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AD1000 SERIES

HIGH PERFORMANCE VARIABLE SPEED DRIVE

Contents

AD1000 High Performance Series

AD1000 - Series

Introduction

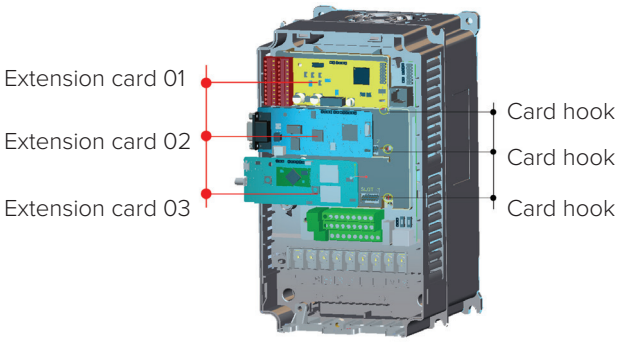
The AD1000 Series of our Variable Speed Drive Range is our high-end Drive aimed at specialized markets and applications, where specific demands need to be met. It is our flagship product of our Variable Speed Drive range. It ranges from 1.5kw to 700kw in 400v and 550v. The AD1000 series also allows for a IP56 range. This series allows for multiple extensions which allow the user to adapt the Drive to suit their exact requirements. Most applications include printing and winding equipment, the paper industry, HVAC as well as textile machinery to name a few. The AD1000 Series allows for close monitoring of applications and provides data and information to the user based on the applications performance.

- Support SVC and VC (Closed Loop) control for both asynchronous and synchronous motors
- Enable high precision speed, positioning, torque control and fast response
- Support optional fieldbus communication cards including: Profinet, Profibus, CANopen, Ethernet IP etc
- Allows for plug-in of three expansion cards simultaneously (only two cards smaller than 7.5kw)
- Connect to IOT via optional Bluetooth and Wi-Fi extension cards
- Multi-function LCD Keypad
- Integrates STO function

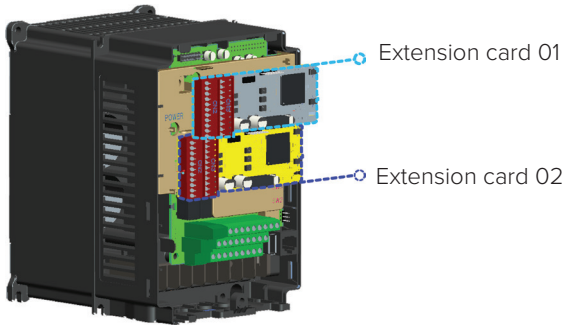
AD1000 - Features

Enhanced Extension Performance

(1) Optional PLC, F/0 , communication, and PG cards
(2) Uniform extension card dimensions



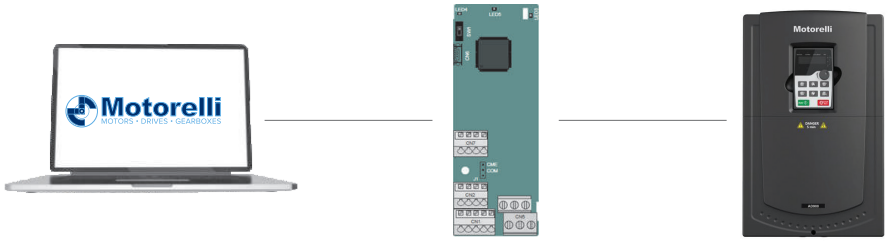
≥ 7.5kW



≤ 5.5kW

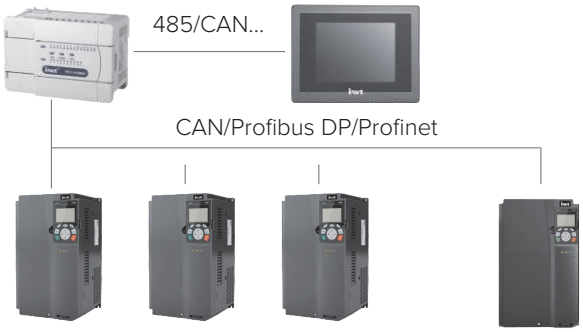
Supporting Customers' Secondary Development

(1) Meeting customization requirements, reducing customers' costs, and improving the efficiency
(2) Built-in PLC card, 128 k program memory space



Supporting various Industrial Communication Protocols

(1) Standard 485 communication, supporting various communication modes based on extension cards



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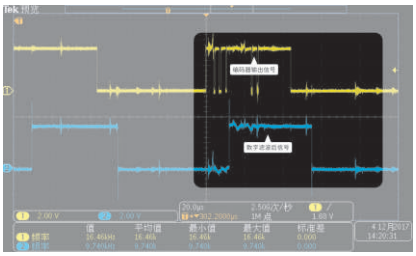
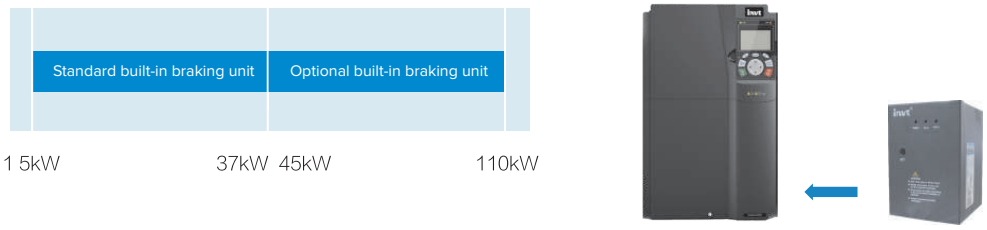
Adopting digital filtering technology that improves EMC; allowing anti-interference performance to be twice that of conventional solutions

(1) Supporting pulse reference and frequency-divided output;
(2) providing fast encoder disconnection detection function to prevent the expansion of the system fault impact

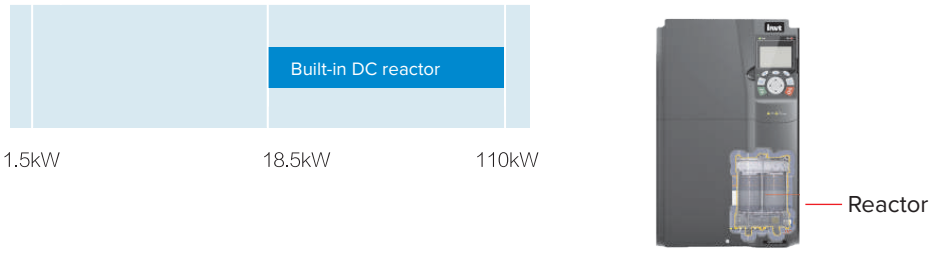


Encoder signal: near-field coupling of 100m motor cable

Optional Built-in brake units up to 110 kW, reducing customers' costs and installation space



Built-in DC reactors for models between 18.5 kW–110 kW



Abundant external interfaces, meeting the requirements of most application sites

TERMINAL TYPE	QUANTITY	FEATURE
Digital Input	4	1. Programmable multi-function terminal 2. Max. input frequency: 1 kHz 3. Compatible with both NPN and PNP inputs
High Speed Pulse Input	2	1. Max. input frequency: 50 kHz 2. Compatible with both NPN and PNP inputs 3. Supporting the input of quadrature encoders, and providing the speed detection function
Analog Input	2	0~10V, 0~20mA, -10V~10V
Digital Output	1	Max. output frequency: 1KHz
High Speed Pulse Output	1	Max. output frequency: 50KHz
Analog Output	2	0~10V, 0~20mA
Relay Output	2	3A/AC250V, 1A/DC30V, NO+NC

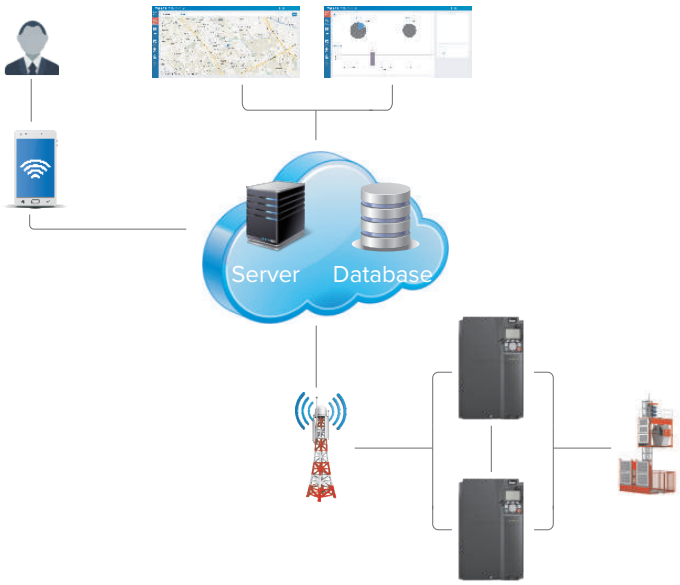
AD1000 - Ease Of Use

Wireless Commissioning

(1) Bluetooth/WIFI connection. You can use the mobile phone application to substitute for the traditional keypad

Connecting through the Internet of Things (IoT) and remote monitoring

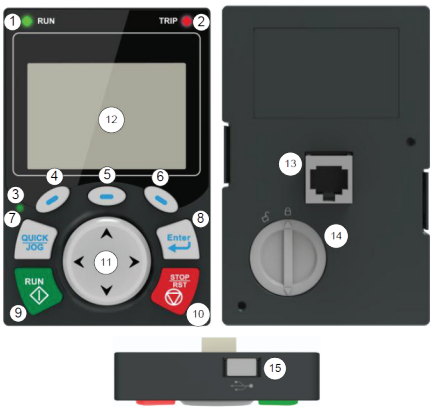
(1) Wireless access. You can easily connect to the IoT, operate the VFD through mobile phone or PC, and obtain the running state of the VFD in real time



Standard USB Interface

Update or modify parameters and software through USB interface
Record the operation curve and failure waveform for easy fault finding and analysis

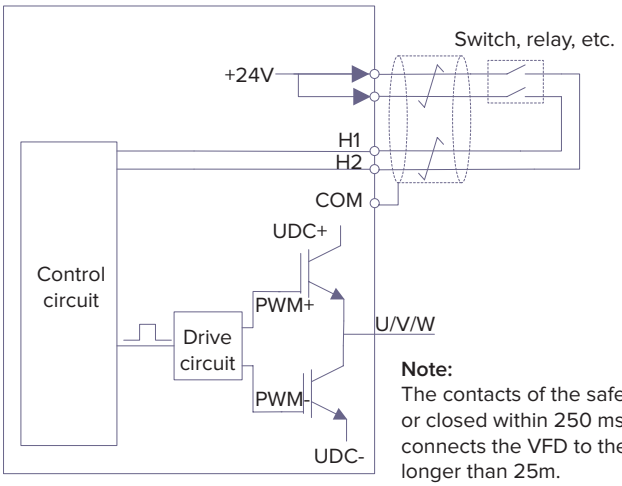
Standard multi-function LCD operating keypad, user-friendly design, focusing on user experience and ease of setup



NO.	NAME	NO.	NAME
1	Run	9	Running key
2	Trip	10	Stop/Reset key
3	Quick/Jog	11	Direction key
4	Function key	12	Display screen
5		13	RJ 45 interface
6		14	Clock battery cover
7	Short-cut key	15	Mini USB terminal
8	Confirmation key		

Providing the built-in safe torque off (STO) function which ensures more safe and reliable application integration

(1) SIL2 level
(2) Can be used to set up a safety system



Note:
The contacts of the safety switch must be opened or closed within 250 ms; and the cable that connects the VFD to the safety switch cannot be longer than 25m.

AD1000 - Technical Specification

FUNCTION DESCRIPTION		SPECIFICATION
Power Input	Input voltage (V)	AC 3PH 400V (- 15%) – 440V (+10%) rated voltage: 400V AC 3PH 520V (-1 5%) – 690V (+10%) rated voltage: 660V
	Input current (A)	Refer to Rated value
	Input frequency (Hz)	50Hz or 60Hz, allowable range: 47~63Hz
Power Output	Output voltage (V)	0~input voltage
	Output current (A)	Refer to Rated value
	Output power (kW)	Refer to Rated value
	Output frequency (Hz)	0~400Hz
Technical Control performance	Control mode	SVPWM control, SVC, VC
	Motor type	Asynchronous motor, permanent–magnet synchronous motor
	Speed regulation ratio	Asynchronous motor 1: 200 (SVC); Synchronous motor 1 20 (SVC), 1:1000 (VC)
	Speed control precision	±0.2% (SVC), ±0.02% (VC)
	Speed fluctuation	± 0.3% (SVC)
	Speed response	<20ms SVC), <10ms (VC)
	Torque control precision	10% (SVC), 5% (VC)
	Starting torque	Asynchronous motor: 0.25Hz/150% (SVC) Synchronous motor: 2.5 Hz/150% (SVC) 0Hz/200% (VC)
	Overload capacity	150% of rated current: 1 minute 180% of rated current: 10 seconds 200% of rated current: 1 second
Running Control performance	Frequency setup mode	Digital, analog, pulse frequency, multi-step speed Provide over 30 kinds of fault protection functions: overcurrent, overvoltage, undervoltage, over-temperature, phase loss and overload, etc
	Auto voltage regulation function	Keep the output voltage constant when grid voltage changes.
	Fault protection function	Provide over 30 kinds of fault protection functions: overcurrent, overvoltage, under-voltage, over-temperature, phase loss and overload, etc.
	Speed tracking restart function	Realize impact-free starting of the motor in rotating Note: This function is available for 4kW and above models
Peripheral interface	Terminal analog input	No more than 20mV
	Terminal digital input resolution	No more than 2ms
	Analog input	2 inputs AI1 0~10V/0~20mA; (AI2) -10~10V
	Analog output	1 output AO1: 0~10V /0~20mA
	Digital input	Four regular inputs; Max. frequency: 1kHz Internal impedance: 3.3kΩ Two high-speed inputs; Max. frequency: 50kHz supports quadrature encoder input; Speed measurement function
	Digital output	1 high speed pulse output, the Max. frequency: 50kHz; 1 Y terminal open collector pole output
	Relay output	2 programmable relay outputs RO1A NO, RO1B NC, RO1C common port RO2A NO, RO2B NC, RO2C common port Contactor capacity: 3A/250VAC,1A/30VDC

FUNCTION DESCRIPTION		SPECIFICATION
	Extension interface	Three extension interfaces: SLOT1, SLOT2, SLOT3 Expandable PG card, programmable extension card, communication card, I/O card, etc.
	Installation mode	Support wall-mounting, floor-mounting and flange-mounting
Others	Temperature of the running environment	-10~50℃, derating is required if the ambient temperature exceeds 40℃
	Protection level	IP20
	Pollution level	Level 2
	Cooling mode	Air-cooling
	Brake Unit	Built-in braking unit for 400V 37kW and below models; Optional built-in brake unit for 400V 45kW–110kW(inclusive) models; Optional external brake unit for 660V models;
	EMC filter	400V models fulfil the requirements of IEC61800-3 C3. Optional external filter should meet the requirements of IEC61800-3 C2

AD1000 Selection

POWER RATINGS AND DIMENSIONS

VFD MODEL	RATED OUTPUT POWER (KW)	INPUT CURRENT (A)	RATED OUTPUT CURRENT (A)	GROSS WEIGHT (KG)
AC 3PH 380V ~ 480V				
AD1000-1R5G-4	1.5	5.0	3.7	2
AD1000-2R2G-4	2.2	5.8	5	2
AD1000-004G-4	4	13.5	9.5	2.5
AD1000-5R5G-4	5.5	19.5	14	2.5
AD1000-7R5G-4	7.5	25	18.5	3
AD1000-011G-4	11	32	25	6
AD1000-015G-4	15	40	32	6
AD1000-018G-4	18.5	45	38	8.5
AD1000-022G-4	22	51	45	8.5
AD1000-030G-4	30	64	60	16
AD1000-037G-4	37	80	75	16
AD1000-045G-4	45	98	92	24
AD1000-055G-4	55	128	115	24
AD1000-075G-4	75	139	150	24
AD1000-090G-4	90	168	180	41
AD1000-110G-4	110	201	215	41
AD1000-132G-4	132	265	260	85
AD1000-160G-4	160	310	305	85
AD1000-185G-4	185	345	340	85
AD1000-200G-4	200	385	380	85

VFD MODEL	RATED OUTPUT POWER (KW)	INPUT CURRENT (A)	RATED OUTPUT CURRENT (A)	GROSS WEIGHT (KG)
AD1000-220G-4	220	430	425	135
AD1000-250G-4	250	460	480	135
AD1000-280G-4	280	500	530	135
AD1000-315G-4	315	580	600	135
AD1000-350G-4	355	625	650	407
AD1000-400G-4	400	715	720	407
AD1000-500G-4	500	890	860	407
AC 3PH 500V ~ 575V				
GD350-2R2G-5	2,2	10	6,5	6
GD350-004G-5	4	13	9	6
GD350-5R5G-5	5,5	16,5	12	7,25
GD350-7R5G-5	7,5	19	16	7,25
GD350-011G-5	11	29	27	30
GD350-015G-5	15	33	30	30
GD350-018G-5	18	40	35	30
GD350-022G-5	22	47	45	30
GD350-030G-5	30	52	52	47
GD350-037G-5	37	65	62	47
GD350-045G-5	45	85	86	47
GD350-055G-5	55	95	98	47
GD350-075G-5	75	118	120	47
GD350-090G-5	90	145	150	85
GD350-110G-5	110	165	175	85
GD350-132G-5	132	190	200	85
GD350-160G-5	160	230	240	135
GD350-185G-5	185	255	270	135
GD350-200G-5	200	286	300	135
GD350-250G-5	220	334	350	135
GD350-280G-5	250	360	380	350
GD350-315G-5	280	445	465	350
GD350-355G-5	315	518	540	350
GD350A-400G-5	400	578	600	350
GD350A-500G-5	500	655	680	350

AD1000 - Installation Dimensions

Wall Mounting

(unit: mm)

MODEL		W1	W2	W3	H1	H2	D1	INSTALLATION HOLE DIAMETER	FIXING SCREW
400V	1.5kW~2.2kW	126	115	-	186	175	185	5	M4
	4kW~5.5kW	128	115	-	186	175	201	5	M4
	7.5kW	146	131	-	256	243.5	192	6	M5
	11kW~15kW	170	151	-	320	303.5	220	6	M5
	18.5kW~22kW	200	185	-	340.6	328.6	208	6	M5
	30kW~37kW	250	230	-	400	380	223	6	M5
	45kW~75kW	282	160	226	560	542	258	9	M6
	90kW~110kW	338	200	-	554	535	330	10	M6
	132kW~200kW	500	180	-	870	850	360	11	M10
	220kW~315kW	680	230	-	960	926	380	13	M12
550V	15kW~30kW	270	130	-	555	540	325	7	M6
	37kW~90kW	325	200	-	680	661	365	9.5	M8
	110kW~185kW	500	180	-	870	850	360	11	M10
	200kW~250kW	680	230	-	960	926	380	13	M12

Flange Mounting

(unit: mm)

MODEL		W1	W2	W3	W4	H1	H2	H3	H4	D1	D2	INSTALLATION HOLE DIAMETER	FIXING SCREW
400V	1.5kW~2.2kW	150.2	115	130	7.5	234	220	190	13.5	185	65.5	5	M4
	4kW~5.5kW	150.2	115	130	7.5	234	220	190	13.5	201	83	5	M4
	7.5kW	170.2	131	150	9.5	292	276	260	6	192	84.5	6	M5
	11kW~15kW	191.2	151	174	11.5	370	351	324	12	220	113	6	M5
	18.5kW~22kW	266	250	224	13	371	250	350.6	20.3	208	104	6	M5
	30kW~37kW	316	300	274	13	430	300	410	56	223	118.3	6	M5
	45kW~75kW	352	332	306	12	580	400	570	80	258	133.8	9	M8
	90kW~110kW	418.5	389.5	361	14.2	600	370	559	108.5	330	149.5	10	M8
	132kW~200kW	500	180	480	60	870	850	796	37	360	178.5	11	M10

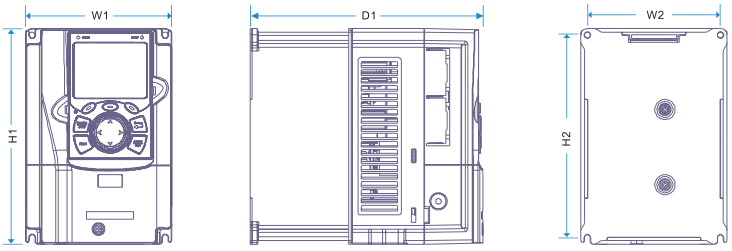
Floor Mounting

(unit: mm)

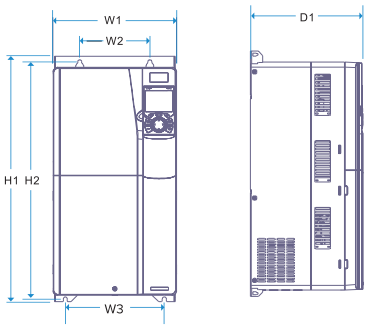
MODEL		W1	W2	W3	W4	H1	H2	D1	D2	INSTALLATION HOLE DIAMETER	FIXING SCREW
400V	220kW~315kW	750	230	714	680	1410	1390	380	150	13\12	M12\M10
	355kW~500kW	620	230	572	-	1700	1678	560	240	22\12	M20\M10
550V	200kW–250kW	750	230	714	680	1410	1390	380	150	13\12	M12\M10
	280kW–450kW	620	230	572	\	1700	1678	560	240	22\12	MM20\M10

Installation Diagrams

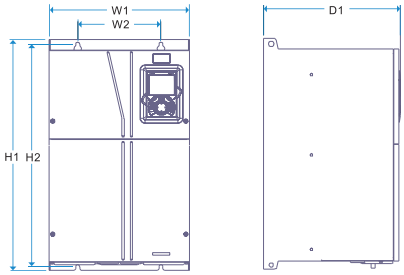
AD1000 series
Wall Mounting for 1.5-355kW



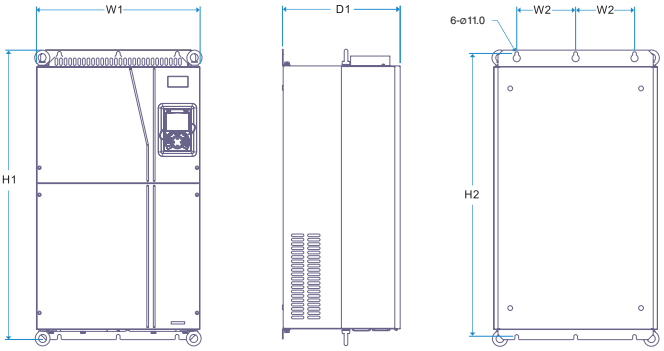
400V, 1.5-37kW Wall mounting Installation diagram



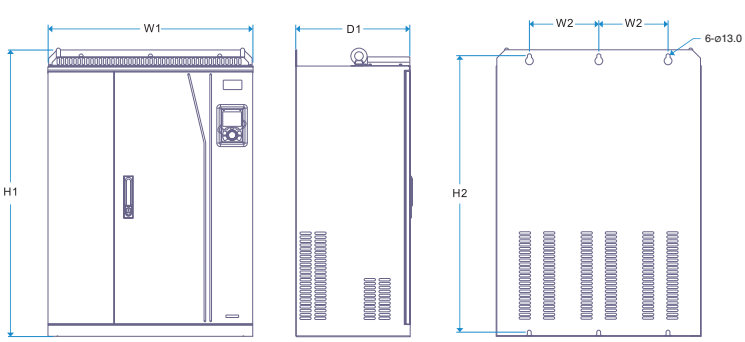
400V, 45-75kW Wall mounting Installation diagram



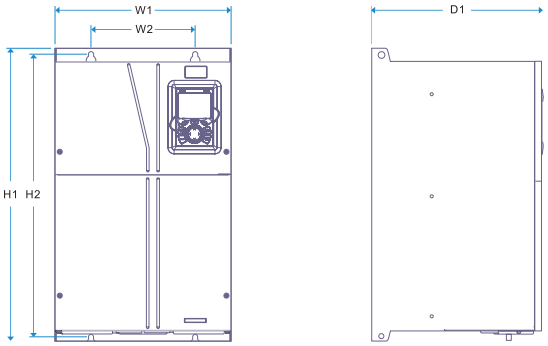
400V, 90-110kW Wall mounting Installation diagram



400V, 132-200kW Wall mounting Installation diagram



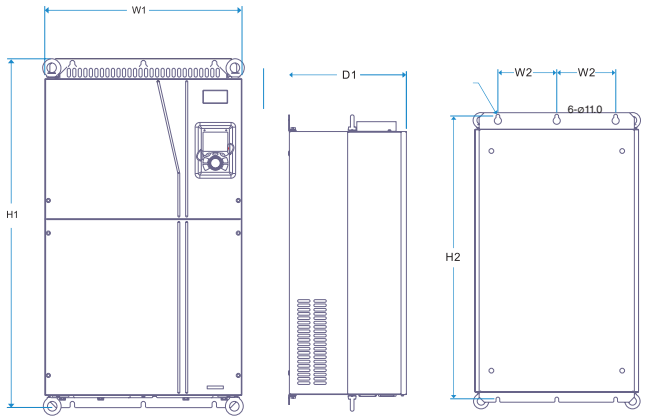
400V, 220-315kW Wall mounting Installation diagram



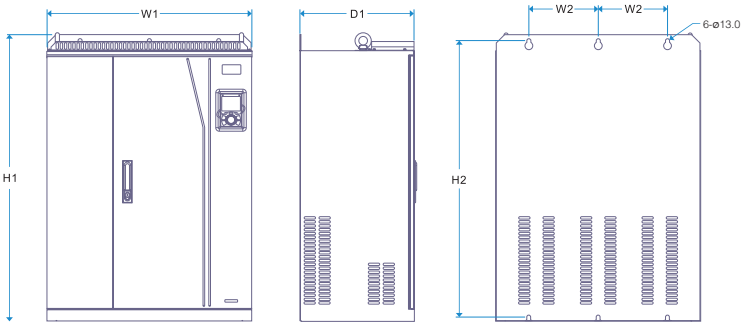
550V, 15-90kW Wall mounting Installation diagram

Installation Diagrams

AD1000 series
Wall Mounting for 1.5-355kW

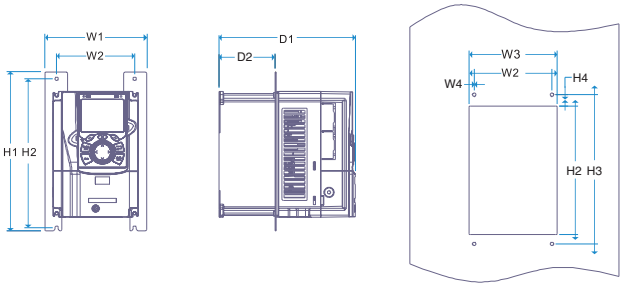


550V, 110-185kW Wall mounting Installation diagram

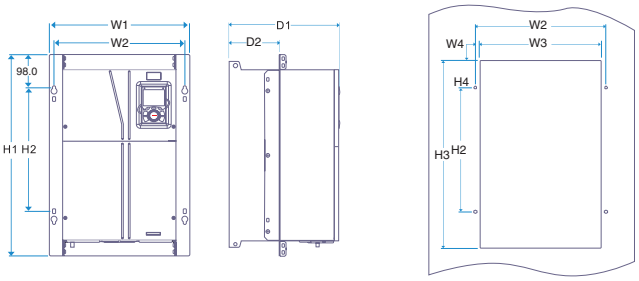


550V, 200-250kW Wall mounting Installation diagram

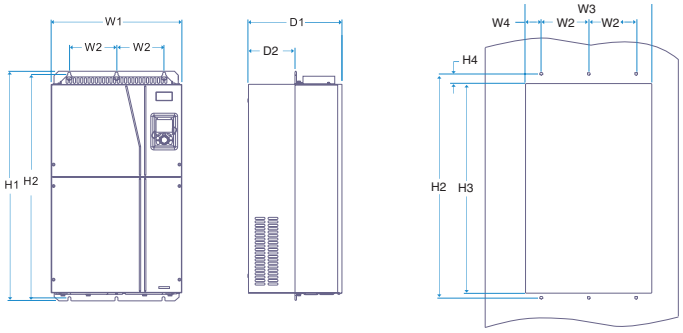
AD1000 Series
Flange Mounting for 1.5-220kW



400V, 1.5-75kW Flange mounting Installation diagram



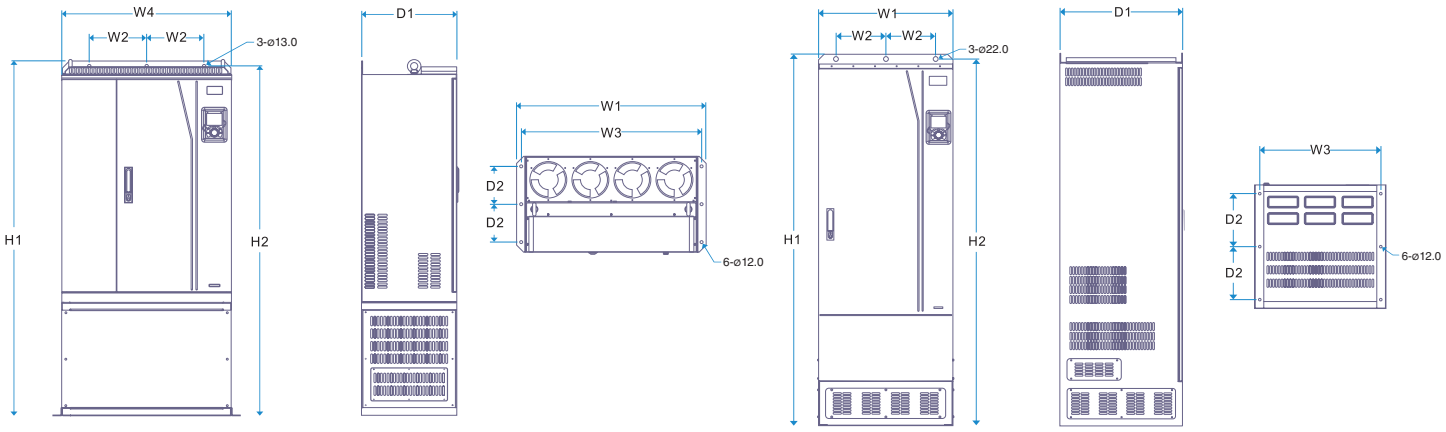
400V, 90-110kW Flange mounting Installation diagram



400V, 132-200kW Flange mounting Installation diagram

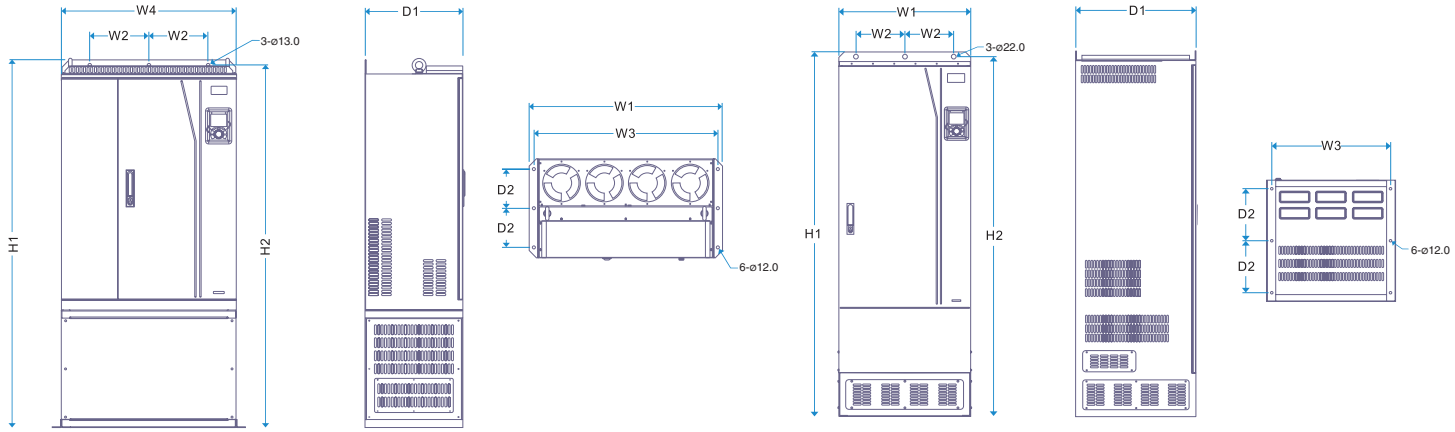
Installation Diagrams

AD1000 Series
Floor Mounting for 200-500kW



400V, 220-315KW Floor mounting Installation diagram

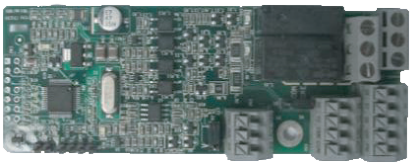
400V, 355-500KW Floor mounting Installation diagram



550V, 200-250kW Floor mounting Installation diagram

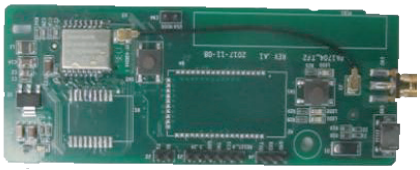
550V, 280-500kW Floor mounting Installation diagram

Extension Cards

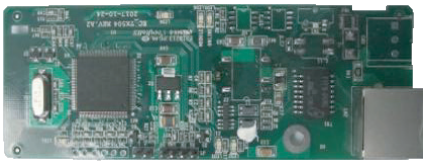


IO extension card
EC-IO501-00

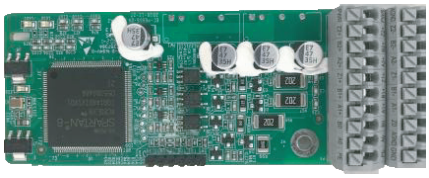
Programmable
extension card
EC-PC501-00



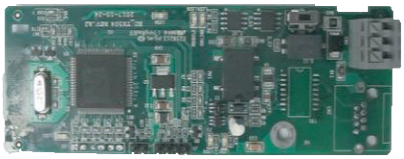
Bluetooth/WIFI
communication card
EC-TX501-1/502



Ethernet
communication card
EC-TX504

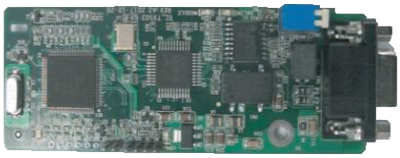


24V incremental PG
card EC-PG505-24

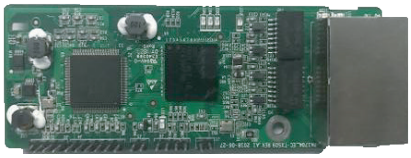


CANopen

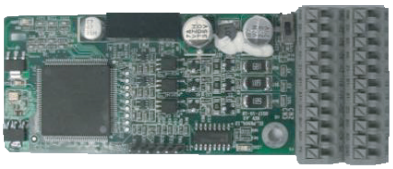
EC-TX505/511



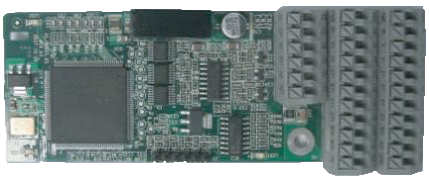
PROFIBUS-DP
communication card
EC-TX503



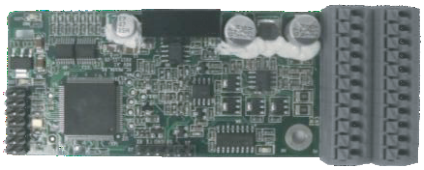
PROFINET
communication card
EC-TX509



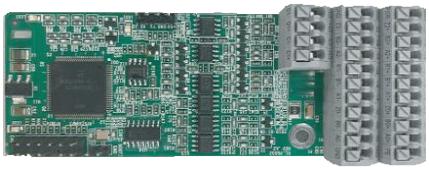
Multi-function
incremental PG card
EC-PG505-12



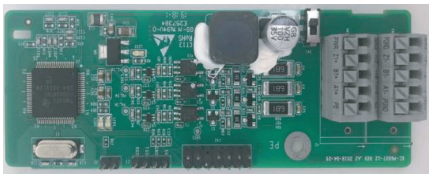
UVW incremental PG card



Resolver PG card
EC-PG504-00



Sin/Cos PG card
EC-PG502



Incremental
PG card
EC-PG507-12
EC-PG503-05

TYPE	NAME	MODEL	SPECIFICATION
I/O card	IO extension card	EC-IO501-00	4 channels switch input 1 channel switch output 1 channel analog input 1 channel analog output 2 channels relay output
PLC card	Programmable extension card	EC-PC501-00	6 channels switch input 2 channels switch output 2 channels relay output
Communication card	Bluetooth communication card	EC-TX501-1 EC-TX501-2	Support Bluetooth 4.0 PCB antenna type or external sucker antenna. Effective communication distance is 30m
	CANopen communication card	EC-TX505	Based on the CAN2.0A physical layer Support the CANopen protocol
	PROFIBUS-DP communication card	EC-TX503	Support PZB to control data exchange. Support PZW to access VFD parameters Baud rate supports up to 12Mbps
	WIFI communication card	EC-TX502-01 EC-TX502-02	Monitor the VFD locally or remotely through WIFI with INVT's mobile phone APP Effective communication distance is 30m
	Ethernet communication card	EC-TX504	Support Ethernet communication with INVT's internal protocol INVT Studio
	CAN master/ slave control communication card	EC-TX511	Based on the CAN2.0B physical layer Adopt INVT's master-slave control proprietary protocol
	PROFINET communication card	EC-TX509	Support the PROFINET protocol
PG card	Multi-function incremental PG card	EC-PG505-12	Applicable to OC encoders of 5 V or 12 V Applicable to push-pull encoders of 5 V or 12 V Applicable to differential encoders of 5 V Supporting pulse string setting
	UVW incremental PG card	EC-PG503_05	Encoder interface: 5V incremental differential ABZ(UVW) encoder, maximum 400kHz.
	Resolver PG card	EC-PG504-00	Rotary transformer encoder. support / directional differential input of pulse. support 5V differential signal 1-255 frequency division output, up to 200kHz
	24V incremental PG card	EC-PG505-24	Support A, B, Z orthogonal input Support A, B, Z frequency-divided output Support pulse string reference input
	Sin/Cos PG card	EG-PG502	Applicable to Sin/Cos encoders with or without CD signal Support A, B, Z frequency-divided output Support pulse string reference input
		EC-PG507-12	Applicable to OC encoders of 5 V or 12 V Applicable to push-pull encoders of 5 V or 12 V Applicable to differential encoders of 5 V

AD1000 Series - Braking System

VFD MODEL	BRAKE UNIT MODEL	RESISTANCE APPLICABLE FOR BRAKE TORQUE (Λ)	DISSIPATED POWER OF BRAKE RESISTOR (kW)			MINIMUM ALLOWABLE BRAKE RESISTOR (Λ)
			10% BRAKE USAGE	50% BRAKE USAGE	80% BRAKE USAGE	
AC 3PH 380V~480V						
AD1000-1R5G-4	Standard Built-in	326	0.23	1.1	1.8	170
AD1000-2R2G-4		222	0.33	1.7	2.6	130
AD1000-004G-4		122	0.6	3	4.8	80
AD1000-5R5G-4		89	0.75	4.1	6.6	60
AD1000-7R5G-4		65	1.1	5.6	9	47
AD1000-011G-4		44	1.7	8.3	13.2	31
AD1000-015G-4		32	2	11	18	23
AD1000-018G-4		27	3	14	22	19
AD1000-022G-4		22	3	17	26	17
AD1000-030G-4		17	5	23	36	17
AD1000-037G-4		13	6	28	44	11.7
AD1000-045G-4	DBU100H-110-4	10	7	34	54	6.4
AD1000-055G-4		8	8	41	66	
AD1000-075G-4		6.5	11	56	90	
AD1000-090G-4	DBU100H-160-4	5.4	14	68	108	4.4
AD1000-110G-4		4.5	17	83	132	
AD1000-132G-4	DBU100H-220-4	3.7	20	99	158	3.2
AD1000-160G-4	DBU100H-320-4	3.1	24	120	192	2.2
AD1000-185G-4		2.8	28	139	222	
AD1000-200G-4		2.5	30	150	240	
AD1000-220G-4	DBU100H-400-4	2.2	33	165	264	1.8
AD1000-250G-4		2.0	38	188	300	
AD1000-280G-4	Two sets DBU100H-320-4	3.6*2	21*2	105*2	168*2	2.2*2
AD1000-315G-4		3.2*2	24*2	118*2	189*2	
AD1000-355G-4		2.8*2	27*2	132*2	210*2	
AD1000-400G-4		2.4*2	30*2	150*2	240*2	
AD1000-450G-4	Two sets DBU100H-400-4	2.2*2	34*2	168*2	270*2	1.8*2
AD1000-500G-4		2.0*2	38*2	186*2	300*2	

VFD MODEL	BRAKE UNIT MODEL	RESISTANCE APPLICABLE FOR BRAKE TORQUE (Λ)	DISSIPATED POWER OF BRAKE RESISTOR (kW)			MINIMUM ALLOWABLE BRAKE RESISTOR (Λ)
			10% BRAKE USAGE	50% BRAKE USAGE	80% BRAKE USAGE	
AC 3PH 500V~575V						
AD1000-022G-5	DBU100H-110-6	55	4	17	27	10.0
AD1000-030G-5		40.3	5	23	36	
AD1000-370G-5		32.7	6	28	44	
AD1000-045G-5		26.9	7	34	54	
AD1000-055G-5		22.0	8	41	66	
AD1000-075G-5		16.1	11	56	90	
AD1000-090G-5		13.4	14	68	108	
AD1000-110G-5		11.0	17	83	132	
AD1000-132G-5	DBU100H-160-6	9.2	20	99	158	6.9
AD1000-160G-5		7.6	24	120	192	
AD1000-185G-5	DBU100H-220-6	6.5	28	139	222	5.0
AD1000-200G-5		6.1	30	150	240	
AD1000-220G-5		5.5	33	165	264	
AD1000-250G-5	DBU100H-320-6	4.8	38	188	300	3.4
AD1000-280G-5		4.3	42	210	336	
AD1000-315G-5		3.8	47	236	378	
AD1000-355G-5		3.5	53	263	420	
AD1000-400G-5	DBU100H-400-6	3.0	60	300	480	2.8
AD1000-450G-5	Two sets DBU100H-320-6	5.5*2	34*2	168*2	270*2	3.4*2
AD1000-500G-5		4.8*2	38*2	188*2	300*2	
AD1000-560G-5		4.3*2	42*2	210*2	336*2	
AD1000-630G-5		3.8*2	47*2	236*2	378*2	

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