2008

AC Inverter • V/f & Sensorless Vector

SIEIDrive
ADV50

Big Performance Small Size.

English

GEFRAN

Power range

AC mains supply	Power range ADV50 kW (Hp)							
	0.4 (0.5)	0.75 (1.0)	1.5 (2.0)	2.2 (3.0)	3.7 (5.0)	5.5 (7.5)	7.5 (10.0)	11.0 (15.0)
230 Vac, 1 phase	Size 1		Size 2					
230 Vac, 3 phase	Size 1			Size 2		Size 3		
460 Vac, 3 phase	Size 1			Size 2		Size 3		

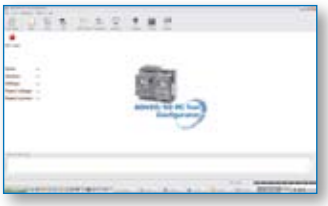
Side-by-side installation

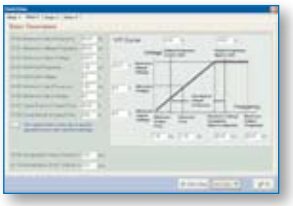
High efficiency cooling and flexible space.

40°C Tamb. max.

ADV50 PC Tool Configurator

ADV50 can be programmed by the use of the PC, integrated functions: programming through parameter list, Integrated oscilloscope, Trend recorder, Saving/Loading and comparing parameters.





Built-in PLC function

Easy to write Soft PLC ADV50 program without additional PLC.

Variable speed AC Motor Drive

Complete protection function

High precision current detection, full overload protection, over-voltage/over-current stall prevention, short-circuit protection, reset after fault, speed search function and motor overheat protection by PTC.

Modular and Compact design

Modular structure and extension with optional card.

Space saving and easy DIN rail mounting with optional DIN rail adapter.

Removable keypad

The standard keypad acts as status monitor. More functions, including parameter modification, RUN/STOP, speed change and status display, via optional keypad.

RFI-Jumper for IT mains

Removable "Y" capacitor for use on IT mains supplies

Flexible extension

Via optional cards, such as I/O card, Relay card, Encoder card and USB card to meet your application requirement.

Built-in EMC filter

(230V 1-phase and 460V 3-phase) To reduce electromagnetic interference efficiently it

Optional fieldbus modules

Provide connection to a variety of networks, including PROFIBUS, DeviceNet, LonWorks and CANopen.

PROFIBUS DeviceNet CANopen

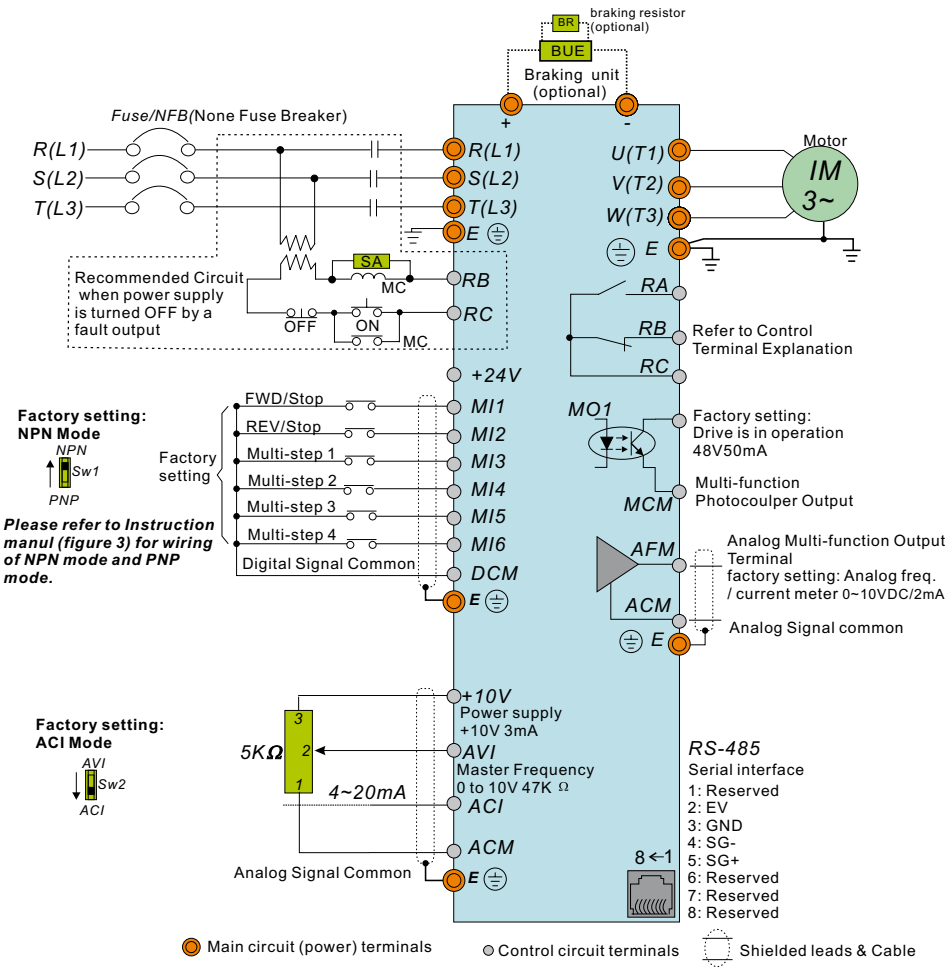
Standard MODBUS protocol

Standard MODBUS Protocol via RS-485 (RJ-45).

Easy DC BUS sharing

Multiple ADV50 can be connected in parallel to share the regenerative braking energy. In this way, over-voltage is prevented and the DC-bus voltage stabilized.

Figure 1 for ADV50-…-…-2T/4F series



*** Single-phase models can only use R(L1), S(L2) to be the power terminals.**
*** Single-phase power cannot be used for 3-phase models.**

External / Internal parts

- Input terminals (R/L1, S/L2, T/L3)
- Digital keypad
- Control board cover
- Output terminals (U/T1, V/T2, W/T3)

- 1: Switch to ON for 50Hz
  2: Switch to ON for free run to stop
  3: Switch to ON for setting frequency sorce to ACI
- Mounting port for extension card
- ACI/AVI current or voltage input
- NPN/PNP
- RS485 port (RJ-45)

Applications

Conveyor and Trasportation Machinery

- Conveyor belt
- Automatic doors
- Roller door
- Small elevator
- Escalator
- Parking device
- X-Y axis of travelling crane

Food Processing

- Dumpling maker
- Food stirrer
- Noodle maker

Machine Tool/Metal Processing Machinery

- Grinder
- Drill
- Small lathe
- Milling machines
- Injection molding (clamp)

Wood working machinery

- 4 side planer
- Woodcarver
- Wood working machine
- Simple cutting machine for wood working
- Spraying machine

HVAC and Pump Systems

- Buildind air conditioner
- Wastewater processing system
- Costant pressure water treatment system
- Water treatment pump
- Agricoltural pump
- Temperature control of middle/large oven
- Air compressor
- Heat exchange fans
- Building water dispenser system
- Dryer's windmill

Paper/Textile Machine

- Round weaver
- Cross weaver
- Ribbon weaver
- Printing press
- Industrial sewing machine
- Knitting machines

Others

- Ironing machine
- Pulverizer
- Treadmil
- Feeder
- Industrial washing machine
- Car washing machine
- Packing machine
- Centrifuge
- Liquid mixer

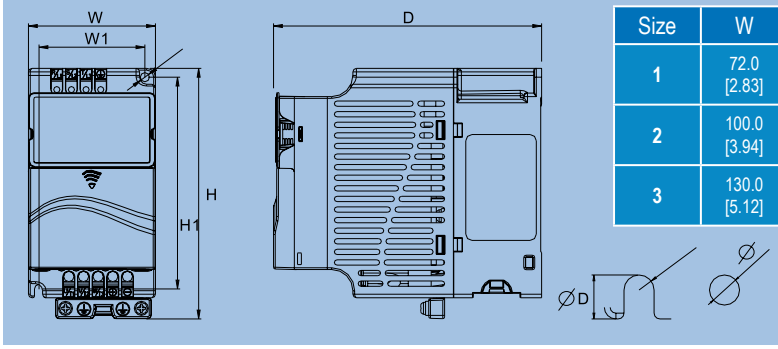
Specifications

Voltage Class			230V Class			
	Model Number ADV50-XXXX		**1004**	**1007**	**2015**	**2022**
	Max. Applicable Motor Output	kW	0.4	0.75	1.5	2.2
	Max. Applicable Motor Output	Hp	0.5	1.0	2.0	3.0
Output Rating	Rated Output Capacity	kVA	1.0	1.6	2.9	4.2
Output Rating	Rated Output Current	A	2.5	4.2	7.5	11.0
Output Rating	Maximum Output Voltage	V	3-Phase Proportional to Input Voltage			
Output Rating	Output Frequency	Hz	0.1~600 Hz			
Output Rating	Carrier Frequency	kHz	1-15			
Input Rating	Rated Input Current	A	6.5	9.5	15.7	24
Input Rating	Rated Voltage/Frequency	V / Hz	Single phase, 200-240V, 50/60Hz			
Input Rating	Voltage Tolerance		± 10% (180~264 V)			
Input Rating	Frequency Tolerance		± 5% (47~63Hz)			
	Cooling Method		Natural Cooling		Fan Cooling	
	Weight	kg	1.1	1.1	1.9	1.9

Voltage Class			230V Class					
	Model Number ADV50-XXXX		**1007**	**1015**	**2022**	**2037**	**3055**	**3075**
	Max. Applicable Motor Output	kW	0.75	1.5	2.2	3.7	5.5	7.5
	Max. Applicable Motor Output	Hp	1.0	2.0	3.0	5.0	7.5	10
Output Rating	Rated Output Capacity	kVA	1.6	2.9	4.2	6.0	9.5	12.5
Output Rating	Rated Output Current	A	4.2	7.5	11.0	17	25	33
Output Rating	Maximum Output Voltage	V	3-Phase Proportional to Input Voltage					
Output Rating	Output Frequency	Hz	0.1~600 Hz					
Output Rating	Carrier Frequency	kHz	1-15					
Input Rating	Rated Input Current (1-phase)	A	5.1	9	15	20.6	26	34
Input Rating	Rated Voltage/Frequency	V / Hz	3-phase, 200-240 V, 50/60Hz					
Input Rating	Voltage Tolerance		±10%(180~264 V)					
Input Rating	Frequency Tolerance		± 5% (47~63Hz)					
	Cooling Method		Natural Cooling	Fan Cooling				
	Weight	kg	1.1	1.2	1.9	1.9	3.5	3.5

Voltage Class			460V Class							
	Model Number ADV50-XXXX		**1004**	**1007**	**1015**	**2022**	**2037**	**3055**	**3075**	**3110**
	Max. Applicable Motor Output	kW	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11
	Max. Applicable Motor Output	Hp	0.5	1.0	2.0	3.0	5.0	7.5	10	15
Output Rating	Rated Output Capacity	kVA	1.2	2.0	3.3	4.4	6.8	9.9	13.7	18.3
Output Rating	Rated Output Current	A	1.5	2.5	4.2	5.5	8.2	13	18	24
Output Rating	Maximum Output Voltage	V	3-Phase Proportional to Input Voltage							
Output Rating	Output Frequency	Hz	0.1~600 Hz							
Output Rating	Carrier Frequency	kHz	1-15							
Input Rating	Rated Input Current	A	1.8	3.2	4.3	7.1	11.2	14	19	26
Input Rating	Rated Voltage/Frequency	V / Hz	3-phase, 380-480V, 50/60Hz							
Input Rating	Voltage Tolerance		±10% (342~528V)							
Input Rating	Frequency Tolerance		± 5% (47~63Hz)							
	Cooling Method		Natural Cooling		Fan Cooling					
	Weight	kg	1.2	1.2	1.2	1.9	1.9	4.2	4.2	4.2

Dimensions - mm [inches]



Size	W	W1	H	H1	D	Ø	Ø D
1	72.0 [2.83]	60.0 [2.36]	142.0 [5.59]	120.0 [4.72]	152.0 [5.98]	5.2 [0.04]	7.6 [0.06]
2	100.0 [3.94]	89.0 [3.50]	174.0 [6.86]	162.0 [6.38]	152.0 [5.98]	5.5 [0.22]	9.3 [0.36]
3	130.0 [5.12]	116.0 [4.57]	260.0 [10.24]	246.0 [9.70]	169.2 [6.66]	5.5 [0.22]	9.8 [0.38]

Variable speed AC Motor Drive

General Specifications			
Control Characteristics	Control System		V/f or sensorless control with SPWM modulation (Sinusoidal Pulse Width Modulation)
	Frequency Setting Resolution		0.01Hz
	Output Frequency Resolution		0.01Hz
	Torque Characteristics		Including the auto-torque/auto-slip compensation; starting torque can be 150% at 3.0Hz
	Overload Endurance		150% of rated current for 1 minute
	Skip Frequency		Three zones, setting range 0.1-600Hz
	Accel/Decel Time		0.1 to 600 seconds (2 Independent settings for Accel/Decel time)
	Stall Prevention Level		Setting 20 to 250% of rated current
	DC Braking		Operation frequency 0.1-600.0Hz, output 0-100% rated current Start time 0-60 seconds, stop time 0-60 seconds
	Regenerated Braking Torque		Approx. 20% (up to 125% possible with optional brake resistor or externally mounted brake unit)
	V/f Pattern		Adjustable V/f pattern
Operating Characteristics	Frequency Setting	Keypad	Setting by ▲ ▼
		External Signal	Potentiometer-5kΩ/0.5W, 0 to +10VDC, 4 to 20mA, RS-485 interface; Multi-function Inputs 3 to 9 (15 steps, Jog, up/down)
	Operation Setting Signal	Keypad	Set by RUN and STOP
		External Signal	2 wires/3 wires (MI1, MI2, MI3), JOG operation, RS-485 serial interface (MODBUS), programmable logic controller
	Multi-function Input Signal		Multispeed selection 0 to 15, Jog, accel/decel inhibit, 2 accel/decel switches, counter, external Base Block, ACI/AVI selections, driver reset, UP/DOWN key settings, NPN/PNP input selection
	Multi-function Output Indication		AC drive operating, frequency attained, non-zero frequancy, Base Block, fault indication, local/remote indication, drive is ready, overheat alarm, emergency stop and status selections of input terminals (NC/NO)
	Analog Output Signal		Output frequency/current
	Alarm Output Contact		Contact will be On when drive malfunctions (1 Form C/change-over contact and 1 open collector output for standard type)
	Operation Functions		Built-in PLC, AVR, accel/decel S-Curve, over-voltage/over-current stall prevention, 5 fault records, reverse inhibition, momentary power loss restart, DC braking, auto torque/slip compensation, auto tuning, adjustable carrier frequency, output frequency limits, parameter lock/reset, vector control, PID control, external counter, MODBUS communication, abnormal reset, abnormal re-start, power-saving, fan control, sleep/wake frequency, 1st/2nd frequency source selections, 1st/2nd frequency source combination, NPN/PNP selection. Parameters for motor 0 to motor 3, DEB and OOB (Out Of Balance Detection), for washing machine (fw 1.11)
	Protection Functions		Over voltage, over current, under voltage, external fault, overload, ground fault, overheating, electronic thermal, IGBT short circuit, PTC
	Display Keypad (optional)		6-key, 7-segment LED with 4-digit, 5 status LEDs, master frequency, output frequency, output current, custom units, parameter values for setup and lock, faults, RUN, STOP, RESET, FWD/REV
	Built-in EMC Filter		EN61800-3:2004 : 2nd Environment, Category 3, carrier frequency ≤8kHz, motor cable lengths ≤15m
Enviromental Conditions	Enclosure Rating		IP20
	Pollution Degree		2
	Installation Location		Altitude 1,000 m or lower, keep from corrosive gasses, liquid and dust
	Ambient Temperature		-10°C to 50°C (40°C for side-by-side mounting), non-condensing and not frozen
	Storage/ Transportation Temperature		-20 °C to 60 °C
	Ambient Humidity		Below 90% RH (non-condensing)
	Vibration		9.80665m/s^2 (1G) less than 20Hz, 5.88m/s^2 (0.6G) at 20 to 50Hz
	Approvals		CE UL cULus

GEFRAN S.p.A. has a policy of the continuous improvement of performance and range of our products and therefore the Company retains the right to modify products, data and dimensions without notice. Although the data and information contained in this document is as accurate as we can make it, it is intended to be used for product description purposes only and must not be interpreted as being legally declared specifications.

Model explanation

ADV50 1007 - XXX - 2T

- Drive: ADV50 series
- Mechanical drive sizes: 1 = size 1 (frame A); 2 = size 2 (frame B); 3 = size 3 (frame C)
- Drive powers, in kW: 004 = 0.4 kW; 007 = 0.75 kW; 015 = 1.5 kW; 022 = 2.2 kW; 037 = 3.7 kW; 055 = 5.5 kW; 075 = 7.5 kW; 110 = 11.0 kW
- Keypad: X = not included; K = included
- Braking unit: X = not included; B = included
- Software: X = standard
- Rated voltage: 2M=230Vac, 1ph; 2T=230Vac, 3ph; 4=400-460Vac, 3ph
- EMI Filter: F = included; = not incl.

Drive models & codes

Models	Code	Description
230V Class - Single phase		
ADV50-1004-XXX-2MF	S6D20	Size 1 - 0.4 kW - No keypad - EMC Filter included
ADV50-1007-XXX-2MF	S6D21	Size 1 - 0.75 kW - No keypad - EMC Filter included
ADV50-2015-XBX-2MF	S6D22	Size 2 - 1.5 kW - No keypad - EMC Filter included
ADV50-2022-XBX-2MF	S6D23	Size 2 - 2.2 kW - No keypad - EMC Filter included
230V Class - Three phase		
ADV50-1007-XXX-2T	S6D25	Size 1 - 0.75 kW - No keypad
ADV50-1015-XXX-2T	S6D26	Size 1 - 1.5 kW - No keypad
ADV50-2022-XBX-2T	S6D27	Size 2 - 2.2 kW - No keypad
ADV50-2037-XBX-2T	S6D28	Size 2 - 3.7 kW - No keypad
ADV50-3055-XBX-2T	S6D29	Size 3 - 5.5 kW - No keypad
ADV50-3075-XBX-2T	S6D30	Size 3 - 7.5 kW - No keypad
400-460V Class - Three phase		
ADV50-1004-XXX-4F	S6D31	Size 1 - 0.4 kW - No keypad - EMC Filter included
ADV50-1007-XXX-4F	S6D32	Size 1 - 0.75 kW - No keypad - EMC Filter included
ADV50-1015-XXX-4F	S6D33	Size 1 - 1.5 kW - No keypad - EMC Filter included
ADV50-2022-XBX-4F	S6D34	Size 2 - 2.2 kW - No keypad - EMC Filter included
ADV50-2037-XBX-4F	S6D35	Size 2 - 3.7 kW - No keypad - EMC Filter included
ADV50-3055-XBX-4F	S6D36	Size 3 - 5.5 kW - No keypad - EMC Filter included
ADV50-3075-XBX-4F	S6D37	Size 3 - 7.5 kW - No keypad - EMC Filter included
ADV50-3110-XBX-4F	S6D38	Size 3 - 11 kW - No keypad - EMC Filter included

Accessories & Options

	Models	Code	Description
	KB-ADV50	S6D56	Display keypad (6-key, 7-segment LED with 4-digit)
	EXP-D6-ADV50	S6D59	Digital I/O Expansion card: 3 Digital PNP/NPN inputs, 3 digital NPN outputs
	USB-485-ADV20/50	S6D65	USB-RS485 RJ45 Converter
	EXP-DN-ADV20/50	S6D50	DeviceNet module
	EXP-PDP-ADV20/50	S6D52	Profibus module
	EXP-CAN-ADV20/50	S6D53	CANopen module

	Models	Code	Description
	KIT DIN ADV20-SA	S6D57	DIN-rail adapter for ADV50 size 1
	KIT DIN ADV20-SB	S6D58	DIN-rail adapter for ADV50 size 2
	KIT EMC ADV20/50	S6D54	Earthing plate
	BU-2-ADV20/50	S6D70	Braking Unit 1.5kW 230V series
	BU-4-ADV20/50	S6D71	Braking Unit 1.5kW 400V series
	Cable 2mt ADV50	S6D82	Standard keypad extension cable 2 mt

Others options (on request only)

Models	Code	Description
EXP-A4-ADV50	S6D62	I/O Expansion card (2 AI / 2 AO)
EXP-R2-ADV50	S6D60	2 Relays expansion card
EXP-R3-ADV50	S6D61	3 Relays expansion card
EXP-ENC-ADV50	S6D63	Encoder Expansion card (5-24V)
EXP-USB-ADV50	S6D64	USB 1.1 Expansion card
EXP-LWK-ADV20/50	S6D51	LonWorks module
BU-2A-ADV20/50	S6D72	Braking Unit 3.7kW 230V series
BU-4A-ADV20/50	S6D73	Braking Unit 3.7kW 400V series

Models	Code	Description
RF-OUT-ADV20/50	S6D67	Zero Phase Reactor
Memory KB-ADV20/50	S6D66	Digital Keypad for parameters copy

Braking Resistors

The table shows the combinations of braking resistors that can be used with internal braking units and with any external braking units (if not integrated). Values for standard resistors refer to a typical braking duty cycle of 10%.

Models	Brake Unit Model (No. Units)	Brake Resistors Model Code (No. Units)			Brake Res. Dimensions Width x Height x Depth (Weigth)
230V Class					
ADV50-1004-XXX-2MF	BU-2-ADV20/50 (1)	RF220T 250R	S8T0CP	(1)	300 x 27 x 36 mm (500 g)
ADV50-1007-XXX-2MF/2T	BU-2-ADV20/50 (1)	RF220T 150R	S8T0CQ	(1)	300 x 27 x 36 mm (500 g)
ADV50-2015-XBX-2MF	*Internal Braking Unit*	RF300DT100R	S8T0CB	(1)	260 x 47 x 106 mm (1400 g)
ADV50-1015-XXX-2T	BU-2-ADV20/50 (1)	RF300DT100R	S8T0CB	(1)	260 x 47 x 106 mm (1400 g)
ADV50-2022-XBX-2MF/2T	*Internal Braking Unit*	RF300DT 68R	S8T0CS	(1)	260 x 47 x 106 mm (1400 g)
ADV50-3037-XBX-2T	*Internal Braking Unit*	RFPD750DT 45R	S8T0CV	(1)	200 x 70 x 106 mm (1700 g)
ADV50-3055-XBX-2T	*Internal Braking Unit*	RFPD750DT 38R	S8T0CU	(1)	200 x 70 x 106 mm (1700 g)
ADV50-3075-XBX-2T	*Internal Braking Unit*	RFPD750DT 26R	S8T0CZ	(1)	200 x 70 x 106 mm (1700 g)
460V Class					
ADV50-1004-XXX-4F	BU-4-ADV20/50 (1)	RF300DT400R	S8T0CR	(1)	260 x 47 x 106 mm (1400 g)
ADV50-1007-XXX-4F	BU-4-ADV20/50 (1)	RF300DT400R	S8T0CR	(1)	260 x 47 x 106 mm (1400 g)
ADV50-1015-XXX-4F	BU-4-ADV20/50 (1)	RF300DT 200R	S8T1DB	(1)	300 x 27 x 36 mm (500 g)
ADV50-2022-XBX-4F	*Internal Braking Unit*	RF300DT 150R	S8T0CT	(1)	260 x 47 x 106 mm (1400 g)
ADV50-2037-XBX-4F	*Internal Braking Unit*	RFPD750DT 100R	S8SY4	(1)	200 x 70 x 106 mm (1700 g)
ADV50-3055-XBX-4F	*Internal Braking Unit*	RFPD750DT 100R	S8SY4	(1)	200 x 70 x 106 mm (1700 g)
ADV50-3075-XBX-4F	*Internal Braking Unit*	RFPD750DT 80R	S8T0CD	(1)	200 x 70 x 106 mm (1700 g)
ADV50-3110-XBX-4F	*Internal Braking Unit*	RFPD1100DT 55R	S8T1DA	(1)	320 x 70 x 106 mm (2700 g)

Fuses

Following table shows the suggested fuses matching. Those fuses are not available in Gefran.

Models	Europe	America
	Fuse current (A) - Suggested type	Bussmann P/N (UL 508C)
230V Class		
ADV50-1007-XXX-2T	8 A , gR type	JJN-10
ADV50-1004-XXX-2MF	10 A , gR type	JJN-15
ADV50-1015-XXX-2T	16 A , gR type	JJN-20
ADV50-1007-XXX-2MF	16 A , gR type	JJN-20
ADV50-2022-XBX-2T	25 A , gR type	JJN-30
ADV50-2015-XBX-2MF	32 A , gR type	JJN-40
ADV50-2037-XBX-2T	32 A , gR type	JJN-40
ADV50-2022-XBX-2MF	40 A , gR type	JJN-50
ADV50-3055-XBX-2T	40 A , gR type	JJN-50
ADV50-3075-XBX-2T	50 A , gR type	JJN-60
460V Class		
ADV50-1004-XXX-4F	6 A , gR type	JJS-6
ADV50-1007-XXX-4F	6 A , gR type	JJS-6
ADV50-1015-XXX-4F	8 A , gR type	JJS-10
ADV50-2022-XBX-4F	12 A , gR type	JJS-15
ADV50-2037-XBX-4F	20 A , gR type	JJS-20
ADV50-3055-XBX-4F	25 A , gR type	JJS-30
ADV50-3075-XBX-4F	32 A , gR type	JJS-40
ADV50-3110-XBX-4F	40 A , gR type	JJS-50

Drive & Motion Control Unit

Inverters

ADV20
- V/f
- 0.4... 3.7 kW
- 110...120 Vac, 1ph
- 200...240 Vac, 1ph
- 380...480 Vac, 3ph

ADV50
- V/f & Sensorless Vector
- 0.4... 11 kW
- 200...240 Vac, 1ph
- 200...240 Vac, 3ph
- 380...480 Vac, 3ph

ADV200
- Vector Field Oriented
- 0.75... 45 kW
- 400 ... 480 Vac, 3ph

AGy-EV
- Torque Vector
- 0.75 ... 200 kW
- 230 ... 575 Vac, 3ph

AVy
- Flux Vector
- 0.75 ... 630 kW
- 230 ... 690 Vac, 3ph

Inverters LIFT

AVMs
- Roomless applications
- Speed range up to 3m/s
- Geared and gearless
- From 5.5kW (7.5Hp) to 18.5kW (25Hp)

AVRy
- Built-in power recovery
- Speed range up to 5m/s and beyond
- Gearless
- From 5.5 (7.5Hp) to 15kW (20Hp)

Lift Drive System

System complete with:
- AVyL or AGyL drive
- Internal EMC filter
- Internal DC choke
- Internal Output contactors
- Emergency supply battery

AGy LIFT
- Sensorless Vector
- Speed range up to 1.5m/s with closed loop
- New installation and Retrofitting
- 0.75 ... 160 kW

AVy LIFT
- Flux Vector
- Speed range up to 5m/s and beyond
- New installation and Retrofitting
- 0.75 ... 160 kW

Brushless

XVy-EV Servodrive
- Brushless and Asynchronous
- 1.5 ... 315 kW (2 ... 450 Hp)
- 230 ... 480 Vac, 3ph

SHJ Servomotors
- 230Vac and 400Vac
- 3000, 4000, 4500, 6000, 8000 rpm
- from 0.33 to 3.8Nm

SBM Servomotors
- 400Vac
- 1500, 2000, 3000 and 4000 rpm
- from 2 to 442Nm

Digital DC

TPD32
- 20 A ... 4800 A (2 and 4 quadrants)
- 230 ... 690 Vac, 3ph

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