

SYSTEM INVERTER

SIEIDrive

ADV100

GEFRAN





THE ACKNOWLEDGED INTERNATIONAL LEADER

Thanks to forty years of experience, Gefran is the world leader in the design and production of solutions for **measuring, controlling, and driving industrial production processes**. We have 14 branches in 12 countries and a network of over 80 worldwide distributors.



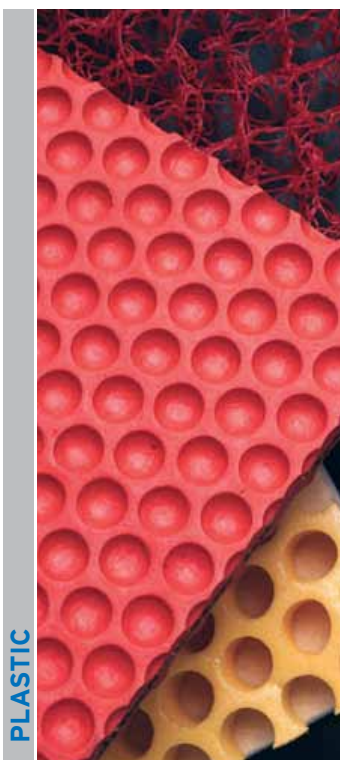
QUALITY AND TECHNOLOGY

Gefran components are a **concentrate of technology**, the result of constant research and of **cooperation with major research centres**.

For this reason, Gefran is synonymous with quality and expertise in the design and production of:

- > **sensors** for measuring main variables such as **temperature, pressure, position and force**
- > **state-of-the-art components and solutions for indication and control**, satisfying demands for optimisation of processes and intelligent management of energy consumption
- > **automation platforms** of various complexities
- > **electronic drives and electric motors** in AC and DC for all industrial automation, HVAC, water treatment, lift, and photovoltaic needs.

Gefran's know-how and experience guarantee continuity and tangible solutions.



PLASTIC



METAL



TEXTILE



INDUSTRIAL HOISTING



PERFORMANCE

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.



SERVICES

PRE AND POST SALES

A team of Gefran experts works with the customer to select the ideal product for its application and to help install and configure devices (technohelp@gefran.com).

TRAINING

Gefran offers a wide range of courses at different levels for the technical-commercial study of the Gefran product range as well as specific courses *on demand*.



TEST BENCHES



MATERIAL HANDLING



CONVEYORS



MATERIAL RECYCLING MACHINERY

ADV100



The GEFAN range of **ADV100** inverters is specifically designed to give the utmost **flexibility of application** to modern automation systems and ensure ease of use, while guaranteeing advanced control capabilities for all asynchronous motors.

It features an intuitive programming environment to enable immediate motor start-up and system functions to implement control architectures for the most advanced application solutions, all with maximum **energy efficiency**.

The ADV100 is based on a **fully modular** structure with a choice of standard configurations, optional cards and integrated accessories such as EMC filters and mains chokes. All these elements offer real advantages in terms of product optimisation and **savings in panel space and wiring costs**, bringing considerable economic benefits.

POWER RANGE

Models	Power (kW)												
	4.0	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90
ADV100	Size 1		Size 2		Size 3			Size 4			Size 5		

WEIGHTS AND DIMENSIONS



Sizes ADV100	Dimensions: Width x Height x Depth		Weight	
	mm	inches	kg	lbs
1040 - 1055	159.2 x 331.1 x 158.7	6.27 x 13.04 x 6.25	5.8	12.8
2075 - 2110	159.2 x 382.1 x 158.7	6.27 x 15.04 x 6.25	7.8	17.2
3150 ... 3220	227.8 x 387 x 178	8.97 x 15.24 x 7.01	10.5	23.15
4300 ... 4450	268 x 612 x 276	10.55 x 24.09 x 10.87	32	70.6
5550...5900	311 x 748 x 330.5	12.24 x 29.4 x 123.01	60	132.3

ADV100 • GENERAL CHARACTERISTICS

Power supply	3 x 230V _{AC} -15% ... 500V _{AC} +5%, 50/60Hz ±2%
Power ratings	from 4kW to 90kW
Voltage	Maximum output 0.98 x V _{in}
Control Mode	Open-loop vector control Vector control with feedback Open loop V/f and V/f with feedback
Overload	150% I _n for 60 seconds every 5 minutes
	180% I _n for 0.5 seconds every 5 minutes
Optional cards	Integration of up to 2 options onboard the drive
Multi-language programming SW	GF-eXpress (5 languages)
Rated protection	Standard IP20
Reference resolution	<ul style="list-style-type: none"> • Digital = 15bit + sign • Analog input = 11-bit + sign • Analog output = 11-bit + sign
Fieldbus management	CANopen / DeviceNet communication (integrated in ADV120-...-C models)

	Control mode	Speed control precision (*)	Range di controllo
Precision	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	Regulation	<ul style="list-style-type: none"> • 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 • RS232 serial line (Modbus RTU)
	Power	<ul style="list-style-type: none"> • Integrated choke DC side (≥ size 4300) • Integrated mains filter (≥ size 4300) • Integrated dynamic braking module (up to size 5550)
Options		Multilingual programming keypad with LCD screen (5 lines x 20 characters) and memory for 5 parameter sets
		Input choke
		Output chokes
		Braking resistors
		Incremental digital encoder feedback card (EXP-DE-IIRIF2-ADL)
		I/O expansion cards
		CANopen / DeviceNet communication (integrated in ADV120-...-C models)
Conformity	Immunity/Emissions	CEE - EN 61800-3
	Safety standards	EN 50178, EN 61800-5-1, UL508C, UL840 degree of pollution 2.
Condizioni Ambientali	Ambient temperature	-10 ...40°C, +40°C...+50°C with derating
	Altitude	Max 2000 m.(up to 1000 m without derating)
Markings		Complies with the EEC directive concerning low voltage equipment
		Complies with directives for the American and Canadian markets.

ADV100



I/O configuration

The ADV100 inverter features a new I/O card, as standard, specially developed for standard application **configuration and to limit costs**; a higher card can be supplied on request for advanced applications:

Standard on ADV110 and ADV120:

Card	Code	Description
EXP-IO-D6A4R2-F-ADL	S580L	<ul style="list-style-type: none"> • 1 enable input (Enable) • 6 digital inputs (DI) • 2 differential analog inputs (AI), 1 voltage ($\pm 10V$, 11 bit + sign) and 1 voltage/current ($\pm 10V$, 11 bit + sign; 0 ... 20 mA, 11 bit). • 2 analog outputs (AO); $\pm 10V$, 11 bit + sign • 2 relay outputs (RO), single contact

Optional cards on request:

EXP-IO-D4-ADL	S567L	1DI (Enable) + 2 (Prog. DI) + 2 (RO)
EXP-IO-D5R3-F-ADL	S5L08	1DI (Enable) + 5 (Prog. DI) + 3 (RO)
EXP-IO-D8R4-ADL	S568L	1DI (Enable) + 8 (Prog. DI) + 4 (RO)
EXP-IO-D8A4R4-ADL	S570L	1DI (Enable) + 8 (Prog. DI) + 2 (AI) + 2 (AO) + 4 (RO)
EXP-IO-D12A2R4-ADL	S569L	1DI (Enable) + 8 (Prog. DI) + 4 (DO) + 2 (AI) + 4 (RO)
EXP-IO-D16R4-ADL	S566L	1DI (Enable) + 12 (Prog. DI) + 4 (DO) + 4 (RO)



Encoder

The ADV100 interfaces with **incremental digital encoders (DE)** for field-oriented vector control (FOC) of asynchronous motors:

Standard on ADV120:

EXP-DE-I1-ADL	S5L36	<ul style="list-style-type: none"> • channels A+ A-, B+ B-, differential line drivers, optoisolated • management of loss of encoder signals • TTL and HTL electrical interface
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Optional card upon request:

EXP-DE-I1R1F2-ADL	S5L04	<ul style="list-style-type: none"> • channels A+ A-, B+ B-, Z+ Z-, differential line drivers, optoisolated • management of loss of encoder signals • encoder signal repetition • TTL and HTL electrical interface
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Special adapter required SD-ADL, cod. S574L.

SD Card

The SD memory card (standard on ADV120-...-C models) makes **saving and loading data and configurations** with the ADV100 very simple.





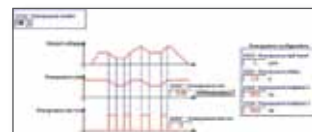
Two self-tuning modes

Self-tuning of motor parameters:

- "Reduced" for faster start-up
- "Complete" to obtain maximum efficiency.

> Energy Saving

The ADV100 has a dedicated function that **decreases** the voltage applied at the motor terminals, and thus **current absorption**, in reduced load conditions.



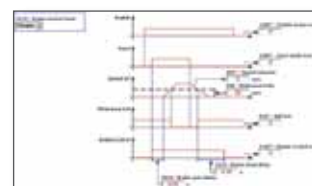
> PID control

The ADV100 **integrates** a complete, easy-to-program, smart **PID controller**, with value settings in engineering units, leakage function and programmable stand-by.



> Brake Control

The SIEIDrive ADV100 can control an **electromechanical parking brake** mounted on the motor.



Power ratings, EMI filter and choke



- Size 1 = from 4 to 5,5 kW (*)
- Size 2 = from 7,5 to 11 kW (*)
- Size 3 = from 15 to 22 kW (*)
- Size 4 = from 30 to 45 kW (**)
- Size 5 = from 55 to 90 kW (***)

(*) Without EMI filter and input choke
 (**) EMI filter (EN 61800-3 : C3 Category / 2nd Environment / 20m Motor cable length) and choke integrated
 (***) EMI filter (EN 61800-3 : C3 Category / 2nd Environment / 30m Motor cable length) and choke integrated

Programming keypad

The optional **K-ADV100** programming keypad (cod. S5P3T) featuring full display of parameters and variables in 5 languages makes the ADV100 extremely intuitive and easy to use.

It has a strip of magnetic material on the back so that it can be attached to the front of the drive or other metal surface (e.g. door of the electrical panel).

- > 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 15 metres (a 70 cm-long connection cable is supplied as standard).

Serial communication

The ADV100 integrates the RS232 serial line with Modbus RTU protocol as standard for peer-to-peer programming with PC.

Wide range of power supplies

A single product for all power supply types, from 230Vac to 500Vac.



ADV100 • CHOOSING THE INVERTER - INPUT AND OUTPUT DATA

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 (see drive instruction manual).

Input Data ADV100					
Sizes ADV100	AC input current for continuous operation In		Overload		In [A]
	@ 230-400 Vac	@ 480 Vac	150 % x In (1' each 5')	180 % x In (0,5" each 5')	
	[Arms]	[Arms]	[A]	[A]	
1040	11	10	14.3	17.1	9.5
1055	16	14	19.5	23.4	13
2075	20	18	24.8	29.7	16.5
2110	28	26	34.5	41.4	23
3150	40	38	46.5	55.8	31
3185	47	44	57	68.4	38
3220	53	49	69	82.8	46
4300	53	50	93	111.6	62
4370	64	60	112.5	135	75
4450	74	71	130.5	156.6	87
5550	100	92	157.5	189	105
5750	143	135	225	270	150
5900	171	165	270	324	180

Output Data ADV100							
Sizes ADV100	Inverter Output for continuous operation [kVA]	Pn mot (Recommended rating, fsw = default)		I2n (Rated output current)		Switching frequency fsw	
		@400 V _{AC} [kW]	@460 V _{AC} [HP]	@400 V _{AC} [A]	@460 V _{AC} [A]	Default [KHz]	Higher [KHz]
1040	7.6	4	5	9.5	8.6	4	6, 8, 10, 12
1055	11.1	5.5	7.5	13	11.7	4	6, 8, 10, 12
2075	13.9	7.5	10	16.5	14.9	4	6, 8, 10, 12
2110	19.4	11	15	23	20.7	4	6, 8, 10, 12
3150	27.7	15	20	31	27.9	4	6, 8, 10, 12
3185	32.6	18.5	25	38	34.2	4	6, 8, 10, 12
3220	36.7	22	30	46	41.4	4	6, 8, 10, 12
4300	36.7	30	40	62	55.8	4	6, 8, 10, 12
4370	44.3	37	50	75	67.5	4	6, 8, 10, 12
4450	51.3	45	60	87	78	4	6, 8
5550	69.3	55	75	105	94.5	4	6, 8
5750	99.1	75	100	150	135	4	6, 8
5900	118.5	90	125	180	162	4	6, 8



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