus communication standard in all drives)
(3) for ADV200-...-4 and ADV200-...-DC models. For ADV200-...-6 models see the ADV200 catalogue.

Inverter LIFT







1				
ADV200 Cabinet	Model	AGL50	ADL100	ADL130-1ph
Field Oriented Control	Control mode	Space Vector	Field Oriented Control	Field Oriented Control
90kW1.2MW (1251600HP)	Power	4 - 5.5 - 7.5 kW (5 - 7.5 - 10Hp)	4 22kW (5 30Hp)	1.1 5.5kW (1.5 7.5Hp)
3 x 380500Vac, 50/60Hz (-4 models) 3 x 690Vca, 50/60Hz (-6 models) 450750Vcc (-DC models)	Voltage	3 x 400Vca 480Vca, 50/60Hz	3 x 230Vca, 3 x 400Vca, 3 x 480Vca; 50/60Hz	1 x 230Vca; 50/60Hz
$\pm~0.01\%$ Motor rated speed $^{(1)}$	Motor type	Asynchronous	Asynchronous	Synchronous
2 two-pole (Voltage/Current)	Speed control (precision)	0.5 1%	± 0.01% Motor rated speed (1)	$\pm~0.01\%$ Motor rated speed (1)
2 two-pole	Analog inputs	1	0	0
(1 voltage or current, 1 voltage)	Analog outputs	1	0	0
6 (PNP / NPN)	Digital inputs	6	5	5
4 (PNP / NPN), (2 static and 2 relay)	Digital outputs	3 (1 static and 2 relay)	3 (relay)	3 (relay)
Heavy: 150% * In (1' every 5'); 180% * In (0.5" every 5') Light: 110% * In (1' every 5') (3)	Overload	up to 170% * In	up to 200% In * 10"	up to 200% In * 10"
500Hz	Max output frequency	500Hz	300Hz	300Hz
Optional	EMI filter:	Optional	Optional	Optional
Up to 132 kW: Integrated DC side ≥ 132 kW: Integrated mains choke	Choke	Optional	Optional	no
Optional	Braking unit	Integrated with external resistor	Integrated with external resistor	Integrated with external resistor
_	Port for SD card	no	no	no
3 yes	Dimensions for roomless applications	yes	yes	yes
(Motion Drive Programmable Logic Controller, standard IEC61131-3)	Emergency operation	Optional (with UPS)	Optional (UPS or buffer battery with EMS module)	Optional (UPS or buffer battery with EMS module)
yes	Max system speed	1.0 m/s	1.2 m/s	1.0 m/s
Constant torque and variable torque mode	Type of lift	Geared	Geared	Geared / Gearless
 (skip size function) MDPLC advanced development environment (according to IEC 61131-3) 	Installations	New installation & Retrofitting	New installation & Retrofitting	New installation & Retrofitting
Safe torque off function (ADV200SI models) Programming keypad with 5 complete sets of drive parameters saved Programming menu in 10 languages.	Functions	16 multispeeds 4 multiramps (linear, S-shaped with independent jerk settings) Self-tuning of motor parameters Integrated lift sequences Speed expressed in m/s Management of space calculated by the drive, even offline Management of short floors Motor contactor control Integrated brake control Temperature control for motor and drive.	Speed control (EFC Elevator Floor Control function) Lift sequence Programming with different engineering units Lift mechanical parameters Ramp generation 8 Multispeeds Pre-torque (load compensation) Automatic fan control Emergency single-phase power supply to return to the floor Wizard function for commissioning Programming menu in 5 languages.	Controllo di velocità (Funzione EFC Elevator Floor Control) Sequenza Ascensore Programmazione con differenti unità ingegneristiche Parametri meccanici ascensore Generazione Rampa Multi velocità Pre-torque (Compensazione del carico) Controllo automatico ventilazione Alimentazione monofase d'emergenza per ritorno al piano Menù guidato per messa in servizio Menu di programmazione in 5 lingue.
RS485 ⁽²⁾ , Modbus RTU.				

RS485 (2), Modbus RTU.

IP20

CE, UL and cUL

Serial communication

Protection class

Markings

RS232 (2), Modbus RTU.

IP20

CE, UL and cUL

RS232 (2), Modbus RTU.

IP20

CE, UL and cUL

RS485 ⁽²⁾, Modbus RTU. Optional: DeviceNet, Profibus DP, CANopen, GDNet, Ethercat.

IP23 or IP54/IP55

CE

Inverter LIFT with integrated power recovery





ADL200	AVRy
Field Oriented Control	Field Oriented Control
4 75kW (5 100Hp)	11kW (15Hp), 20kW (27Hp) and 27kW (36Hp) (with high voltage motors) OT 7.5kW (10Hp), 14kW (19Hp) and 17kW (23Hp) (with standard motors)
3 x 230Vca, 3 x 400Vca, 3 x 480Vca; 50/60Hz	3 x 400Vca, 3 x 460Vca, 50/60Hz
Asynchronous / Synchronous	Synchronous
± 0.01% Motor rated speed (1)	± 0.01% Motor rated speed (1)
0	2
0	2
8	6
4 (relay)	4 (2 static and 2 relay)
up to 200% In * 10" (up to 22kW) up to 180% In * 10" (≥ 30kW)	183% In * 10"
300Hz	300Hz
Integrated (EN 12015, first environment, category C2)	Integrated (EN 12015)
Integrated DC side (sizes ≥ 30kW)	Integrated (EN 12016)
Integrated fino a 55kW with external resistor	NO (Regeneration)
yes	no
yes	yes
Optional (UPS or buffer battery with EMS module)	Optional (UPS or buffer battery with EMS module)
4.0 m/s	3.0 m/s
Geared / Gearless	Geared / Gearless
New installation & Retrofitting	New installation & Retrofitting
Speed control (EFC Elevator Floor Control function) Position control (EPC Elevator Positioning Control function) DCP3-4 control Lift sequence Programming with different engineering units Lift mechanical parameters Ramp generation 8 Multispeeds Pre-torque (load compensation) Management of short floors Off-floor detection Automatic calculation of deceleration point Direct landing at the floor Automatic fan control Emergency single-phase power supply to return to the floor Wizard function for commissioning Programming menu in 5 languages.	Integrated AFE regenerative technology Speed control (EFC Elevator Floor Control function) Lift sequence Parameters in linear units Lift mechanical parameters Ramp generation.
RS232 ⁽²⁾ , Modbus RTU, DCP3, DCP4 and CAN	RS485 (2), Modbus RTU. Optional: DeviceNet, Profibus DP, CANopen
IP20	IP20
CE, UL and cUL	CE, UL and cUL

Servodrive



Model XVy-EV XVyA-EV	
1.5315kW	
(2 450Hp)	
3 x 230480Vac, 50/60Hz ≥ 160kW: 3 x 400480Vac, 50/60Hz ≥ 160kW: 3 x 400480Vac, 50/60Hz 3 x 230480Vac, 50/60Hz 3 x 400480Vac, 50/60Hz 4 x 400480Vac, 50/60Hz 3 x 400480Vac, 50/60Hz 3 x 400480Vac, 50/60Hz 3 x 400480Vac, 50/60Hz 3 x 400480Vac, 50/60Hz 4 x 400480Vac, 50/60Hz 3 x 400480Vac, 50/60Hz 3 x 400480Vac, 50/60Hz 4 x 400480Vac, 50/60Hz 3 x 400480Vac, 50/60Hz 4 x 400480Vac, 50/60Hz 4 x 400480Vac, 50/60Hz 5 x 400	
nalog inputs 2 two-pole (Voltage/Current) 2 two-pole (Voltage/Current) 8 igital inputs 8 igital outputs 1 encoder / resolver + 1 auxiliary input / repetition verload 150% * In (60" every 5') 200% * In (0.5" every 5') 200% * In (0.5" every 5') 150% * In (60" every 5') As output equency 450Hz External (optional) External (optional) Integrated (up to 55kW) External optional (> 55kW) External optional (> 55kW) External optional (> 55kW) External optional (> 50kW) External optional (>	
nalog outputs 2 two-pole (Voltage/Current) 1 gital inputs 8 igital outputs 1 encoder / resolver + 1 auxiliary input / repetition 150% * In (60" every 5') 200% * In (0.5" every 5') 150% * In (60" every 5') Integrated (optional) Integrated (up to 55kW) External optional (> 55kW) Integrated (up to 55kW)	
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igital outputs 7 (6 static and 1 relay) 1 encoder / resolver + 1 auxiliary input / repetition 150% * In (60" every 5') 200% * In (0.5" every 5') 150% * In (60" every 5') Isax output equency 450Hz External (optional) hoke External (optional) Integrated (up to 55kW) External optional (> 55kW) External optional (> 55kW) ptions for integra- on onboard drive LC yes (Motion Drive Programmable Logic Controller, standard IEC61131-3) afety Card yes (models XVy-EV+SI) Torque control Speed control Position control Sequential position control (multi-position controller) Electric shaft Asynchronous or brushless motor control	
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Torque control Speed control Position control Sequential position control (multi-position controller) Electric shaft Asynchronous or brushless motor control	
Speed control Position control Sequential position control (multi-position controller) Electric shaft Asynchronous or brushless motor control	
Multiramp function (4) Multispeed function (8) Double overload lxT and 12T Coast through function (power failure) Brake control Flux reduction Motor potentiometer Power loss detection Linear motor control (XVy-EV) Softscope SW oscilloscope	
erial communi- ation RS485 (2), CANopen, Modbus RTU. Optional: DeviceNet, Profibus DP, FastLink, GDNet, Ethercat.	
water-cooled version, Ambient temperature 60°C (XVy-EVEWH/EWHR models).	
Protection class (-C and -CP models available with IP00)	
larkings CE, UL and cUL	

Type Stall torque Number of poles Rated power supply voltage Speed Type of construction Shaft diameter Type of shaft Connections Protection class Feedback devices Brake Fan Oil seal	
Stall torque Number of poles Rated power supply voltage Speed Type of construction Shaft diameter Type of shaft Connections Protection class Feedback devices Brake Fan Oil seal	Model
Number of poles Rated power supply voltage Speed Type of construction Shaft diameter Type of shaft Connections Protection class Feedback devices Brake Fan Oil seal	Туре
Rated power supply voltage Speed Type of construction Shaft diameter Type of shaft Connections Protection class Feedback devices Brake Fan Oil seal	Stall torque
Speed Type of construction Shaft diameter Type of shaft Connections Protection class Feedback devices Brake Fan Oil seal	Number of poles
Type of construction Shaft diameter Type of shaft Connections Protection class Feedback devices Brake Fan Oil seal	
Shaft diameter Type of shaft Connections Protection class Feedback devices Brake Fan Oil seal	Speed
Type of shaft Connections Protection class Feedback devices Brake Fan Oil seal	Type of construction
Connections Protection class Feedback devices Brake Fan Oil seal	Shaft diameter
Protection class Feedback devices Brake Fan Oil seal	Type of shaft
Feedback devices Brake Fan Oil seal	Connections
Brake Fan Oil seal	Protection class
Fan Oil seal	Feedback devices
Oil seal	Brake
	Fan
General Characteristics	Oil seal
	General Characteristics

Markings

Servomotors





SDIVI	эпэ
High inertia brushless motor	Standard brushless motor
from 2 to 442 Nm	from 0.33 to 4.9 Nm
8 poles (SBM series)	4 poles (SHJ 2-3 series) 6 poles (SHJ 4 series)
3 x 230Vac 3 x 400Vac 3 x 460Vac	3 x 400Vac
3000 rpm 4000 rpm 4500 rpm 6000 rpm 8000 rpm	3000 rpm (SHJ 4) 4000 rpm (SHJ 2-3) 5000 rpm (SHJ 4) 8000 rpm (SHJ 2-3)
B5 (Standard) Upon request: B3&B5 F75, F115	B5 (Standard)
19 mm (SBM 5) 24 mm (SBM 7) 42 mm (SBM 8) 48 mm (SBM 9) Special sizes upon request.	9 mm (SHJ 2) 11 mm (SHJ 3) 14 mm (SHJ 4)
Shaft with key (standard); Upon request: shaft without key	Shaft with key (standard); Upon request: shaft without key
Power and signal connectors (SBM 5-7); Box with power terminal strip and signal connectors (SBM 8-9).	Power and signal connectors (SHJ 3-4); Cables (SHJ 2)
IP54 (Standard) Upon request: IP65	IP54 (Standard) Upon request: IP65
2-pole resolver (standard) Upon request: Digital encoder + Hall probe; Absolute encoder with SSI protocol; 5-track SinCos encoder; Encoder with EN-DAT 2.2 protocol	2-pole resolver (standard) Upon request: Digital encoder + Hal probe; 5-track SinCos encoder.
Optional Upon request: motor with safety brake; motor with brake and fan	Optional
Standard in -F models Upon request: motor with fan; motor with brake and fan	no
Standard in SBM 8 and SBM 9 models Other models: upon request	Optional
Class F motor isolation Class H windings Klikon thermal overload at 130°C Balancing: with key Shaft with key Any service position Protection class IP54 Connections: power and signal connector (SBM 5-7), connection box with power terminal strip and signal connector (SBM 8-9) Bearings permanently lubricated	Class F motor isolation Class H windings Klixon thermal overload at 130°C Balancing: with key Shaft with key Any service position B5 flange Protection class IP54 Integrated 2-pole resolver Connections: free cables (SHJ 2), power and signal connector (SHJ 3-4) Bearings permanently lubricated

CE

Digital DC drive



Model	TPD32 EV
Current rating	from 20 A to 3,300A A
Rated AC voltage input	3 x 230 690 Vac, 50/60Hz
Rated DC voltage output	470 Vdc (@ 400 Vac - 2B) 420 Vdc (@ 400 Vac - 4B) 600 Vdc (@ 500 Vac - 2B) 520 Vdc (@ 500 Vac - 4B) 680 Vdc (@ 575 Vac - 2B) 600 Vdc (@ 575 Vac - 4B) 810 Vdc (@ 690 Vac - 2B) 720 Vdc (@ 690 Vac - 4B)
Operating quadrants	2B models = two quadrants; 4B models = four quadrants
Field circuit (U1/V1) — 1ph	230 Vac ±10%, 50/60Hz ±5% 400 Vac ±10%, 50/60Hz ±5% 460 Vac ±10%, 50/60Hz ±5%
Regulation circuit (U2/V2) – 1ph	115 Vac ±15%, 50/60Hz ±5% 230 Vac ±15%, 50/60Hz ±5%
Analog inputs	$\begin{array}{c} \textbf{3 differential} \\ \textbf{(12 programmable bits, selectable for} \pm \textbf{10 VDC,} \\ \textbf{0 - 20 mA, 0 - 10 VDC, 4 - 20 mA)} \end{array}$
Analog outputs	2 (±10Vdc)
Digital inputs	8 (4 fixed + 4 programmable)
Digital outputs	5 (4 static and 1 relay)
Encoder input	2 sinusoidal (5 V power supply) and digital (24 V power supply)
Tachogenerator input	1
Motor thermistor input	1 I ² t algorithm
Overload	programmable up to 200%
EMI filter	External optional
Input choke	External optional
Options for integration onboard drive	3 (I/O, fieldbus, APC200d)
Functions	Self-tuning of current and speed loop Independent and programmable ramps Programmable linear and S-shaped ramp T programmable linear and S-shaped ramp T programmable limits with independent adjustment for each speed direction Current limitation according to speed Speed regulator adaptive gains Independent control of integral gain at zero speed Programmable overload control Jog function Controlled stop and automatic motor restart Motor potentiometer function 12t motor thermal cutout switch PID function Servo diameter control function Speed Draw function Auto-capture function Droop function
Serial communication	RS485 ⁽²⁾ , Modbus RTU. Optional: DeviceNet, Profibus DP, CANopen.
Protection class	IP20 up to 1000 A (2B) and 1050 A (4B) IP20/IP00 for larger sizes
Markings	CE, UL and cUL (TPD32 EVNA series)

Regenerative power supply unit



	The state of the s
Model	AFE200
Control mode	Active Front End technology
Power	22 kW 1.2 MW (301600Hp)
Voltage	380 480 Vac, 3ph
Power factor	≥ 0.99
THD	≤ 3%
Analog inputs	2 two-pole (Voltage/Current)
Analog outputs	2 two-pole (1 voltage or current, 1 voltage)
Digital inputs	6 (PNP/NPN)
Digital outputs	4 (PNP / NPN), (2 static and 2 relay)
Overload	150% * In (1 ' every 5') 180% * In (0.5 " every 5')
EMI filter	External mandatory
Input choke	External mandatory
Options for integra- tion onboard drive	2
Pre-load kit	External mandatory 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.
Functions	"Clean Power" thanks to the unit power factor and reduced harmonic distortion (<3%) 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.
Serial communication	RS485 (2), Modbus RTU. Optional: DeviceNet, Profibus DP, CANopen, GDNet
Protection class	IP20 (IP00 size 7 and parallel)

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