

ENG

PRODUCT RANGE

DRIVES AND MOTION



GEFRAN
BEYOND TECHNOLOGY





GEFRAN

BEYOND TECHNOLOGY

Over fifty years of experience, an organisation highly focused on the customer's needs and constant technological innovation make Gefran a benchmark in the design and production of sensors and components for industrial process automation and control.

Expertise, flexibility and process quality are the factors that distinguish Gefran in the production of integrated tools and systems for specific applications in various industrial fields, with consolidated know-how in the plastics, mobile hydraulics, heating and lift sectors.

Technology, innovation and versatility represent the catalogue's added value in addition to the ability to create specific application solutions in association with the world's leading machine manufacturers.



In addition to foreseeing the market's application needs, Gefran forms partnerships with its customers to find the best way to optimise and boost the performance of various applications.

Gefran products communicate with one another to provide integrated solutions, and can dialogue with devices by other companies thanks to compatibility with numerous fieldbuses.



APPLICATION SECTORS



PLASTIC



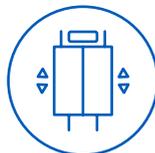
WOOD



CHEMICAL/
PHARMACEUTICAL



METAL



ELEVATORS



TEXTILE



HVAC



WATER
TREATMENT



INDUSTRIAL
HOISTING



TEST BENCHES



LIFTS FOR MINES



GLASS

GUIDE TO CHOICES BY APPLICATION

	INVERTER						
							
	BDI50 & VDI100	ADV200	ADV200 SP	ADV200-LC	ADV200-WA ⁽¹⁾ ADV200-HC ⁽²⁾	ADP200	ADV200 Cabinet
Plastic processing machinery	●	●		●		●	●
Metal processing machinery		●					●
Machinery for the textile industry	●	●					●
Water treatment					● ⁽¹⁾		●
HVAC	●				● ⁽¹⁾		●
Test benches		●					●
Material Handling	●	●					●
Conveyors	●	●					●
Material recycling machinery	●	●					●
Lifts							
Hoisting equipment	●	●					●
Mines		●		●			●
Tunnel drilling		●		●			
Pumping station					● ⁽¹⁾		●
Solar-powered pumping systems			●				
Hoist & Crane System					● ⁽²⁾		

INVERTER LIFT			SERVODRIVE	DIGITAL DC DRIVE	REGENERATIVE POWER SUPPLY UNIT		AC/DC POWER SUPPLY UNIT
							
ADL500	ADL300	VDL200 AGL50	AXV300	TPD32-EV	AFE200	FFE200	SMB200 SM32
			•	•	•	•	•
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INVERTER



Model	BDI50	VDI100	ADV200
Control mode	V/f, Sensorless (SLV)	V/f, V/f+Encoder, SLV, SV, PMSLV, PMSV	Field Oriented Control
Power	0.4 ... 11kW (0.5 ... 15 Hp)	0.75 ... 45kW (1 ... 60 Hp)	0.75kW...1.65MW [100...2213Hp] (-4 models) 75kW...1.65MW [100...2213Hp] (-6 models) 18.5kW...1.65MW [25...2213Hp] (-DC models)
Voltage	1 x 200-240Vac, 50/60Hz (-2M models) 3 x 200-240Vac, 50/60Hz (-2T models) 3 x 380-480Vac, 50/60Hz (-4 models)	3 x 380-480Vac, 50/60Hz	3 x 380...500Vac, 50/60Hz (-4 models) 3 x 500...690Vac, 50/60Hz (-6 models) 450...750Vdc (-DC-4 models) 600...1120Vdc (-DC-6 models)
Motor type	Asynchronous	Asynchronous / Synchronous	Asynchronous / Synchronous
Speed control (Accuracy)	±1% (SLV), ±3% (V/f open-loop)	±1% (SLV), ±0.1% (SV) ±1.5% (V/f open-loop)	± 0.01% Motor rated speed ⁽¹⁾
Analog inputs	2 (Voltage/Current)	2 (Voltage/Current)	2 two-pole (Voltage/Current)
Analog outputs	1 (Voltage)	2 (Voltage/Current)	2 two-pole (1 voltage or current, 1 voltage)
Digital inputs	5, NPN/PNP	8, NPN/PNP	6 (PNP / NPN)
Digital outputs	1 relay	Sizes 1 = 2 + 1 Relay output All other sizes = 1 + 2 Relay outputs	4 (PNP / NPN) , (2 static and 2 relay)
Overload	150% * In (for 60")	HD: 150% * In (for 60"), 200% * In (for 2"); ND: 120% * In (for 60")	Heavy: Asynchronous=150% * In (1' every 5'); 180% * In (for 0.5 sec), Sync.=160% * In (1' every 5'); 200% * In (for 3") Light: Asynchronous and Synchronous = 110% * In (1' every 5') ⁽³⁾
Max output frequency	599Hz	599Hz	500Hz (depending on drive size)
EMI filter	Integrated on -F models	Integrated on -F models	Integrated
Choke	Optional	Optional	Integrated DC side (up to 132 kW)
Braking unit	Built-in on 3ph 400V Class and 3ph 200V Class 7.5kW	Built-in on 0.75-30kW HD	Integrated (up to 55kW) External optional (≥75kW)
Options for integration onboard drive	0	1	3
PLC	no	Integrated (Simple PLC Function)	yes (Motion Drive Programmable Logic Controller, standard IEC61131-3, 5 languages)
Safety Card	no	no	yes (models ADV200-...-SI)
Functions	<ul style="list-style-type: none"> Autotune, 8 preset speeds, Auto-run, PID control, Torque boost, Fault reset, Powerloss ride through, DC-brake, Mechanical brake control, AVR function, Fan control. 	<ul style="list-style-type: none"> Auto-tuning, Zero Servo, Torque Control, Position Control, Droop, Soft-PWM, Over-Voltage Protection, Dynamic Braking, "Autocapture" function, Frequency Traversing, Momentary Power Loss Restart, PID Control, Automatic Torque Compensation, Slip Compensation, RS-485 Communication, Close Loop Control with encoder, Simple PLC Function, 2 Analog Inputs, Torque-Off function, Application Presets 	<ul style="list-style-type: none"> 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 I²T thermal protection for motor, drive and braking resistor 16 programmable multispeeds and 4 multitramp settings (linear, jerk, independent and S-shape) Motor potentiometer function Motor auto-capture function Droop function Dual motor management PID function (application pre-loaded) Mains loss detection with: controlled stop and/or power optimisation Variable switching frequency Speed feedback from Encoder / Resolver through option Hardware
Communication protocols	RS485 Modbus RTU / ASCII, BACnet. Optional: Profibus, DeviceNet, CANopen, TCP/IP	RS485 Modbus RTU / ASCII. Optional: Profibus/CANopen/DeviceNet/TCP-IP	RS485 ⁽²⁾ , Modbus RTU. Optional: DeviceNet, Profibus DP, CANopen®, GDNNet, Ethercat, Industrial Ethernet ⁽⁵⁾ , Profinet
Protection degree	IP20	IP20/NEMA1	IP20 (IP00 size 7 and parallel)
Certification	CE*, cULus (UL508C)	CE*, cULus (UL508C)	CE*, UL and cUL

SLV (vector control open loop), SV (vector control closed loop), PMSLV (vector control open loop for Permanent Magnet Motor), PMSV (vector control closed loop for Permanent Magnet Motor).

* Inverter: Complies with the EC Directive concerning low voltage equipment (Directives LVD 2014/35/EU, EMC 2014/30/EU, RoHS 2011/65/EU)



Model	ADV200 SP	ADV200-LC
Control mode	Field Oriented Control	Field Oriented Control
Power	1.5kW...1.8MW	30 ... 800kW (40 ... 1000Hp)
Voltage	AC: 3 x 380...500Vac, 50/60Hz DC (from photovoltaic panels): 330...800Vdc	3 x 380 ... 500 Vac, 50/60 Hz
Motor type	Asynchronous	Asynchronous / Synchronous
Speed control (Accuracy)	± 0.01% Motor rated speed ⁽¹⁾	± 0.01% Motor rated speed ⁽¹⁾
Analog inputs	2 two-pole (Voltage/Current)	2 two-pole (Voltage/Current)
Analog outputs	2 two-pole (1 voltage or current, 1 voltage)	2 two-pole (1 voltage or current, 1 voltage)
Digital inputs	6 (PNP / NPN)	6 (PNP / NPN)
Digital outputs	4 (PNP / NPN) , (2 static and 2 relay)	4 (PNP / NPN) , (2 static and 2 relay)
Overload	Heavy Duty: Async.=150% * In (1' each 5'), 180% * In (for 0,5") Light Duty: 110% * In (1' each 5') ⁽³⁾	Heavy Duty: Async.=150% * In (1' each 5'), 180% * In (for 0,5"); Sync.=160% * In (1' each 5'), 200% * In (for 3") Light Duty: Async. and Sync.=110% * In (1' each 5') ⁽³⁾
Max output frequency	500Hz	500Hz (sizes 4300 ... 72000), 200Hz (sizes 82500 ... 84000)
EMI filter	Optional external	Integrated
Choke	Integrated choke DC side	Integrated choke DC side (up to 200 kW). External choke inductance mandatory for higher powers.
Braking unit	Integrated (up to 30kW) Optional external (≥37kW)	Integrated (up to 90kW) Optional external (≥110kW)
Options for integration onboard drive	3	3
PLC	yes (Motion Drive Programmable Logic Controller, standard IEC61131-3, 5 languages)	yes (Motion Drive Programmable Logic Controller, standard IEC61131-3, 5 languages)
Safety Card	no	yes (models ADV200-LC-...-SI)
Functions	<ul style="list-style-type: none"> • Integrated MPPT control and optimisation • Dual source control • Double PID • Specific functions for pump control • Optional blocking diode - DC side 	<ul style="list-style-type: none"> • Dissipation with liquid, water, or oil via an innovative cooling system. • Excellent corrosion protection with aluminum cooling pipes and internal separation of electronics and cooling liquid. • Revolutionary drive mounting system: inside electrical panel and with external heat-sink. • Integrated temperature control function to control an external solenoid for drive and liquid-cooled motor. • Braking resistance can be mounted directly on heat-sink (for sizes up to 55 kW). • Integrated humidity sensor with programmable anti condensation function.
Communication protocols	RS485 ⁽²⁾ , Modbus RTU. Opzionale: DeviceNet, Profibus DP, CANopen®, GDNet, Ethercat, Industrial Ethernet ⁽⁵⁾ , Profinet	RS485 ⁽²⁾ , Modbus RTU. Optional: DeviceNet, Profibus DP, CANopen®, GDNet, Ethercat, Industrial Ethernet ⁽⁵⁾ , Profinet
Protection degree	IP20 / IP54 (IP00 size 7 and parallel) (version with externally installed heatsink and turnkey cabinet solution available upon request)	IP00 / IP54 (-E54=Version with mounting rear panel heat sink with IP54 protection rating)
Certification	CE*, UL and cULus	CE*, UL and cULus

(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.

(4) ADV200-WA only.

(5) Compatible to industry standards.

INVERTER



Model	ADV200-WA	ADV200-HC	ADP200
Control mode	Field Oriented Control		Vector control with feedback
Power	1.5kW...1.65MW [100...2213Hp] (WA-4) 75kW...1.2MW (WA-6) 22kW...1.2MW [30...1600Hp] (WA-DC)	0.75kW...1.65MW (HC-4) 75kW...1.65MW (HC-6) 18.5kW...1.65MW (HC-DC)	7.5...75kW (10...100 Hp)
Voltage	3 x 380...500Vac, 50/60Hz (-4 models) 3 x 500...690Vac, 50/60Hz (-6 models) 450...750Vdc (-DC-4 models) 600...1120Vdc (-DC-6 models)		3 x 230-400-480 Vac, 50/60Hz
Motor type	Asynchronous		Synchronous
Speed control (Accuracy)	± 30% motor slip rating (V/f control)	± 0.01% Motor rated speed ⁽¹⁾	±0.01% Motor rated speed Control Range: 1:1500
Analog inputs	2 two-pole (Voltage/Current)		3 AI: Voltage/Current + Motor Protection
Analog outputs	2 two-pole (1 voltage or current, 1 voltage)		1 (Voltage/Current)
Digital inputs	6 (PNP / NPN)		6 + Enable
Digital outputs	4 (PNP / NPN) , (2 static and 2 relay)		2 + 2 relay
Overload	Light: 110% * In (1' every 5') ⁽³⁾ Heavy: 150% * In (1' every 5'); 180% * In (0.5" every 5')		170% * In (for 60"), 200% * In (for 3")
Max output frequency	500Hz (depending on drive size)		300 Hz
EMI filter	Integrated		Integrated on -F models
Choke	Integrated DC side (up to 160 kW)	Integrated DC side (up to 132 kW)	DC side choke: integrated in sizes 30...75kW AC side choke: external optional (sizes 7.5...22kW and 5S550/5S750 models)
Braking unit	Integrated (up to 75kW) External optional (≥90kW)	Integrated (up to 55kW) External optional (≥75kW)	Integrated with external resistor (except ADP200-5750 model), braking torque 150% max
Options for integration onboard drive	3		2
PLC	yes (Motion Drive Programmable Logic Controller, standard IEC61131-3, 5 languages)		PLC with advanced IEC61131-3 programming environment
Safety Card	yes (models ADV200-...-SI)		no
Functions	<ul style="list-style-type: none"> Application Macro for HVAC and Pump management Energy optimization Direct acquisition by PT100, PT1000, NI1000 temperature sensors (with EXP-IO-SEN-...-ADV cards) Cascade control of up to 4 pumps, plus the master device (with EXP-IO-D5R8-ADV card) 4 integrated timers with Real Time Clock Fire and Bypass Mode Two independent PID controllers with autotuning Variable and constant torque operation Tool calculator software for pumps and fans Engineering Units programming 	<ul style="list-style-type: none"> Full management of the mechanical brake Torque proving Joystick Input Multispeed & Multiramp Overtravel Hoist Speed up Low speed zone Anti-Sway Anti -Impact Wide range of encoder and communication cards Option "Active Front End" available. 	<ul style="list-style-type: none"> Self-tuning rotational and stand still of speed-current-flux regulators and motor data identification Torque control Simplified Start-up menu Motor, Drive and Braking resistor I²t thermal protection Multispeed function (16 programmable preset) 4 independent programmable Multi-ramp with jerks Variable switching frequency Motor temperature monitoring PID function block for injection molding machine application Flow and pressure limit control Pressure sensor status control Adaptive Feedforward Automatic switchover between closed-loop speed and pressure control Speed and pressure control loops tuning Pump Rotation direction identification Multipump convergent and divergent control Motor protection through KTy, PTC or klixon.
Communication protocols	RS485 ⁽²⁾ , Modbus RTU. Optional: DeviceNet, LONWORKS [®] ⁽⁴⁾ , BACNet ⁽⁴⁾ , Profibus DP, CANopen [®] , GDNNet, Ethercat, Industrial Ethernet ⁽⁵⁾ , Profinet		RS485 ⁽²⁾ , Modbus RTU CANopen [®] (-C models)
Protection degree	IP20 (IP00 size 7 and parallel)		IP20
Certification	CE*, UL and cUL		CE*, cULus (UL508C)

(1) Riferito a motori standard 4 poli

(2) La porta seriale è utilizzata per la programmazione (PC) e controllo (comunicazione Modbus standard in tutti i drive)

(3) Riferito ai modelli ADV200-...-4 e ADV200-...-DC. Per i modelli ADV200-...-6 fare riferimento al catalogo ADV200.

(4) Solo ADV200-WA.

(5) Compatibile con gli standard di settore.

* Conforme alla direttiva CE sugli apparecchi a bassa tensione (Direttive LVD 2014/35/EU, EMC 2014/30/EU, RoHS 2011/65/EU)



Model	ADV200 Cabinet
Control mode	Field Oriented Control
Power	90kW...1.65MW
Configuration	Ready to use Basic
Voltage	3 x 380...500Vac, 50/60Hz (-4 models) 3 x 500...690Vac, 50/60Hz (-6 models)
Speed control (Accuracy)	$\pm 0.01\%$ Motor rated speed ⁽¹⁾
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	Heavy: Async.=150% * In (1' every 5'); 180% * In (for 0.5"), Sync.=160% * In (1' every 5'); 200% * In (for 3") Light: Async. and Sync.=110% * In (1' every 5') ⁽³⁾
Max output frequency	500Hz (depending on drive size)
EMI filter	yes
Choke	Up to 132 kW: Integrated DC side ≥ 132 kW: Integrated mains choke
Braking unit	Optional
Options for integration onboard drive	3
PLC	yes (Motion Drive Programmable Logic Controller, standard IEC61131-3)
Safety Card	yes (ADV-...-S, AFE-...-S models)
Functions	<ul style="list-style-type: none"> Constant torque and variable torque mode (skip size function) MDPLC advanced development environment (according to IEC 61131-3) Programming keypad with 5 complete sets of drive parameters saved Programming menu in 10 languages.
Communication protocols	RS485 ⁽²⁾ , Modbus RTU. Optional: DeviceNet, Profibus DP, CANopen®, GDNNet, Ethercat, Industrial Ethernet ⁽⁵⁾ , Profinet
Protection degree	IP31 - IP54
Certification	CE*

(1) For standard 4-pole motors

(2) The serial port is used for programming (PC) and control (Modbus communication standard in all drives)

(5) Compatible to industry standards.

INVERTER LIFT



Model	ADL510	ADL530	ADL550
Control mode	Field Oriented Control	Field Oriented Control	Field Oriented Control
Power	4-15kW	4-15kW	4-15kW
Voltage	3 x 400Vac; 50/60Hz	3 x 230Vac, 3 x 400Vac , 3 x 480Vac; 50/60Hz	3 x 230Vac, 3 x 400Vac , 3 x 480Vac; 50/60Hz
Motor type	Asynchronous	Asynchronous / Synchronous	Asynchronous / Synchronous
Speed control (Accuracy)	± 0.01% Motor rated speed ⁽¹⁾	± 0.01% Motor rated speed ⁽¹⁾	± 0.01% Motor rated speed ⁽¹⁾
Analog inputs	1+PTC	1+PTC	1+PTC
Analog outputs	0	0	0
Digital inputs	8 + 1 Enable	8 + 1 Enable	8 + 1 Enable+ 2 Fast
Digital outputs	4 (relay)	4 (relay)	4 (relay)
Overload	183% x 10s	183% x 10s	183% x 10s / 200% x 2s
Max output frequency	300Hz	300Hz	300Hz
EMI filter	Integrated (ADL510-...-F models)	Integrated (ADL530-...-F models)	Integrated (ADL550-...-F models)
Choke	Integrated > 22kW	Integrated > 22kW	Integrated > 22kW
Braking unit	Integrated	Integrated	Integrated
USB port	No	Yes	Yes
Wi-Fi module	No	Optional	Optional
Dimensions for roomless applications	Yes	Yes	Yes
Emergency operation	Battery powered (48-96 Vdc) UPS (230V single-phase)	Battery powered (48-96 Vdc) UPS (230V single-phase)	Battery powered (48-96 Vdc) UPS (230V single-phase)
Max system speed	4.0 m/s	4.0 m/s	4.0 m/s
Type of lift	Geared / Gearless	Geared / Gearless	Geared / Gearless
Installations	New installation & Retrofitting	New installation & Retrofitting	New installation & Retrofitting
Functions	<ul style="list-style-type: none"> Optimized management of emergency battery consumption Sensorless control optimized for asynchronous motors Easily programmed via the PC configurator (GF_DriveLabs) 	<ul style="list-style-type: none"> Optimized management of emergency battery consumption Smooth Emergency CANopen lift 417 Universal multi-encoder card integrated Wireless control through Webapp (with optional Wi-Fi Drive Link external module) USB port for import / export of drive files and language motors selection Sensorless control optimized for asynchronous motors Easily programmed via WebApp (GF_LifTouch) or the PC configurator (GF_DriveLabs). 	<ul style="list-style-type: none"> Calculation of energy savings in regenerative configuration Optimized management of emergency battery consumption Motor with peripheral encoder control Start & Stop (Stand-by feature) Smooth Emergency CANopen lift 417 DCP3 – DCP4 with internal optional card Universal multi-encoder card integrated Wireless control through Webapp (with optional Wi-Fi Drive Link external module) USB port for import / export of drive files and language motors selection Sensorless control optimized for asynchronous motors Safety features: Safe torque off SIL3 (Contactorless), Safe brake test (SBT) and EBC Electronic Brake Control SIL3 Easily programmed via WebApp (GF_LifTouch) or the PC configurator (GF_DriveLabs).
Optional cards	<ul style="list-style-type: none"> I/O Expansion card (EXP-I01-ADL500) DCP3 and DCP4 Protocols card (EXP-DCP-ADL500) 	<ul style="list-style-type: none"> I/O Expansion card (EXP-I01-ADL500) DCP3 and DCP4 Protocols card (EXP-DCP-ADL500) 	<ul style="list-style-type: none"> I/O Expansion card (EXP-I01-ADL500) DCP3 and DCP4 Protocols card (EXP-DCP-ADL500)
Communication protocols	Modbus TCP (RJ45 port), DCP3 and DCP4 (with optional card), CANopen and CANopen Lift DS 417	Modbus TCP (RJ45 port), DCP3 and DCP4 (with optional card), CANopen and CANopen Lift DS 417	Modbus TCP (RJ45 port), DCP3 and DCP4 (with optional card), CANopen and CANopen Lift DS 417
Protection degree	IP20	IP20	IP20
Certification	CE*, cULus (UL508C)	CE*, cULus (UL508C)	CE*, cULus (UL508C)

(1) For standard 4-pole motors

* Complies with the EC Directive concerning low voltage equipment (Directives LVD 2014/35/EU, EMC 2014/30/EU, Lift 2014/33/EU, RoHS 2011/65/EU).



Model	ADL550-ICS	VDL200
Control mode	Field Oriented Control	Field Oriented Control
Power	4-15kW	4 ... 22kW
Voltage	3 x 230Vac, 3 x 400Vac, 3 x 480Vac; 50/60Hz	3 x 230-400Vac, -15%+10%, 50Hz
Motor type	Asynchronous / Synchronous	Asynchronous
Speed control (Accuracy)	± 0.01% Motor rated speed ⁽¹⁾	± 0.01% Motor rated speed ⁽¹⁾
Analog inputs	1+PTC	1
Analog outputs	0	No
Digital inputs	8 + 1 Enable+ 2 Fast	8 + 1 Enable
Digital outputs	4 (relay)	4 (relay)
Overload	183% x 10s / 200% x 2s	Up to 200% In * 10"
Max output frequency	300Hz	300Hz
EMI filter	Integrated (ADL550-ICS-...-F models)	Integrated (VDL200-F models) (EN 12015)
Choke	Integrated > 22kW	DC side choke: external optional AC side choke: external optional
Braking unit	Integrated	Integrated with external resistor
USB port	Yes	No
Wi-Fi module	Optional	No
Dimensions for roomless applications	Yes	Yes
Emergency operation	Battery powered (48-96 Vdc) UPS (230V single-phase)	Optional (UPS single-phase 230V)
Max system speed	4.0 m/s	0.8 m/s
Type of lift	Geared / Gearless	Geared
Installations	New installation & Retrofitting	New installation & Retrofitting
Functions	<ul style="list-style-type: none"> • Calculation of energy savings in regenerative configuration • Optimized management of emergency battery consumption • Motor with peripheral encoder control • Start & Stop (Stand-by feature) • Smooth Emergency • CANopen lift 417 • DCP3 - DCP4 with internal optional card • Universal multi-encoder card integrated • Wireless control through Webapp (with optional Wi-Fi Drive Link external module) • USB port for import / export of drive files and language motors selection • Sensorless control optimized for asynchronous motors • Safety features: Safe torque off SIL3 (Contactorless), Safe brake test (SBT) and EBC Electronic Brake Control SIL3 • Easily programmed via WebApp (GF_LifTouch) or the PC configurator (GF_Drive-Labs). 	<ul style="list-style-type: none"> • Speed control • Short floor management • Lift sequence management • Ramp generation • Management of up to 8 Multispeeds • Load compensation • Configuration via optional keypad (5 languages) • Configuration via PC (GF_eXpress) • Wizard for commissioning • Menu for setting electrical and mechanical parameters • Programming with linear engineering units • DC power supply or emergency single-phase power supply to return to floor with optimized consumption • The drive complies with the monitoring requirements of the correct lifting or dropping of the machine brake according to 5.6.7.3 of EN 81-20:2014 and 5.8 of EN 81-50:2014.
Optional cards	<ul style="list-style-type: none"> • I/O Expansion card (EXP-I01-ADL500) • DCP3 and DCP4 Protocols card (EXP-DCP-ADL500) • ICS-CR (Integrated Control System Car Roof card), ICS-COP (Integrated Control System Car Operator Panel), ICS-CD (Integrated Control System Car Display), ICS-FD (Integrated Control System Floor Display). 	-
Communication protocols	Modbus TCP (RJ45 port), DCP3 and DCP4 (with optional card), CANopen and CANopen Lift DS 417	RS232 ⁽²⁾
Protection degree	IP20	IP20
Certification	CE*, cULus (UL508C)	CE*

(1) For standard 4-pole motors

(2) The serial port is used for programming (PC).

* Complies with the EC Directive concerning low voltage equipment (Directives LVD 2014/35/EU, EMC 2014/30/EU, Lift 2014/33/EU, RoHS 2011/65/EU).

INVERTER LIFT



Model	ADL300-2T	ADL300-2M	ADL300-4
Control mode	Field Oriented Control	Field Oriented Control	Field Oriented Control
Power	5.5 ... 37kW (7.5 ... 50Hp)	1.1 ... 5.5kW (1.5 ... 7.5Hp)	4 ... 75kW (5 ... 100Hp)
Voltage	3 x 200Vac, 3 x 230Vac, 50/60Hz	1 x 230Vac; 50/60Hz	3 x 230Vac, 3 x 400Vac, 3 x 480Vac; 50/60Hz
Motor type	Asynchronous / Synchronous	Asynchronous / Synchronous	Asynchronous / Synchronous
Speed control (Accuracy)	± 0.01% Motor rated speed ⁽¹⁾	± 0.01% Motor rated speed ⁽¹⁾	± 0.01% Motor rated speed ⁽¹⁾
Analog inputs	ADL300B: 0; ADL300A: upon request ^(*)	ADL300B: 0; ADL300A: upon request ^(*)	ADL300B: 0; ADL300A: upon request ^(*)
Analog outputs	ADL300B: 0; ADL300A: upon request ^(*)	ADL300B: 0; ADL300A: upon request ^(*)	ADL300B: 0; ADL300A: upon request ^(*)
Digital inputs	ADL300B: 8 + 1 enable ADL300A: upon request ^(*)	ADL300B: 8 + 1 enable ADL300A: upon request ^(*)	ADL300B: 8 + 1 enable ADL300A: upon request ^(*)
Digital outputs	ADL300B : 4 (relay) ADL300A: upon request ^(*)	ADL300B : 4 (relay) ADL300A: upon request ^(*)	ADL300B : 4 (relay) ADL300A: upon request ^(*)
Overload	Up to 200% In * 10" (up to 11kW) Up to 180% In * 10" (≥ 15kW)	Up to 200% In * 3"	Up to 200% In * 10" (up to 22kW) Up to 180% In * 10" (≥ 30kW)
Max output frequency	300Hz	300Hz	300Hz
EMI filter	Integrated (ADL300.-F models) (EN 12015, EN 61800-3)	Optional external (EN 12015, EN 61800-3)	Integrated (ADL300.-F models) (EN 12015, EN 61800-3)
Choke	DC side choke: integrated (≥ 30kW), external optional on lower sizes AC side choke: external optional	no	DC side choke: integrated (≥ 30kW), external optional on lower sizes AC side choke: external optional
Braking unit	Integrated up to 30kW with external resistor	Integrated with external resistor	Integrated up to 55kW with external resistor
Port for SD card	yes	yes	yes
Dimensions for roomless applications	yes	yes	yes
Emergency operation	Optional (UPS or buffer battery with EMS module)	Optional (UPS or buffer battery with EMS module)	Optional (UPS or buffer battery with EMS module)
Max system speed	4.0 m/s	1.0 m/s	4.0 m/s
Type of lift	Geared / Gearless	Geared / Gearless	Geared / Gearless
Installations	New installation & Retrofitting	New installation & Retrofitting	New installation & Retrofitting
Functions	<p>The ADL300 is available in two configurations:</p> <ul style="list-style-type: none"> ^(*) ADL300A (Advanced): to guarantee maximum programmability, the ADL300A is supplied as standard with no I/O or feedback cards, leaving the customer free to perform the appropriate configuration, choosing from an extensive range of options; ADL300B (Basic) features the following as standard: <ul style="list-style-type: none"> - 8 (Prog. DI) + 1 DI (Enable) + 4 (RO); - channels A+ A-, B+ B-, Z+ Z-, differential line drivers, optoisolated; management of loss of encoder signals; encoder signal repetition; TTL electrical interface; - input for absolute SinCos or Endat / SSI encoder. 	<ul style="list-style-type: none"> - The ADL300 is certified for the use of a single output contactor, in accordance with EN81-20, EN81-50 - Safety Certification for a CONTACTORLESS operations: ADL300 is CERTIFIED as EN81-20, EN81-50 - STO according to EN61800-5-2-2007 - SIL3 - Integrated LED keypad - Speed control - Position control with direct landing at floor (EPC Elevator Positioning Control) - Automatic calculation of deceleration point - Short floor management - Off-floor stop detection - Lift sequence management - Ramp generation - Management of up to 8 Multispeeds 	<ul style="list-style-type: none"> - Load compensation - DCP3/DCP4 protocol communication - CANopen communication - CANopen -Lift (Cia® 417) communication - Configuration via keypad with LEDs - Configuration via optional keypad (5 languages) - Configuration via PC (GF-eXpress) - Wizard for commissioning - Menu for setting electrical and mechanical parameters - Programming with linear engineering units - DC power supply or emergency single-phase power supply to return to floor with optimized consumption - External +24VDC power supply - Regenerative configuration with AFE200 external modules
Communication protocols	RS232 ⁽²⁾ , Modbus RTU, DCP3, DCP4, CANopen and CANopen Lift DS 417 (ADL300B-...-C models).	RS232 ⁽²⁾ , Modbus RTU, DCP3, DCP4, CANopen and CANopen Lift DS 417 (ADL300B-...-C models).	
Protection degree	IP20	IP20	IP20
Certification	CE*, cULus (UL508C)	CE*	CE*, cULus (UL508C)

(1) Riferito a motori standard 4 poli

(2) La porta seriale è utilizzata per la programmazione (PC) e controllo (comunicazione Modbus standard in tutti i drive).

* Conforme alla direttiva CE sugli apparecchi a bassa tensione (Direttive LVD 2014/35/EU, EMC 2014/30/EU, Lift 2014/33/EU, RoHS 2011/65/EU)

SERVO DRIVE



Model	AXV300 multi-drive rack system	Module	Power Supply Module AXV300-SM
Overload I²t	slow : 150% In x 60 sec fast: 200% In x 0,5 sec	Rated input voltage	3-phase 400Vac ±10%, 50/60Hz
		Rated output voltage	from 20 to 230A
Overload IxT	200% In x 10 sec	Output peak current	from 40 to 345A
Functions	MDPlc programming in IEC 61131-3 (on the AXV300-CU module); the MDPlc environment is a tool for developing high-level application architectures.	Rated power	from 11 to 122kW
Operating temperature	-10 ... +40°C; +40°C...+50°C with derating	Peak power	from 22 to 183kW
Protection degree	IP20	Switching frequency	-
Installation position	Pollution degree 2 or lower	External power supply (aux.)	24 Vdc
Altitude	Max 200 metres above sea level; up to 1000 m with no reduction in current	Performance	-
		Vdc bus voltage	565 Vdc
Atmospheric pressure	[kPa] 86 to 106 (class 3K3 according to EN50178)	Standard I/O	-
		I/O expansion	-
Climate	EN 60721-3-3	Encoder expansion	-
Isolation distance	EN 61800-5-1		
Vibration	IEC68-2 Part 6		
Interference immunity	IEC801 Part 2, 3 and 4		
EMC compatibility	EN61800-3		
Safety	STO EN61800-5-2		
Certification	CE		

SERVODRIVE



Module	Axis Modules AXV300 EV-...	Module	Control Unit Module AXV300-CU
Rated input voltage	3-phase 400Vac ±10%, 50/60Hz	Rated input voltage	24 Vdc
Rated output voltage	from 4.5 to 200Arms	Rated output voltage	-
Output peak current	from 13.5 to 320Arms	Output peak current	-
Rated power	from 2.7 to 120kW	Rated power	-
Peak power	from 8.1 to 192kW	Peak power	-
Switching frequency	400Hz (PWM 4kHz) / 450Hz (PWM 8kHz)	Switching frequency	-
External power supply (aux.)	24 Vdc	External power supply (aux.)	-
Vdc bus voltage	600 Vdc ±10%	Vdc bus voltage	-
Performance	<ul style="list-style-type: none"> · Motor control loop (brushless or asynchronous) · Current loop closing: 16 KHz (62.5 µsec) · Speed loop closing: 4 KHz (250 µsec) · Overload I2T: slow (150% In x 60 sec) and fast (200% In x 0.5 sec) · Management of local encoder for closing current/speed loops · Standard IOs connector (4 DO + 2 DI) · High-performance resolvers + repetition (models AXV300 EV-...-R) · Alarm management · Management of GStar communication from/to the AXV300-CU control module. 	Standard I/O	<ul style="list-style-type: none"> · 2 non-opto-isolated analog inputs -10V...+10V · 1 non-opto-isolated analog output -10V...+10V@5mA · 4 opto-isolated digital inputs HTL 0...30V · 2 opto-isolated digital outputs 30V@40mA · 1 opto-isolated digital output 30V@500mA
		Real Time Ethernet (EXP-AXV300-RTE card)	<ul style="list-style-type: none"> · GDNNet real time · Ethercat · Modbus TCP-IP · ...
		I/O expansion (external), max	<ul style="list-style-type: none"> · 64 digital inputs · 64 digital outputs · 8 analog inputs 16 Bit · 8 analog outputs 16 Bit
		Encoder expansion	<ul style="list-style-type: none"> · HTL-TTL encoder input (+5V...+24V) and HTL-TTL encoder repetition (+5V...+24V) · Number of SW-selectable input and output impulses · Integrated encoder power supply unit (+24Vdc...+5Vdc)
		Performance	GStar optical fibre communication with max 8 axes (2 lines x 4 axes) 250µSec cycle

SERVOMOTORS AND DIGITAL DC DRIVE



Model	SBM
Type	Standard Brushless motor
Stall torque	from 0.8 to 442 Nm
Number of poles	8 poles (SBM series)
Rated power supply voltage	3 x 230Vac, 3 x 400Vac, 3 x 460Vac
Speed	3000 rpm, 4000 rpm, 4500 rpm, 6000 rpm, 8000 rpm
Type of construction	B5 (Standard) Upon request: B3&B5; F75, F115
Shaft diameter	11 mm (SBM 3), 19 mm (SBM 5), 24 mm (SBM 7), 42 mm (SBM 8), 48 mm (SBM 9), Special sizes upon request.
Type of shaft	Shaft with key (standard); Upon request: shaft without key
Connections	Power and signal connectors (SBM 3-5-7); Box with power terminal strip and signal connectors (SBM 8-9).
Protection degree	IP54 (Standard) Upon request: IP65
Feedback devices	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
Brake	Optional Upon request: motor with safety brake; mo- tor with brake and fan
Fan	Standard in -F models Upon request: motor with fan; motor with brake and fan
Oil seal	Standard in SBM 8 and SBM 9 models Other models: upon request
General Characteristics	<ul style="list-style-type: none"> • Class F motor isolation • Class H windings • Klixon thermal overload at 130°C • Balancing: with key • Shaft with key • Any service position • Protection degree IP54 • Connections: power and signal connec- tor (SBM 3-5-7), connection box with power terminal strip and signal connec- tor (SBM 8-9) • Bearings permanently lubricated
Certification	CE

Model	TPD32 EV
Current rating	from 20A to 3300A. Higher sizes on request.
Rated AC voltage input	3 x 230Vac -10%... 690Vac+10%, 50/60Hz 3 x 400Vac -10% ... 950Vac+10%, 50/60Hz ⁽²⁾
Rated DC voltage output	270Vdc (@ 230Vac -2B), 240Vdc (@ 230Vac - 4B) 470Vdc (@ 400Vac - 2B), 420Vdc (@ 400Vac - 4B) 600Vdc (@ 500Vac - 2B), 520Vdc (@ 500Vac - 4B) 810Vdc (@ 690Vac - 2B), 720Vdc (@ 690Vac - 4B) 680Vdc (@ 575Vac - 2B), 600Vdc (@ 575Vac - 4B) 1100Vdc (@ 950Vac - 2B), 1000Vdc (@ 950Vac - 4B) ⁽³⁾
Operating quadrants	2B models = two quadrants; 4B models = four quadrants
Bridge configuration	6 Pulses (Available 12 Pulses models)
Field circuit supply (U1/V1) – 1ph	230Vac ±10%, 50/60Hz ±5% 400Vac ±10%, 50/60Hz ±5% 460Vac ±10%, 50/60Hz ±5%
Regulation supply (U2/V2) – 1ph	115Vac ±15%, 50/60Hz ±5% 230Vac ±15%, 50/60Hz ±5%
Analog inputs	3 differential (12bit, programmable, selectable for ±10 Vdc, 0 - 20 mA, 0 - 10 Vdc, 4 - 20 mA)
Analog outputs	2 (±10Vdc)
Control inputs	4 (Enable, Start, Fast Stop, Ext. Fault; 0-24Vdc PNP/NPN, optoisolated)
Digital inputs	4 programmable (0-24Vdc PNP/NPN, optoisolated)
Digital outputs	4 programmable (0-24Vdc PNP/NPN, optoisolated)
Relay output	1: Drive OK (250Vac - 1A) 1: programmable (250Vac - 1A)
Encoder input	1 (TTL Increm. Digit. 5Vdc /HTL 15...24Vdc, ch. A-B-Z, optoisolated) 1 (Incremental Sinusoidal 5Vdc channels A-B-Z) Encoder supply 5.2...6.5Vdc (TTL) - 24Vdc (HTL)
Tachogenerator input	1 (from ± 22,7Vdc to 302,9Vdc)
Motor thermistor input	1 (PTC according to DIN 44081 0 44082)
Overload	I ² t Algorithm programmable
EMI filter	External optional
Input choke	External optional
Options for integration onboard drive	3 (I/O expansion, fieldbus, APC300 technological card)
Functions	<ul style="list-style-type: none"> • Self-tuning of current and speed loop • 5 independent and programmable ramps • Programmable linear and S-shaped ramp • 7 programmable multispeeds • Min/Max speed limits with independent adjustment for each speed direction • Armature 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 • I²T motor thermal cutout switch • PID and Servo diameter control function • "Speed Draw" function • Auto-capture function • Droop function • External brake control • "Test SCR" function • Programmable alarms management.
Communication protocols	RS485 ⁽²⁾ , Modbus RTU Optional: DeviceNet, Profibus DP, CANopen®
Safety function	Not available
Protection degree	IP20 up to 1000 A (...2B) and 1050 A (...4B) IP20/IP00 for larger sizes
Certification	CE, UL and cUL (TPD32 EV-...-NA series).

(2) The serial part is used for programming (PC) and control (Modbus communication standard in all drives).
(3) Special version on request.

REGENERATIVE POWER SUPPLY UNIT



Model	AFE200	FFE200
Control mode	Active Front End technology	Fundamental Front End technology
Power	22 kW...1.65 MW (-4 models) 160 kW ... 1.65 MW (-6 models)	300 kW... 2.1 MW (-4 models) 475 kW ... 3.8 MW (-6 models)
Voltage	3 x 380Vac -15% ... 500Vac +5%, 50/60Hz (-4 models) 3 x 500Vac -10% ... 690Vac +10%, 50/60Hz (-6 models)	3 x 380Vac -15% ... 500Vac +5%, 50/60Hz (-4 models) 3 x 500Vac -10% ... 690Vac +10%, 50/60Hz (-6 models)
Power factor	≥ 0.99	< 0.94
THD	≤ 3% (Considering a network with voltage THD of less than 2%).	< 40%
Analog inputs	2 two-pole (Voltage/Current)	2 two-pole (Voltage/Current)
Analog outputs	2 two-pole (1 voltage or current, 1 voltage)	2 two-pole (1 voltage or current, 1 voltage)
Digital inputs	6 (PNP / NPN)	6 (PNP / NPN)
Digital outputs	4 (PNP / NPN), (2 static and 2 relay)	4 (PNP / NPN), (2 static and 2 relay)
Overload	Heavy duty: 150% * In (60" every 300") Light duty: 110% * In (60" every 300")	Heavy duty: 150% * In (60" every 300") Light duty: 110% * In (60" every 300")
EMI and LCL filters	External mandatory	Optional external EMI mains filter (line inductance mandatory)
Options for integration onboard drive	2	2
Pre-charge 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 fuses, resistors and contactors.	Mandatory. In the FFE200-...+PRC the precharge circuit is integrated
Functions	<ul style="list-style-type: none"> • "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. 	<ul style="list-style-type: none"> • Efficiency enhancement of the internal power module • Limited internal dissipative losses • 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.
Communication protocols	RS485 ⁽²⁾ , Modbus RTU Optional: DeviceNet, Profibus DP, CANopen®, GDNet, EtherCAT, Industrial Ethernet ⁽⁵⁾ , Profinet.	RS485 ⁽²⁾ , Modbus RTU Optional: DeviceNet, Profibus DP, CANopen®, GDNet, EtherCAT, Industrial Ethernet ⁽⁵⁾ , Profinet.
Protection degree	IP20 (IP00 size 7 and parallel)	IP00
Certification	CE, UL and cUL (-4 models / -4A)	CE. UL and cUL (with Power Supply ≤ 600Vac only, (on progress).

(2) The serial port is used for programming (PC) and control (Modbus communication standard in all drives)
(5) Compatible to industry standards.

AC/DC POWER SUPPLY



Model	SBM200	SM32
Type	3-phase AC/DC power supply	3-phase AC/DC power supply
Power	590 kW... 3.8 MW (-4 models) 700 kW ... 6.6 MW (-6 models)	125 kW ... 1.35 MW
Voltage	3 x 230 ... 500 Vac * (-4 models) 3 x 500 ... 690 Vac * (-6 models) * configurable by dip-switch.	3 x 400Vac -15% +10% 3 x 480Vac -15% +10%
Mains frequency	50Hz or 60Hz (configurable by dip-switch).	50Hz or 60Hz (configurable by dip-switch).
THD	< 45%	< 45%
DC-link rated voltage	U _{ln} x 1.35	U _{ln} x 1.35
DC-link rated current	1200 A up to 9000 A	185 A up to 2000 A
Digital inputs	1 (Enable)	1 (Enable)
Digital outputs	2 + 1 Relay outputs (drive OK contact)	2 + 1 Relay outputs (drive OK contact)
Overload	Heavy duty: 150% * I _n (60" each 300") Light duty: 110% * I _n (60" each 300")	Heavy duty: 150% * I _n (60" each 300")
Input Choke	Optional (mandatory)	Optional (mandatory)
Pre-charge choke	Optional (mandatory) for +PRC models	Not necessary
Precharge Kit	External Integrated on -T and +PRC models	Integrated
Functions	(Models -T and +PRC only). Opening of the OK relay in case of: - overtemperature - power supply loss on the regulation card (±15V) - power supply loss - completely discharged DC link	Opening of the OK relay in case of: - overtemperature - power supply loss on the regulation card (±15V) - power supply loss - completely discharged DC link
Protection degree	IP20 casing, excluded top and lower power connections where protection degree is IP00 (according to EN 60529).	IP20 (IP00 size 2000A)
Certification	CE. UL and cUL (with Power Supply ≤ 600Vac only, on progress).	CE

