2010

AC Inverter • Compact V/f

SIEIDrive
ADV20



Big Performance Small Size.

English

GEFRAN

Power range

AC mains supply	Power range ADV20 **kW** (Hp)				
	0.4 (0.5)	**0.75** (1.0)	**1.5** (2.0)	**2.2** (3.0)	**3.7** (5.0)
115 Vac, 1 phase	**Size 1**	**Size 2**			
230 Vac, 1 phase	**Size 1**		**Size 2**		
460 Vac, 3 phase	**Size 1**		**Size 2**		

Side-by-side installation

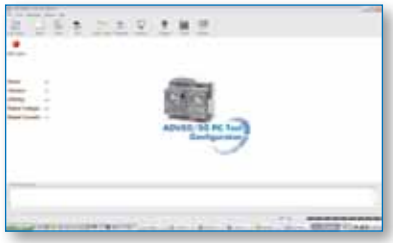
High efficiency cooling and flexible space.

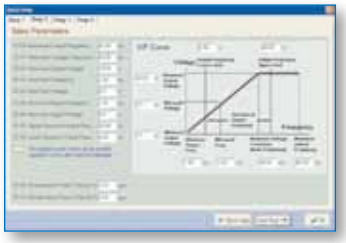


40°C Tamb. max.

ADV20 PC Tool Configurator

ADV20 can be programmed by the use of the PC, integrated functions: programming through parameter list, Integrated oscilloscope, Trend recorder, Saving/ Loading and comparing parameters.





Variable speed AC Motor Drive

Compact design

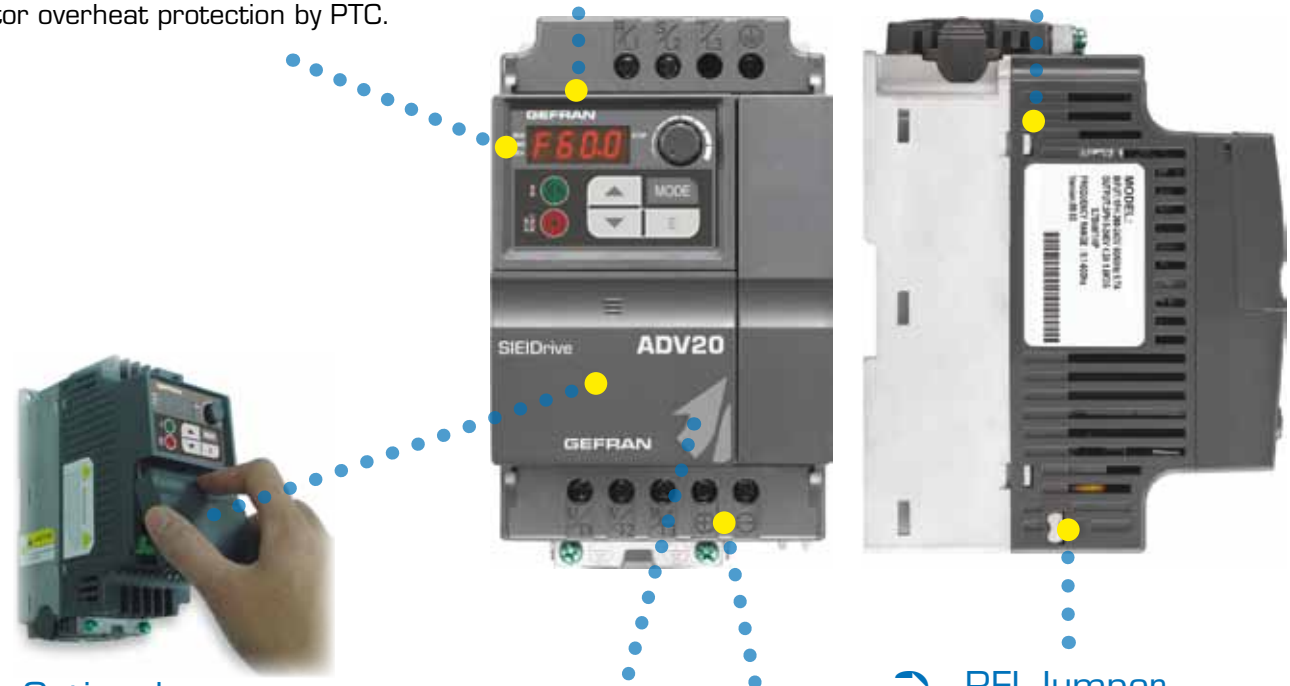
Space saving and easy DIN rail mounting with DIN rail adapter (Built in size 2, Optional for Size 1).

Built-in EMC filter

On 230V 1-phase and 400-460V 3-phase models. To reduce electro-magnetic interference efficiently it was applied EN61800-3.

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.



Optional fieldbus modules

Provide connection to a variety of networks, including PROFI-BUS, DeviceNet, LonWorks and CANopen®.

PROFIBUS DeviceNet CANopen



RFI-Jumper for IT mains

Removable "Y" capacitor for use on IT mains supplies

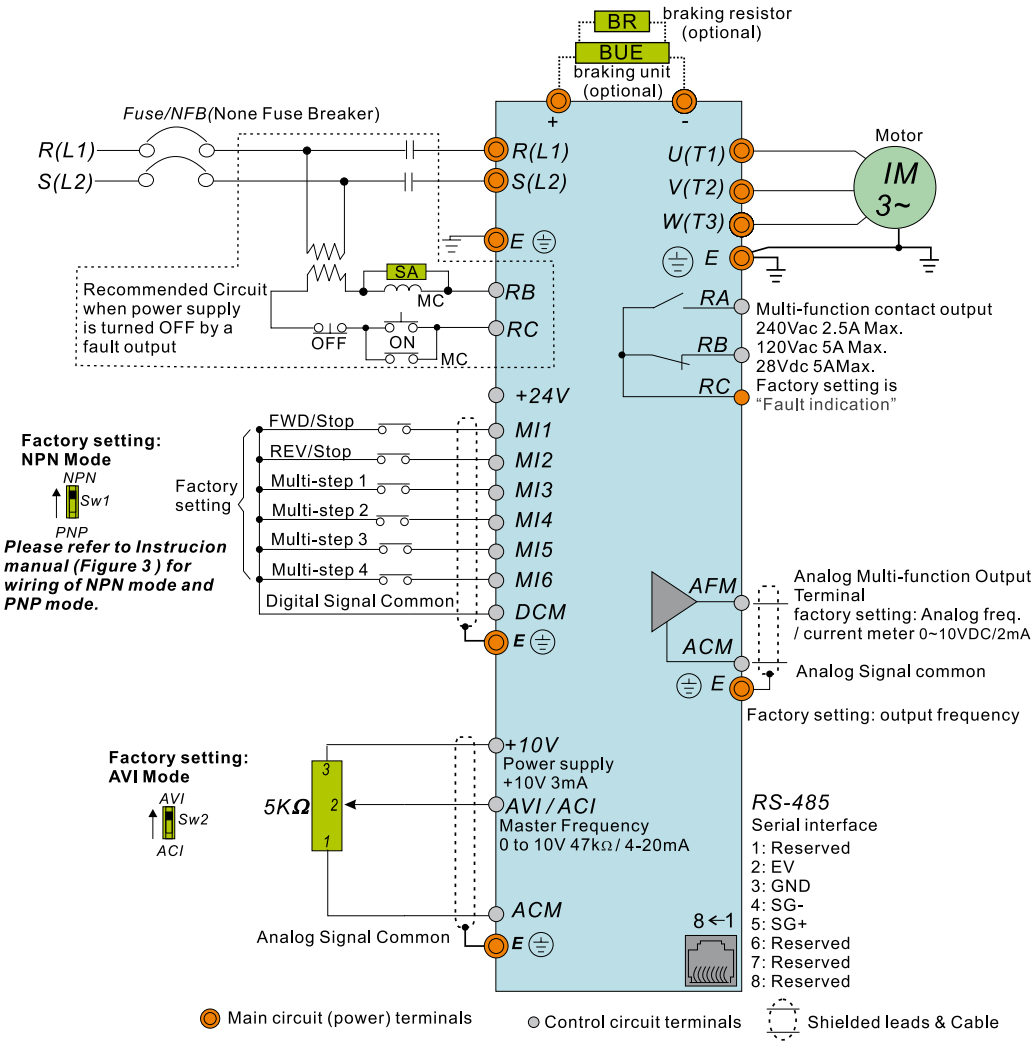
Easy DC BUS sharing

Multiple ADV20 can be connected in parallel to share the regenerative braking energy. In this way, over-voltage is prevented and the DC-bus voltage stabilized.

Standard MODBUS protocol

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

Figure 1 for ADV20-...-...-1M/2M series



External / Internal parts



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



- Input terminals (R/L1, S/L2, T/L3)
- NPN/PNP
- ACI/AVI current or voltage input
- Control terminals
- RS485 port (RJ-45)
- Output terminals (U/T1, V/T2, W/T3)

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

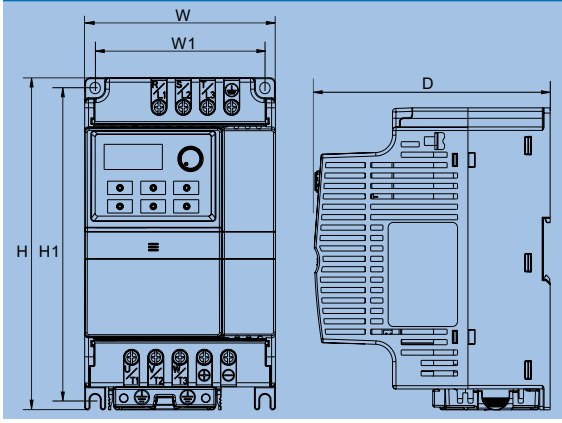
Specifications

Voltage Class			115V Class	
	Model Number ADV20-XXXX		**1004**	**2007**
	Max. Applicable Motor Output	kW	0.4	0.75
	Max. Applicable Motor Output	Hp	0.5	1.0
Output Rating	Rated Output Capacity	kVA	1.0	1.6
Output Rating	Rated Output Current	A	2.5	4.2
Output Rating	Maximum Output Voltage	V	3-Phase Proportional to Twice the Input Voltage	
Output Rating	Output Frequency	Hz	0.1~600 Hz	
Output Rating	Carrier Frequency	kHz	2-12	
Input Rating	Rated Input Current	A	9	18
Input Rating	Rated Voltage/Frequency	V / Hz	Single phase, 100-120V, 50/60Hz	
Input Rating	Voltage Tolerance		± 10% (90~132 V)	
Input Rating	Frequency Tolerance		± 5% (47~63Hz)	
	Cooling Method		Natural Cooling	
	Weight	kg	1.1	1.4

Voltage Class			230V Class			
	Model Number ADV20-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	2-12			
Input Rating	Rated Input Current (1-phase)	A	6.5	9.5	15.7	24
Input Rating	Rated Voltage/Frequency	V / Hz	1-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	1.2	1.2	1.7	1.7

Voltage Class			460V Class				
	Model Number ADV20-XXXX		**1004**	**1007**	**1015**	**2022**	**2037**
	Max. Applicable Motor Output	kW	0.4	0.75	1.5	2.2	3.7
	Max. Applicable Motor Output	Hp	0.5	1.0	2.0	3.0	5.0
Output Rating	Rated Output Capacity	kVA	1.2	2.0	3.3	4.4	6.8
Output Rating	Rated Output Current	A	1.5	2.5	4.2	5.5	8.2
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	2-12				
Input Rating	Rated Input Current	A	1.8	3.2	4.3	7.1	9.0
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	1.7	1.7

Dimensions - mm [inches]



Size	W	W1	H	H1	D	Ø	Ø D
1	72.0 [2.83]	59.0 [2.32]	174.0 [6.86]	151.6 [5.97]	136.0 [5.36]	5.4 [0.21]	2.7 [0.11]
2	100.0 [3.94]	89.0 [3.50]	174.0 [6.86]	162.9 [6.42]	136.0 [5.36]	5.4 [0.21]	2.7 [0.11]

Variable speed AC Motor Drive

General Specifications

Control Characteristics	Control System		SPWM (Sinusoidal Pulse Width Modulation) control (V/f control)
	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 5.0Hz
	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 6 (15 steps, Jog, motopotentiometer)
	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		Multistep 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, zero speed, Base Block, fault indication, local/remote indication, drive is ready, overheat alarm, emergency stop and status selections of input terminals
	Analog Output Signal		Output frequency/current
	Alarm Output Contact		Contact will be On when drive malfunctions (1 Form C/change-over contact)
	Operation Functions		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, adjustable carrier frequency, output frequency limits, parameter lock/reset, 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
	Protection Functions		Over voltage, over current, under voltage, external fault, overload, ground fault, overheating, electronic thermal, IGBT short circuit, PTC
	Display Keypad		6-key, 7-segment LED with 4-digit, 4 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)		• 230V, 1phase models: 2nd Environment, Category 1, carrier frequency ≤8kHz, motor cable lengths ≤1m and Category 2, carrier frequency ≤8kHz, motor cable lengths ≤5m • 400-460V, 3phase models: 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 c UL us

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Model explanation

ADV20 1007 - KXX - 4 F

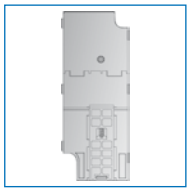
- Drive: ADV20 series
- Mechanical drive sizes: 1 = size 1 (frame A); 2 = size 2 (frame B)
- Drive powers, in kW: 004 = 0.4 kW; 007 = 0.75 kW; 015 = 1.5 kW; 022 = 2.2 kW; 037 = 3.7kW
- Keypad: X = not included; K = included
- Braking unit: X = not included; B = included
- Software: X = standard
- Rated voltage: 1M=115Vac, 1ph; 2M=230Vac, 1ph; 4=400-460 Vac, 3ph
- EMI Filter: F = included; = not incl.



Drive models & codes

Models	Code	Description
115V Class - Single phase		
ADV20-1004-KXX-1M	S6D01	Size 1 - 0.4 kW - With keypad
ADV20-2007-KXX-1M	S6D02	Size 2 - 0.75 kW - With keypad
230V Class - Single phase		
ADV20-1004-KXX-2MF	S6D03	Size 1 - 0.4 kW - With keypad - EMC Filter included
ADV20-1007-KXX-2MF	S6D04	Size 1 - 0.75 kW - With keypad - EMC Filter included
ADV20-2015-KXX-2MF	S6D05	Size 2 - 1.5 kW - With keypad - EMC Filter included
ADV20-2022-KXX-2MF	S6D06	Size 2 - 2.2 kW - With keypad - EMC Filter included
400-460V Class - Three phase		
ADV20-1004-KXX-4F	S6D10	Size 1 - 0.4 kW - With keypad - EMC Filter included
ADV20-1007-KXX-4F	S6D11	Size 1 - 0.75 kW - With keypad - EMC Filter included
ADV20-1015-KXX-4F	S6D12	Size 1 - 1.5 kW - With keypad - EMC Filter included
ADV20-2022-KXX-4F	S6D13	Size 2 - 2.2 kW - With keypad - EMC Filter included
ADV20-2037-KXX-4F	S6D14	Size 2 - 3.7 kW - With keypad - EMC Filter included

Accessories & Options

	Models	Code	Description
	EXP-DN-ADV20/50	S6D50	DeviceNet module
	EXP-PDP-ADV20/50	S6D52	Profibus module
	EXP-CAN-ADV20/50	S6D53	CANopen® module
	KIT DIN ADV20-SA	S6D55	DIN-rail adapter for ADV20 size 1
	KIT EMC ADV20/50	S6D54	Earthing plate
	USB-485-ADV20/50	S6D65	USB-RS485 RJ45 Converter
	BU-2-ADV20/50	S6D70	Braking Unit 1.5kW 230V series
	BU-4-ADV20/50	S6D71	Braking Unit 1.5kW 400V series

Other options (on request only)

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
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 to be used exclusively with the relative external braking units. Values for standard resistors refer to a braking duty cycle of 10%.

Models	Brake Unit	Brake Resistors Model			Brake Res. Dimensions.
	Model (No. Units)	Model	Code	(No. Units)	Width x Height x Depth (Weigth)
115V Class					
ADV20-1004-KXX-1M	BU-2-ADV20/50 (1)	RF220T 250R	S8T0CP	(1)	300 x 27 x 36 mm (500 g)
ADV20-2007-KXX-1M	BU-2-ADV20/50 (1)	RF220T 150R	S8T0CQ	(1)	300 x 27 x 36 mm (500 g)
230V Class					
ADV20-1004-KXX-2MF	BU-2-ADV20/50 (1)	RF220T 250R	S8T0CP	(1)	300 x 27 x 36 mm (500 g)
ADV20-1007-KXX-2MF	BU-2-ADV20/50 (1)	RF220T 150R	S8T0CQ	(1)	300 x 27 x 36 mm (500 g)
ADV20-2015-KXX-2MF	BU-2-ADV20/50 (1)	RF300DT 100R	S8T0CB	(1)	260 x 47 x 106 mm (1400 g)
ADV20-2022-KXX-2MF	BU-2A-ADV20/50 (1)	RF300DT 68R	S8T0CS	(1)	260 x 47 x 106 mm (1400 g)
460V Class					
ADV20-1004-KXX-4F	BU-4-ADV20/50 (1)	RF300DT 400R	S8T0CR	(1)	260 x 47 x 106 mm (1400 g)
ADV20-1007-KXX-4F	BU-4-ADV20/50 (1)	RF300DT 400R	S8T0CR	(1)	260 x 47 x 106 mm (1400 g)
ADV20-1015-KXX-4F	BU-4-ADV20/50 (1)	RF300DT 200R	S8T1DB	(1)	260 x 47 x 106 mm (1400 g)
ADV20-2022-KXX-4F	BU-4A-ADV20/50 (1)	RF300DT 150R	S8T0CT	(1)	260 x 47 x 106 mm (1400 g)
ADV20-2037-KXX-4F	BU-4A-ADV20/50 (1)	RFPD750DT 100R	S8SY4	(1)	200 x 70 x 106 mm (1700 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)
115V Class		
ADV20-1004-KXX-1M	10 A , gR type	JJN-15
ADV20-2007-KXX-1M	32 A, gR type	JJN-30
230V Class		
ADV20-1004-KXX-2MF	10 A, gR type	JJN-15
ADV20-1007-KXX-2MF	16 A, gR type	JJN-20
ADV20-2015-KXX-2MF	25 A, gR type	JJN-30
ADV20-2022-KXX-2MF	40 A, gR type	JJN-50
460V Class		
ADV20-1004-KXX-4F	6 A, gR type	JJS-6
ADV20-1007-KXX-4F	6 A, gR type	JJS-6
ADV20-1015-KXX-4F	8 A, gR type	JJS-10
ADV20-2022-KXX-4F	12 A, gR type	JJS-15
ADV20-2037-KXX-4F	16 A, gR type	JJS-20

Product Overview

Inverters



ADV20 & 50
- V/f & Sensorless Vector
- 0.4... 11 kW
- 110...120 Vac, 1ph
- 200...240 Vac, 1ph
- 200...240 Vac, 3ph
- 380...480 Vac, 3ph



ADV200
- Vector Field Oriented
- 0.75 kW... 1.2 MW
- 400...480, 690 Vac, 3ph



ADV200-DC
- Vector Field Oriented
- 18,5... 355 kW
- 450 ... 750 Vdc



AFE200
- "Active Front End" Regenerative Converter
- 18.5... 355 kW
- 380 ... 480 Vac, 3ph



Cabinet
- Vector Field Oriented
- 90 kW ... 1.2 MW
- 400...480, 690 Vac, 3ph
- IP23 or IP54/IP55 Cabinet

Inverters and LIFT solutions



ADL100
- Sensorless Vector
- Speed range up to 1,2m/s
- Gearless
- New installation and Retrofitting
- 4 ... 22 kW



ADL200
- Sensorless Vector
- Speed range up to 3m/s
- Geared and gearless
- New installation and Retrofitting
- 4 ... 22 kW



AVRy
- Built-in power recovery
- Speed range up to 3m/s
- Gearless
- Output current from 14 to 33 Arms



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



TSM Motors
- Gearless motors
- Static charge up to 2250 kg
- Speed range from 38 to 255 rpm
- Holding Brake and Feedback devices

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

KFM 05



KFM 05 Asynchronous Positioning Motor with-Integrated Frequency Inverter
- Motor outputs: 180 W to 510 W
- 1 x 230 Vac

Digital DC



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

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