

AD3000

Rugged inverter
for heavy industrial
applications



Introduction



Seamless integration

The AD3000 drive is designed for easy installation in both new or existing plants. It is the ideal system integration product, available as a compact stand-alone inverter or in pre-wired configuration, ready to start. Full factory testing prior to shipment shortens configuration and installation time. A wide range of communication features contributes to a simple integration with existing automation systems.

Main Technical features

- Voltage classes:
380÷480 Vac (F)
500Vac (G)
525÷690 Vac (K)
- Power ratings (400 Vac):
from 0.75 kW to 1250 kW
- Power ratings (690 Vac):
from 132 kW to 1600 kW
- Power configurations:
AC/AC (6-12-18 pulses)
DC/AC
AFE (regenerative versions)
- Efficiency up to 98%

Designed
with system
integration
requirements
in mind

Powerful, flexible and robust

Designed to perform for the life of your plant, our drive is rugged and particularly suited for heavy duty applications.



Life cycle support



Quick start

AD3000 is available as a stand-alone inverter or in a "plug-and-play" pre-wired design with 2 or 3 parallels on a metal chassis, ready for integration. This solution is built on a master-slave configuration with a single control board on the master module and a wired connection between the parallels.

Stand-alone inverter:

- The single inverter module reaches a power of 450 kW (400Vac) and 500 kW (690Vac)

Plug-and-play design:

- Power up to 1600 kW
- Full mounted and tested solution
- Easy installation and reduced maintenance time (MTTR: 20 minutes)
- Compact footprint: 2 modules can be fitted into a standard 800 mm panel, 3 modules into a standard 1000 mm panel

Commissioning and control

The AD3000 is provided with the Drive Manager, our configuration and management software developed in-house for the complete line of LV AD drives. This PC tool together with the keypad provide a flexible and intuitive environment for configuration.

- Easy programming and use
- Quick start function
- Parameters' storage and transfer to other drives (through removable keypad)
- Installation, monitoring and troubleshooting with remote access or in the field



Versatile control

- 3 motor control methods available for different performance requirements: V/Hz, Vector V/Hz (Sensorless), Vector closed loop with encoder (FOC)
- Auto-tuning functions
- Induction and synchronous motors control available

Service

Because our equipment lies at the heart of our customers' operations, we know its efficient operation and absolute reliability are essential to optimum performance. That's why SERVICE is the backbone of our business.

When technical issues arise, our engineering service team is available 24/7 to answer questions and troubleshoot problems, either servicing our solutions on-site or helping you diagnose problems through remote monitoring. We also offer preventive and predictive maintenance programs tailored to your needs and schedule.

Education and Training

Nidec offers ongoing training to help users manage their systems for long life and optimal performance. We will tailor your education and training program to address your specific needs and concerns. Both hands-on onsite training on your premises, as well as standard and specialty courses at our facilities are available. Our trainers are seasoned professionals with extensive field experience.



Ratings and Dimensions

AD3000 - F - 380÷480 Vac ±10%													
Model	Frame	CI.0	CI.1 - Overload: 110% for 1 min, every 5 min				CI.2 - Overload: 150% for 1 min, every 5 min			Dimensions			
		IN0	IN1	Motor (4p)' @400 V	Motor (4p)' @460 V	IN2	Motor (4p)' @400 V	Motor (4p)' @460 V	Height	Width	Depth	Weight	
		A	A	kW	HP	A	kW	HP	mm	mm	mm	Kg	
AD3A0P3FBBNH	I	4	3,8	1,5	2	2,1	0,75	1,5	271	133	169.5	4	
AD3A0P4FBBNH	I	6	5,6	2,2	3	3,8	1,5	2	271	133	169.5	4	
AD3A0P6FBBNH	I	10	9,5	4	5	5,6	2,2	3	271	133	169.5	4	
AD3A008FBBNH	II	13	12	5,5	7,5	9,5	4	5	341.5	130	223.5	5.5	
AD3A011FBBNH	III	17	16	7,5	10	12	5,5	7,5	441.5	130	223.5	8	
AD3A015FBBNH	III	22	21	9	15	16	7,5	10	441.5	130	223.5	8	
AD3A018FBBNH	IIIX	26	25	11	20	21	9	15	466.5	130	245.5	8	
AD3A022FBBNH	IIIX	34	32	15	25	25	11	20	466.5	130	245.5	8	
AD3A028FBBNH	IIIL	42	40	18,5	30	32	15	25	466.5	130	260	10.5	
AD3A030FBBFH	IIIN	42	40	18,5	30	32	15	25	454	246	279	32	
AD3A036FBBFH	IIIN	55	52	22	40	40	18,5	30	454	246	279	32	
AD3A045FBNFH	IVN	68	65	30	50	52	22	50	675	290	289	36	
AD3A053FBNFH	IVN	81	77	37	60	65	30	50	675	290	289	36	
AD3A066FBNFH	IVN	101	96	45	75	77	37	60	675	290	289	40	
AD3A086FBNFH	VN	130	124	55	100	96	45	75	755	290	304.5	52	
AD3A108FBNFH	VN	164	156	75	125	124	55	100	755	290	304.5	52	
AD3A125FBNFH	VIN	189	180	90	150	156	75	125	1000	300	334.5	88	
AD3A150FBNFH	VIN	221	210	110		180	90	150	1000	300	334.5	96	
AD3A166FBNFH	VIN	252	240	132	200	200	110		1000	300	334.5	96	
AD3A210FBNFH	VII	310	300	160	250	240	132	200	1068	290	526	120	
AD3A260FBNFH	VII	395	370	200	300	285	160	200	1068	290	526	120	
AD3A290FBNFH	VII	440	410	225	350	320	160	250	1068	290	526	120	
AD3A350FBNFH	VIII	550	510	280	400	385	200	300	1490	290	526	165	
AD3A370FBNFH	VIII	580	540	280	450	410	225	350	1490	290	526	165	
AD3A440FBNFH	VIII	650	640	355	550	510	280	400	1490	290	526	165	
AD3A480FBNFH	VIII	740	690	400	600	530	280	450	1490	290	526	165	
AD3A520FBNFH	VIII	810	750	450	650	585	315	500	1490	290	526	165	
AD3A580FBNFH	2xVII	880	820	450	700	640	355	500	1126	600	530	270	
AD3A700FBNFH	2xVIII	1.100	1020	560	800	770	450	600	1524	600	530	335	
AD3A740FBNFH	2xVIII	1.160	1080	630	900	820	450	700	1524	600	530	335	
AD3A880FBNFH	2xVIII	1.300	1280	710	1000	1020	560	800	1524	600	530	335	
AD3A960FBNFH	2xVIII	1.480	1380	800	1200	1060	560	900	1524	600	530	335	
AD3A1K0FBNFH	2xVIII	1.620	1500	800	1300	1170	630	1000	1524	600	530	335	
AD3A1K1FBNFH	3xVIII	1.740	1620	900	1350	1230	710	1050	1524	900	530	495	
AD3A1K3FBNFH	3xVIII	1.950	1920	1000	1650	1530	800	1200	1524	900	530	495	
AD3A1K4FBNFH	3xVIII	2.220	2070	1000	1800	1590	900	1350	1524	900	530	495	
AD3A1K6FBNFH	3xVIII	2.430	2250	1250	1950	1755	1000	1500	1524	900	530	495	

For electrical data of G series please refers to series F table

AD3000 - K - 525÷690Vac +15% , -10%													
Model	Frame	CI.0	CI.1 - Overload: 110% for 1 min, every 5 min				CI.2 - Overload: 150% for 1 min, every 5 min			Dimensions			
		IN0	IN1	Motor (4p)' @525 V	Motor (4p)' @690 V	IN2	Motor (4p)' @525 V	Motor (4p)' @690 V	Height	Width	Depth	Weight	
		A	A	kW	HP	A	kW	HP	mm	mm	mm	Kg	
AD3A260KBNFH	VII	230	215	200	200	160	132	150	1068	290	526	120	
AD3A280KBNFH	VII	255	235	225	250	180	160	150	1068	290	526	120	
AD3A440KBNFH	VIII	400	370	355	350	275	250	250	1490	290	526	165	
AD3A500KBNFH	VIII	450	420	400	450	315	250	300	1490	290	526	165	
AD3A530KBNFH	VIII	480	445	450	500	330	315	350	1490	290	526	165	
AD3A650KBNFH	VIII	580	540	500	600	405	400	450	1490	290	526	165	
AD3A880KBNFH	2xVIII	800	740	710	800	550	500	600	1524	600	530	335	
AD3A1K0KBNFH	2xVIII	900	840	800	900	630	630	700	1524	600	530	335	
AD3A1K1KBNFH	2xVIII	960	890	900	950	660	630	700	1524	600	530	335	
AD3A1K3KBNFH	2xVIII	1160	1080	1000	1100	810	800	850	1524	600	530	335	
AD3A1K5KBNFH	3xVIII	1350	1260	1250	1250	945	900	1000	1524	900	530	495	
AD3A1K6KBNFH	3xVIII	1440	1335	1300	1400	990	950	1100	1524	900	530	495	
AD3A2K0KBNFH	3xVIII	1740	1620	1600	1700	1215	1250	1250	1524	900	530	495	

Inverter Identification code

AD3	A	520	F	B	N	F	H
Product Series	Cooling	RatedPower [kVA]	Input voltage	Control Board	Dynamic Breaking	Internal RFI Filter	Keypad
AD3000	A=Air Cooling W=Water Cooling (option)	See table with electrical data	F =380-480 Vac Y=650 Vdc G=500 Vac Z=770 Vdc K=525-690 Vac J=975 Vdc L=1100 Vdc	B=Basis	B=Installed N=Not installed	F=Installed N=Not installed	H=Installed N=Not installed

Option codes

N	C	N	00	NN
Communication Expansions	Expansion Boards	Safe Torque Off Function	External Supply	Cart
P=Profibus & Modbus TCP	A=Input expansion board & RTC	T=STO board installed	10=External inverter control supply	CN=Cart installed
E=EtherNet/IP	B=I/O expansion board & RTC	N=Not Installed	00=Not Installed	CR=Cart with output reactor installed
I=ProfiNet	C=Encoder expansion board & RTC (standard)			NN=Not Installed
N=Not Installed	N=Not Installed			

Ratings and Dimensions

AD3000 – AFE Y – 380÷440 Vac ±10%											
Model	Frame	Cl.1 - Overload: 110% for 1 min, every 5 min			Cl.2 - Overload: 150% for 1 min, every 5 min			Dimensions			
		IN1	Power dc @400V	Power dc @440V	IN2	Power dc @400V	Power dc @440V	Height	Width	Depth	Weight
		A	kW	HP	A	kW	HP	mm	mm	mm	Kg
AD3A030YBAFH---	IIIN	40	27	30	32	22	24	454	246	279	30
AD3A036YBAFH---	IIIN	52	35	39	40	27	30	454	246	279	30
AD3A045YBAFH---	IVN	65	44	49	52	35	39	675	290	289	34
AD3A053YBAFH---	IVN	77	52	58	65	44	49	675	290	289	34
AD3A066YBAFH---	IVN	96	65	72	77	52	58	675	290	289	34
AD3A086YBAFH---	VN	124	84	93	96	65	72	755	290	304.5	38
AD3A108YBAFH---	VN	156	106	117	124	84	93	755	290	304.5	50
AD3A125YBAFH---	VIN	180	122	134	156	106	117	1000	300	334.5	85
AD3A150YBAFH---	VIN	210	143	157	180	122	134	1000	300	334.5	90
AD3A166YBAFH---	VIN	240	163	179	200	136	149	1000	300	334.5	90
AD3A210YBAFH---	VII	300	204	224	240	163	179	1068	290	526	115
AD3A260YBAFH---	VII	370	251	276	285	193	213	1068	290	526	115
AD3A290YBAFH---	VII	410	278	306	320	217	239	1068	290	526	115
AD3A350YBAFH---	VIII	510	346	381	385	261	288	1312	290	526	160
AD3A370YBAFH---	VIII	540	367	403	410	278	306	1312	290	526	160
AD3A440YBAFH---	VIII	590	401	441	460	312	344	1312	290	526	160
AD3A520YBAFH---	VIII	720	489	538	560	380	418	1312	290	526	160
AD3A580YBAFH--- (AD3A290x2)	2xVII	820	557	612	640	435	478	1126	600	530	260
AD3A700YBAFH--- (AD3A350x2)	2xVIII	1020	693	762	770	523	575	1346	600	530	325
AD3A740YBAFH--- (AD3A370x2)	2xVIII	1080	733	807	820	557	612	1346	600	530	325
AD3A880YBAFH--- (AD3A440x2)	2xVIII	1180	801	881	920	625	687	1346	600	530	325
AD3A1K0YBAFH--- (AD3A520x2)	2xVIII	1440	978	1075	1120	760	836	1346	600	530	325
AD3A1K1YBAFH--- (AD3A370x3)	3xVIII	1620	1100	1210	1230	835	919	1346	900	530	480
AD3A1K3YBAFH--- (AD3A440x3)	3xVIII	1770	1202	1322	1380	937	1031	1346	900	530	480
AD3A1K6YBAFH--- (AD3A520x3)	3xVIII	2160	1467	1613	1680	1141	1255	1346	900	530	480

AD3000 - AFE J - 525÷660 Vac ±10%											
Model	Frame	Cl.1 - Overload: 110% for 1 min, every 5 min			Cl.2 - Overload: 150% for 1 min, every 5 min			Dimensions			
		IN1	Power dc @525V	Power dc @660V	IN2	Power dc @525V	Power dc @660V	Height	Width	Depth	Weight
		A	kW	kW	A	kW	kW	mm	mm	mm	Kg
AD3A260JBAFH---	VII	215	192	241	160	143	179	1068	290	526	120
AD3A280JBAFH---	VII	235	209	263	180	160	202	1068	290	526	120
AD3A500JBAFH---	VIII	340	303	381	265	236	297	1490	290	526	165
AD3A530JBAFH---	VIII	445	397	499	330	294	370	1490	290	526	165
AD3A650JBAFH---	VIII	540	481	605	405	361	454	1490	290	526	180
AD3A1K0JBAFH--- (AD3A500x2)	2xVIII	680	606	762	530	472	594	1524	600	530	335
AD3A1K1JBAFH--- (AD3A530x2)	2xVIII	890	793	997	660	588	739	1524	600	530	335
AD3A1K3JBAFH--- (AD3A650x2)	2xVIII	1080	962	1210	810	722	907	1524	600	530	360
AD3A1K5JBAFH--- (AD3A500x3)	3xVIII	1020	909	1143	795	708	891	1524	900	530	495
AD3A1K6JBAFH--- (AD3A530x3)	3xVIII	1335	1190	1496	990	882	1109	1524	900	530	495
AD3A2K0JBAFH--- (AD3A650x3)	3xVIII	1620	1444	1815	1215	1083	1361	1524	900	530	550

AFE identification code

AD3	A	520	Y	B	A	F	H
Product Series	Cooling	Rated Power [kVA]	Grid Voltage	Control Board	Application	Internal DC Filter	Keypad
AD3000	A=Air Cooling W=Water Cooling (option)	See table with electrical data	Y=380-440Vac Z=480Vac J=525-660Vac L=690Vac	B=Basis	A=AFE P=Renewable	F=Installed	H=Installed N=Not installed

Option codes

N	N	N	00	NN
Communication Expansions	Expansion Boards	Reserved	External Supply	Cart
P=Profibus & Modbus TCP	A=Input expansion board & RTC	N	10=External inverter control supply	CN=Cart installed
E=EtherNet/IP	B=I/O expansion board & RTC		00=Not installed	CR=Cart with output reactor installed
I=ProfiNet	N=Not installed			NN=Not installed
N=Not Installed				

CONNECTION TO MAINS			
Three-phase voltage	F=380+480 Vac ±10%	G=500 Vac ±10%	K = 525+690 Vac +15/-10%
Frequency	48-63 Hz		
Total Power Factor	0.93 (typical with line reactor)		
Fundamental Mode (cosφ _i)	>0,98 (with line reactor – rated load)		
Efficiency	0,98 max (50 Hz – rated load)		
DC Supply Versions	Y=650 Vdc ± 10%, Z=770 Vdc ± 10%, J=975 Vdc ± 10%, L=1100 Vdc		

CONNECTIONS TO MOTORS	
Three-phase voltage	0 to main voltage
Output currents	I _{No} : continuously current without overload at 40°C I _{N1} (cl1): light duty current . Overload: 110% for 1 min/5 min at 40°C I _{N2} (cl2): heavy duty current. Overload: 150% lor 1 min/5 min at 40°C
Output frequency	0,1-200 Hz
Frequency resolution (V/f)	0, 05 Hz (typical)

CONTROL CHARACTERISTICS	
Control Method	V/f, Vector V/f (Sensorless), Vector closed loop with encoder (FOC) Active Front End (AFE)
Switching frequency	1,5-2-3-4-6-8 kHz
Frequency set point accuracy (V/f)	0.1% (analog control) 0,01% (digital control)
Speed Resolution	0,05 Hz (Sensorless) / 1:5000 (FOC)
Speed static accuracy	0,4% slip frequency (Sensorless) / 0,01% (FOC)
Torque Control Response Time	<10ms (Sensorless) / <5ms (FOC)

PROTECTION FUNCTIONS		
Over-current	Inverter Over-Temperature	Earth Fault
Over-voltage	Motor Overload	Communication Error
Under-voltage	Motor-over speed	Watchdog

ENVIRONMENTAL CONDITIONS	
Operating Temperature	0-40°C (1% current derating for every °C, 55°C max)
Storage Temperature	-25 to +70°C
Relative Humidity	95% (without condensation)
Altitude ASL	1000m (1% current derating for every 100m, max 3000m)
Protection grade	IP20 Frames I-VIN IP00 Frames VII-VIII
Cooling	Air coooling with internal fan / Optional: water cooling for frames VII & VIII
Contamination level	Chemical gases: IEC 721-3-1, Class 1C2 Solid Particles IEC 721-3-1, Class 1S3

ENVIRONMENTAL CONDITIONS

EN61800-2 (Low Voltage PDS: General Requirements)
EN61800-3 (PDS: EMC Requirements)
EN61800-5-1 (PDS: Safety Requirements)
EN61800-5-2 (PDS: Functional Safety)
EN50178 (Electronics Equipment in Power Installation)

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LISTED

OPTIONS AND ACCESSORIES	
• Keypad with LCD graphic display (Standard) • Standard RFI filter: C2 up to frame VI; C3 for all other frames • Line reactor: standard from size AD3A030F to AD3A166F. • Braking switch : option from size AD3A045F to AD3A290F. • External Control Supply	• I/O expansion boards • Enconder expansion board (standard) • Safe Torque Off (PL e) • Communication modules - Standard: Modbus RTU; Options: Modbus TCP, Profibus DP, Ethernet/IP, ProfiNet. • Cart with or without output reactor (available only for sizes VII&VIII) • Sinusoidal filters, Harmonic filters.

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