Type number key

VFD 007 FP 4E A -XYS

IP Protection Level
X = 4: IP41
5: IP55

NEMA Level
Y = 1: NEMA1
2: NEMA12

S = Main switch

Mount Method:
A = Wall mount

Input voltage
4E = 400VAC with filter

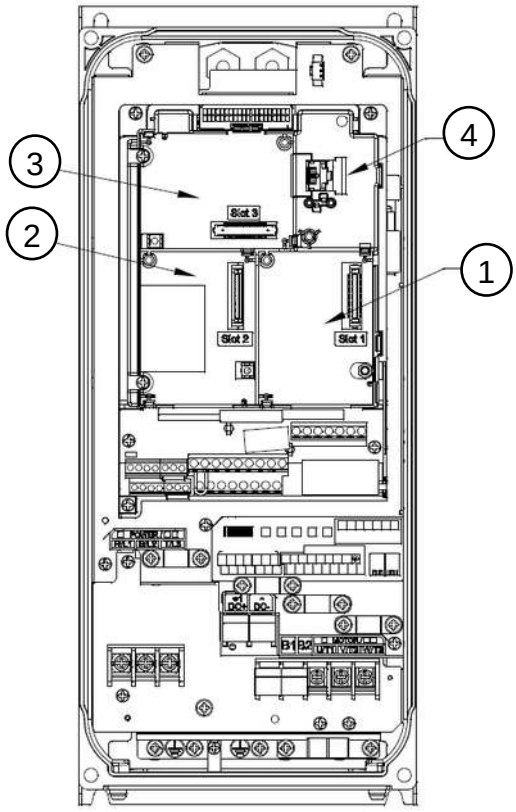
CFP2000 series

Power
007 = 0.75 kW **022** = 2.2 kW
185 = 18.5 kW **370** = 37 kW etc.

Delta **V**ariable **F**requency **D**rive



Option cards



Slot 1: Communication cards

CMC-PN01	Profinet
CMC-PD01	Profibus DP
CMC-DN01	DeviceNet
EMC-COP01	CANopen
CMC-EIP01	Ethernet/IP & Modbus-TCP, 1 port
CMC-EIP02	Ethernet/IP & Modbus-TCP, 2 ports
CMC-EC01	EtherCAT
eZVFD-CC	BACnet IP

Slot 2: No function

Slot 3: I/O & Relay cards

EMC-D42A	4 MI, 2 MO
EMC-R6AA	6 Relays (NO)
EMC-D611A	6 MI (120V_{AC})
EMC-A22A	2 AI, 2AO
EMC-BPS01	24 V_{DC} Backup Power Supply Card

4: RJ45(female) for digital keypad

KPC-CC01	Standard LCD
KPC-CE01	Option LED

400V 0.75 - 7.5kW

Type number VFD□□□□□□□□-41 / VFD□□□□□□□□-52 / VFD□□□□□□□□-52S		007FP4EA	015FP4EA	022FP4EA	037FP4EA	040FP4EA	055FP4EA	075FP4EA
Rated power (LD/ND)	kW	0.75/0.4	1.5/0.75	2.2/1.5	3.7/2.2	4.0/3.7	5.5/4	7.5/5.5
Rated output current (LD/ND)	A RMS	3/1.7	4.2/3	5.5/4	8.5/6	10.5/9	13/10.5	18/12
Overload (LD/ND)	%	120% 60s / 120% 60s;160% 3s						
Rated output capacity (LD/ND)	kVA	2.4/1.4	3.3/2.4	4.4/3.2	6.8/4.8	8.4/7.2	10.4/8.4	14.3/10
Rated input current (LD/ND)	A RMS	3/1.7	4.2/3	5.5/4	8.5/6	10.5/9	13/10.5	18/12
Mains fuse (for UL: Bussmann)		JJS-6		JJS-10	JJS-15		JJS-20	JJS-25
Non-fuse current breaker	A	6		10	15		20	25
Frame & Dimensions HxWxD *	mm	A-1 (-52) 366.4x161x199 A-2 (-52S) 366.4x161x244 A-3 (-41) 366.4x161x199						
Weight	kg	6.8						
Power cable entry	∅mm	1x 20.3 2x 25.4						
Signal cable entry	∅mm	4x 20.3						
Section of power cables (stranded)	mm^2	3.3-5.3				5.3		
Cooling		Convection		Fan				
Cooling air flow rate	m^3/hr	14 (internal)		48				
Carrier frequency	kHz	2-15						
EMC-Filter		Built-in						
DC-Choke		Built-in						
DC-Bus connection		Yes						
Brake chopper		Built-in						
Recommended brake resistor	Ω/W	750/80		360/200	250/300	150/400	75/1000	
Minimum brake resistor value	Ω	190		126.7	108.6	84.4	54.3	

400V 11 - 22kW

Type number VFD□□□□□□□□-41 / VFD□□□□□□□□-52 / VFD□□□□□□□□-52S		110FP4EA	150FP4EA	185FP4EA	220FP4EA
Rated power (LD/ND)	kW	11/7.5	15/11	18.5/15	22/18.5
Rated output current (LD/ND)	A RMS	24/18	32/24	38/32	45/38
Overload (LD/ND)	%	120% 60s / 120% 60s;160% 3s			
Rated output capacity (LD/ND)	kVA	19/14	25/19	30/25	36/30
Rated input current (LD/ND)	A RMS	24/18	32/24	38/32	45/38
Mains fuse (for UL: Bussmann)		JJS-35	JJS-50	JJS-60	
Non-fuse current breaker	A	35	50	60	
Frame & Dimensions HxWxD *	mm	B-1 (-52) 491.4x261x229 B-2 (-52S) 491.4x261x274 B-3 (-41) 491.4x261x229			
Weight	kg	14.5			
Power cable entry	∅mm	2x 41 1x 25.4			
Signal cable entry	∅mm	4x 20.3			
Section of power cables (stranded)	mm^2	8.4-13.3		13.3	
Cooling		Fan			
Cooling air flow rate	m^3/hr	102			
Carrier frequency	kHz	2-15			2-10
EMC-Filter		Built-in			
DC-Choke		Built-in			
DC-Bus connection		Yes			
Brake chopper		Built-in			
Recommended brake resistor	Ω/W	75/1000	43/1500	32/2000	
Minimum brake resistor value	Ω	47.5	42.2	26.2	23

* See dimensional drawing on Page 7-11.

400V 30 - 37kW

Type number VFD□□□□□□□□-41 VFD□□□□□□□□-52 VFD□□□□□□□□-52S		300FP4EA	370FP4EA
Rated power (LD/ND)	kW	30/22	37/30
Rated output current (LD/ND)	A RMS	60/45	73/60
Overload (LD/ND)	%	120% 60s / 120% 60s;160% 3s	
Rated output capacity (LD/ND)	kVA	48/36	58/48
Rated input current (LD/ND)	A RMS	60/45	73/60
Mains fuse (for UL: Bussmann)		JJS-90	JJS-100
Non-fuse current breaker	A	90	100
Frame & Dimensions HxWxD *	mm	C-1 (-52) 630x282x265 C-2 (-52S) 630x282x310 C-3 (-41) 630x282x265	
Weight	kg	26.5	
Power cable entry	∅mm	2x 51 1x 41 1x 25.4	
Signal cable entry	∅mm	4x 20.3	
Section of power cables (stranded)	mm^2	21.2-33.6	33.6
Cooling		Fan	
Cooling air flow rate	m^3/hr	229	
Carrier frequency	kHz	2-10	
EMC-Filter		Built-in	
DC-Choke		Built-in	
DC-Bus connection		Yes	
Brake chopper		Built-in	
Recommended brake resistor	Ω/W	26/3000	16/4000
Minimum brake resistor value	Ω	23	14.1

400V 45 - 90kW

Type number VFD□□□□□□□□-41 VFD□□□□□□□□-52 VFD□□□□□□□□-52S		450FP4EA	550FP4EA	750FP4EA	900FP4EA
Rated power (LD/ND)	kW	45/37	55/45	75/55	90/75
Rated output current (LD/ND)	A RMS	73/58	110/91	150/110	180/150
Overload (LD/ND)	%	120% 60s / 120% 60s;160% 3s			
Rated output capacity (LD/ND)	kVA	73/58	88/73	120/88	143/120
Rated input current (LD/ND)	A RMS	91/73	110/91	150/110	180/150
Mains fuse (for UL: Bussmann)		JJS-125	JJS-150	JJS-200	JJS-250
Non-fuse current breaker	A	125	150	200	250
Dimensions HxWxD	mm	D0-1 (-52) 680x308x307 D0-2 (-52S) 680x308x352 D0-3 (-41) 680x308x307		D-1 (-52) 770x370x335 D-2 (-52S) 770x370x380 D-3 (-41) 770x370x335	
Weight	kg	42		59.5	
Power cable entry	∅mm	2x 64 1x 51 1x 25.4			
Signal cable entry	∅mm	4x 20.3			
Section of power cables, stranded (with ring)	mm^2	42.4-53.5	53.5	85-107	107
Cooling		Fan			
Cooling air flow rate	m^3/hr	314		359	
Carrier frequency	kHz	2-10			2-9
EMC-Filter		Built-in			
DC-Choke		Built-in			
DC-Bus connection		Yes			
Brake chopper		External option			
Recommended brake resistor **	Ω/W	15/4800	13/6000	10.2/8000	7.5/9600
Minimum brake resistor value **	Ω	12.7		9.5	6.3

* See dimensional drawing on Page 7-11.

** With external brake unit.

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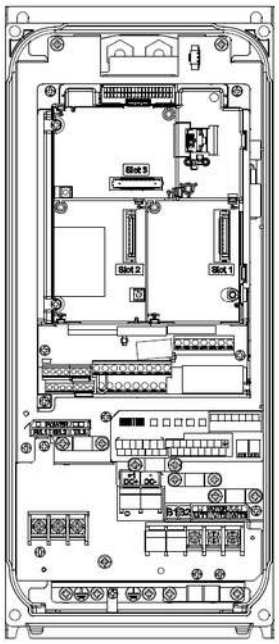
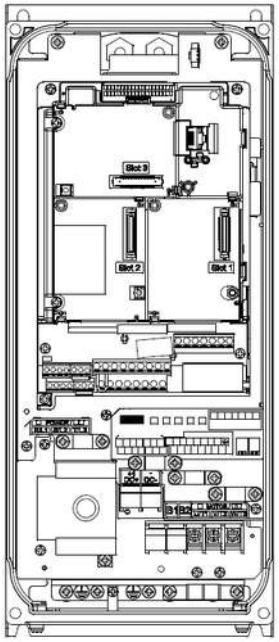
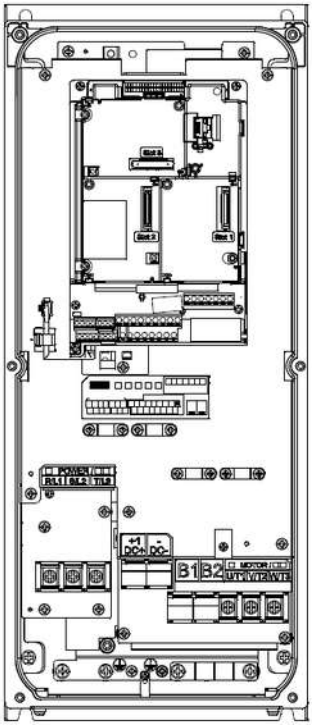
Main circuit wiring Frame A-1/-3



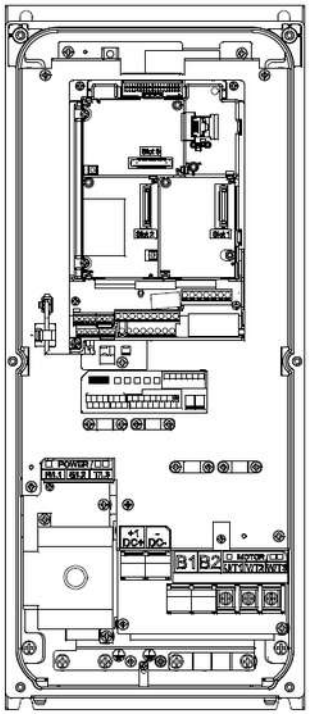
Main circuit wiring Frame A-2



Main circuit wiring Frame B-1/-3



Main circuit wiring Frame B-2



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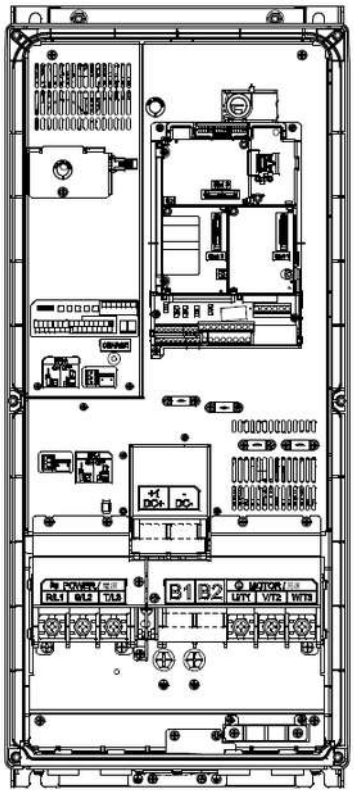
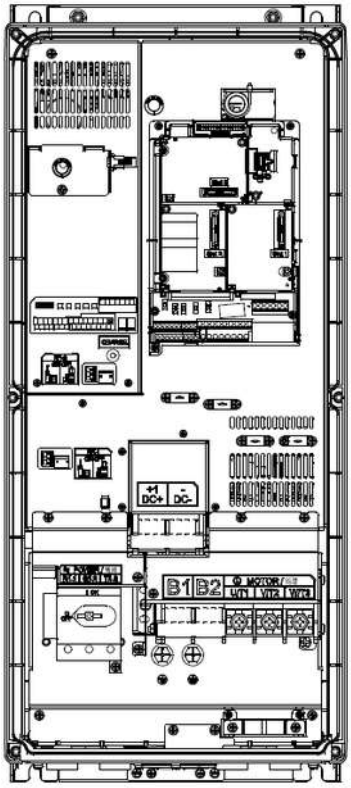
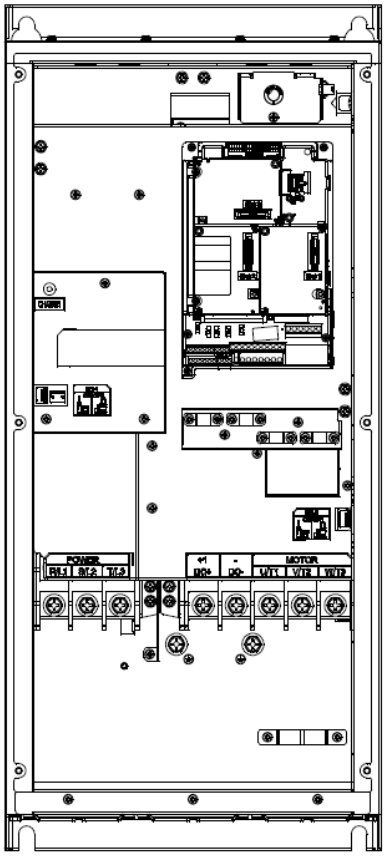
Main circuit wiring Frame C-1/-3



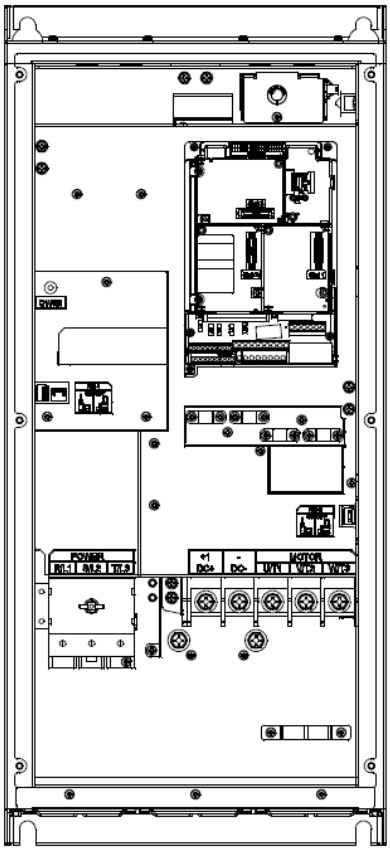
Main circuit wiring Frame C-2



Main circuit wiring Frame D0-1/-3



Main circuit wiring Frame D0-2



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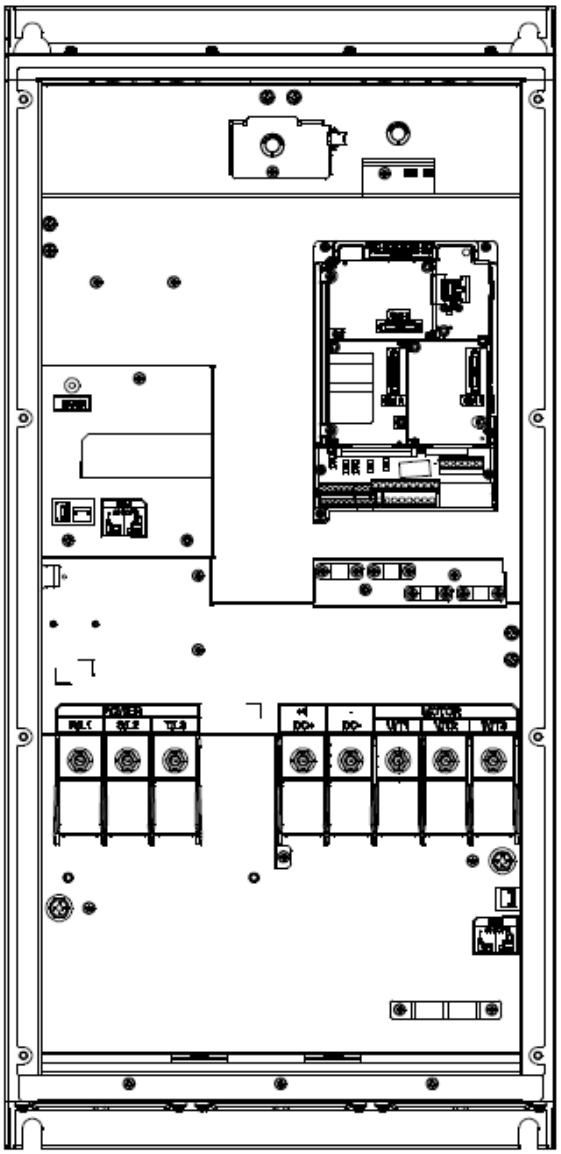
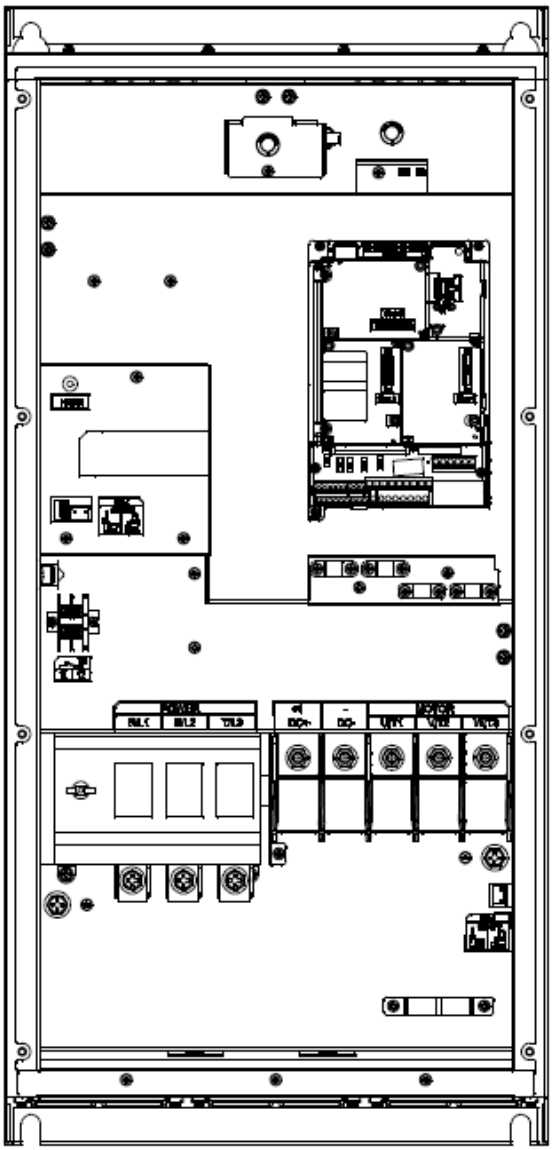
Main circuit wiring Frame D-1/-3



Main circuit wiring Frame D-2



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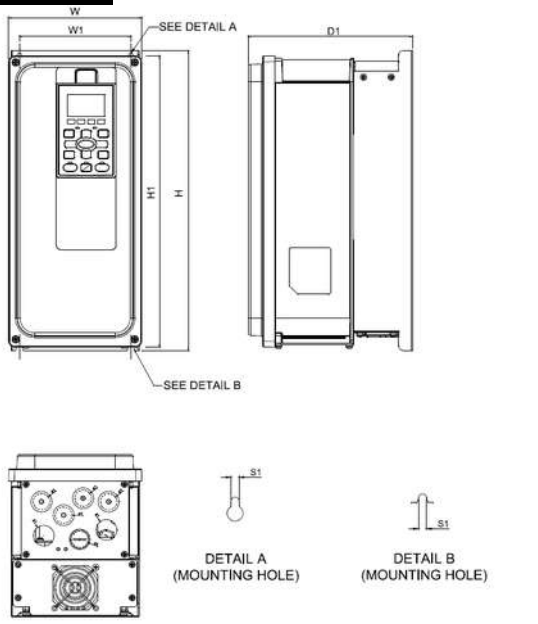
Frame sizes and dimensions in mm [inches]

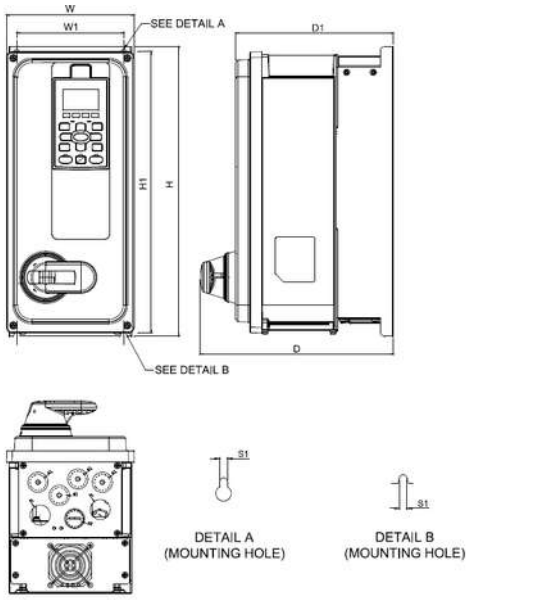
Frame A-1



Unit: mm [inch]

Frame	W	W1	H	H1	D	D1	S1	Φ1	Φ2	Φ3
A-1	161.0 [6.34]	135.0 [5.31]	366.4 [14.43]	356.0 [14.02]	-	199.0 [7.83]	6.5 [0.26]	25.4 [1.00]	20.3 [0.80]	20.3 [0.80]

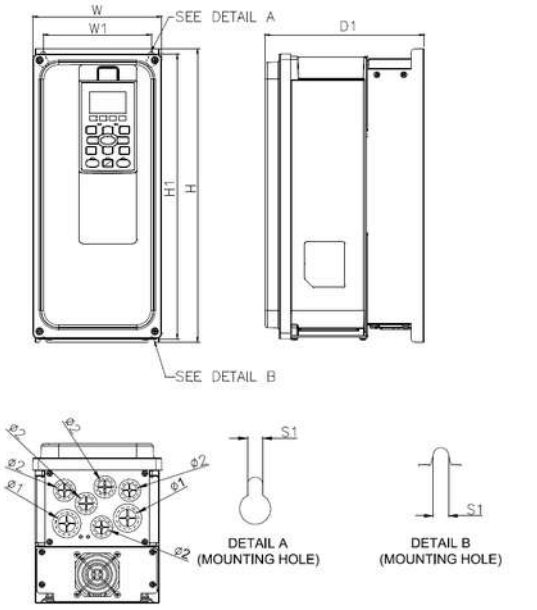
Frame A-2



Unit: mm [inch]

Frame	W	W1	H	H1	D	D1	S1	Φ1	Φ2	Φ3
A-2	161.0 [6.34]	135.0 [5.31]	366.4 [14.43]	356.0 [14.02]	244.0 [9.61]	199.0 [7.83]	6.5 [0.26]	25.4 [1.00]	20.3 [0.80]	20.3 [0.80]

Frame A-3

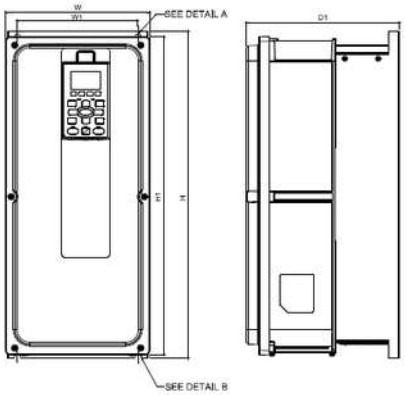


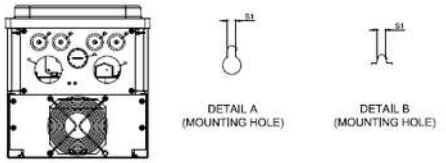
Unit: mm [inch]

Frame	W	W1	H	H1	D	D1	S1	Φ1	Φ2	Φ3
A-3	161.0 [6.34]	135.0 [5.31]	366.4 [14.43]	356.0 [14.02]	-	199.0 [7.83]	6.5 [0.26]	25.4 [1.00]	20.3 [0.80]	-

Frame sizes and dimensions in mm [inches] (cont'd)

Frame B-1

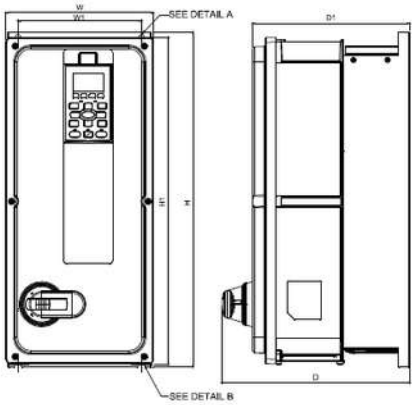


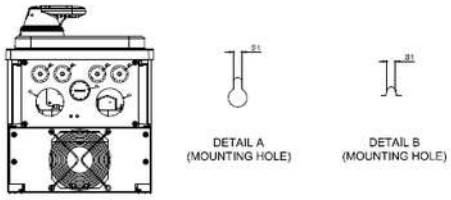


Unit: mm [inch]

Frame	W	W1	H	H1	D	D1	S1	Φ1	Φ2	Φ3
B-1	261.0 [8.50]	181.0 [7.13]	491.4 [19.35]	479.0 [18.86]	-	229.0 [9.02]	8.5 [0.33]	41.0 [1.61]	25.4 [1.00]	20.3 [0.80]

Frame B-2

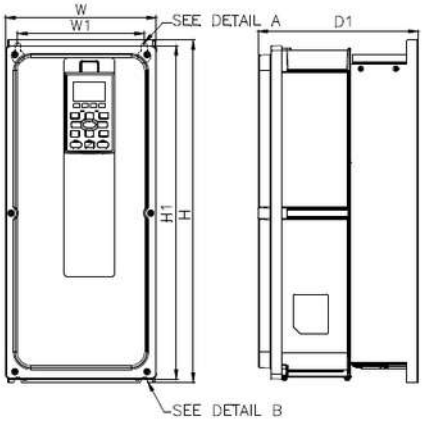


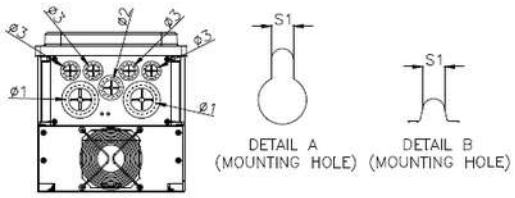


Unit: mm [inch]

Frame	W	W1	H	H1	D	D1	S1	Φ1	Φ2	Φ3
B-2	261.0 [8.50]	181.0 [7.13]	491.4 [19.35]	479.0 [18.86]	274.0 [10.79]	229.0 [9.02]	8.5 [0.33]	41.0 [1.61]	25.4 [1.00]	20.3 [0.80]

Frame B-3





Unit: mm [inch]

Frame	W	W1	H	H1	D	D1	S1	Φ1	Φ2	Φ3
B-3	216.0 [8.50]	181.0 [7.13]	491.4 [19.35]	479.0 [18.86]	-	229.0 [9.02]	8.5 [0.33]	41.8 [1.65]	28.0 [1.10]	22.0 [0.87]

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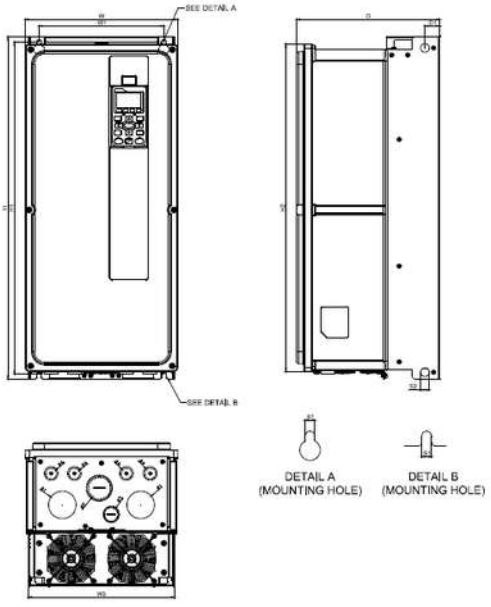
Frame C-1

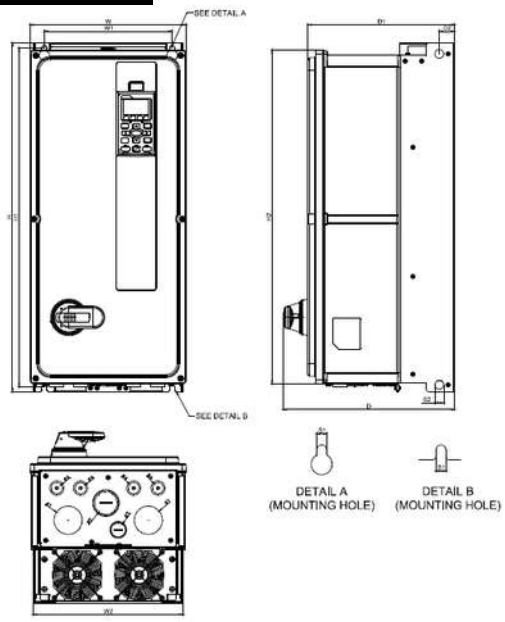


Unit: mm [inch]

Frame	W	W1	W2	H	H1	H2	D
C-1	282.0 [11.10]	231.0 [9.09]	271.0 [10.67]	630.0 [24.8]	611.0 [24.06]	602.5 [23.72]	265.0 [10.43]

Frame	D1	S1	S2	Φ1	Φ2	Φ3	Φ4
C-1	27.8 [1.09]	9.0 [0.35]	16.0 [0.63]	51.0 [2.01]	41.0 [1.61]	25.4 [1.00]	20.3 [0.80]

Frame C-2

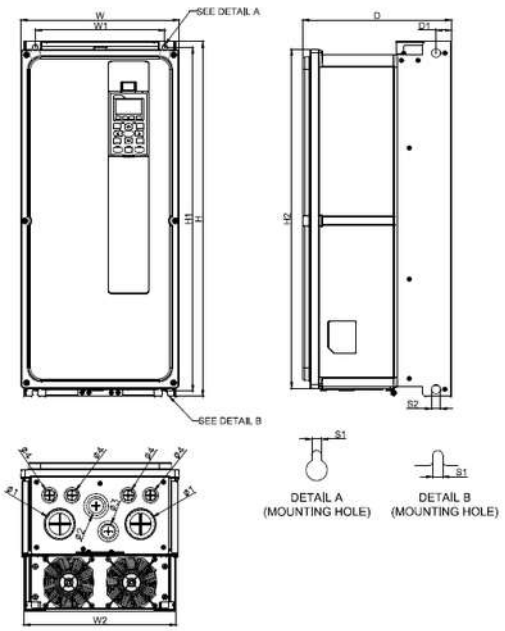


Unit: mm [inch]

Frame	W	W1	W2	H	H1	H2	D	D1
C-2	282.0 [11.10]	231.0 [9.09]	271.0 [10.67]	630.0 [24.8]	611.0 [24.06]	602.5 [23.72]	310.0 [12.20]	265.0 [10.43]

Frame	D2	S1	S2	Φ1	Φ2	Φ3	Φ4
C-2	27.8 [1.09]	9.0 [0.35]	16.0 [0.63]	51.0 [2.01]	41.0 [1.61]	25.4 [1.00]	20.3 [0.80]

Frame C-3

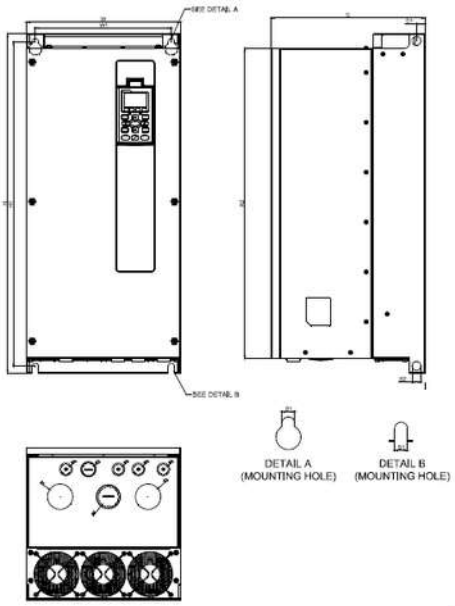


Unit: mm [inch]

Frame	W	W1	W2	H	H1	H2	D
C-3	282.0 [11.10]	231.0 [9.09]	271.0 [10.67]	630.0 [24.80]	611.0 [24.06]	602.5 [23.72]	265.0 [10.43]

Frame	D1	S1	S2	Φ1	Φ2	Φ3	Φ4
C-3	27.8 [1.09]	9.0 [0.35]	16.0 [0.63]	51.0 [2.01]	34.0 [1.34]	28.0 [1.10]	22.0 [0.87]

Frame D0-1

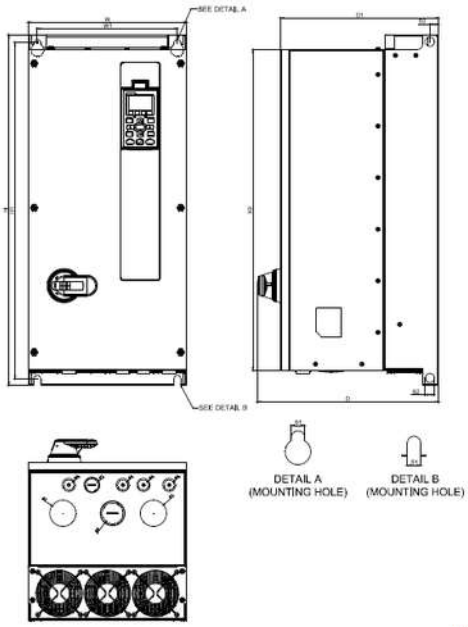


Unit: mm [inch]

Frame	W	W1	H	H1	H2	D
D0-1	308.0 [12.13]	272.0 [10.71]	680.0 [26.77]	651.0 [25.63]	622.0 [24.49]	307.0 [12.09]

Frame	D1	S1	S2	Φ1	Φ2	Φ3	Φ4
D0-1	17.0 [0.67]	13.0 [0.51]	18.0 [0.71]	51.0 [2.01]	41.0 [1.61]	25.4 [1.00]	20.3 [0.80]

Frame D0-2

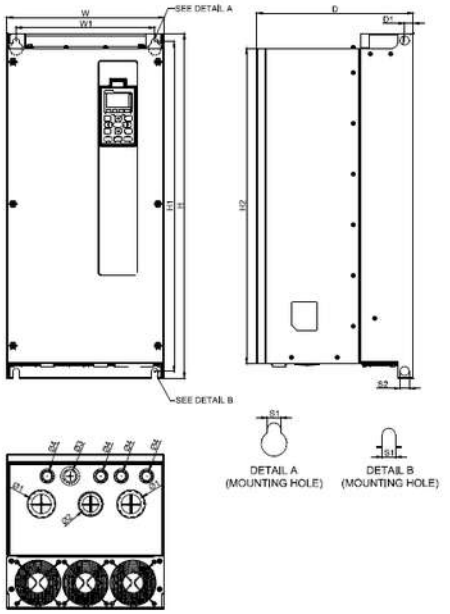


Unit: mm [inch]

Frame	W	W1	H	H1	H2	D	D1
D0-2	308.0 [12.13]	272.0 [10.71]	680.0 [26.77]	651.0 [25.63]	622.0 [24.49]	352.0 [13.86]	307.0 [12.09]

Frame	D2	S1	S2	Φ1	Φ2	Φ3	Φ4
D0-2	17.0 [0.67]	13.0 [0.51]	18.0 [0.71]	51.0 [2.01]	41.0 [1.61]	25.4 [1.00]	20.3 [0.80]

Frame D0-3

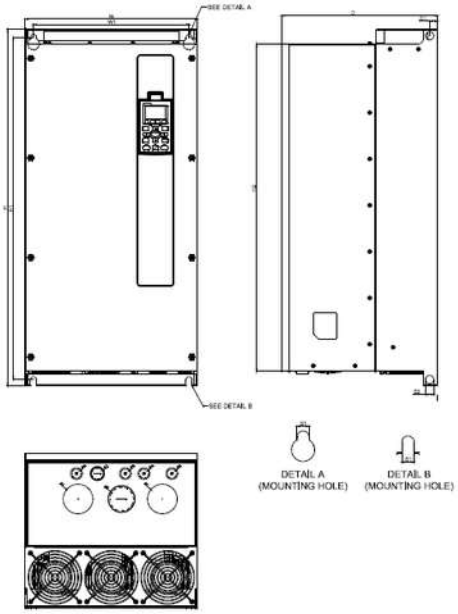


Unit: mm [inch]

Frame	W	W1	H	H1	H2	D
D0-3	308.0 [12.13]	272.0 [10.71]	680.0 [26.77]	651.0 [25.63]	622.0 [24.49]	307.0 [12.09]

Frame	D1	S1	S2	Φ1	Φ2	Φ3	Φ4
D0-3	17.0 [0.67]	13.0 [0.51]	18.0 [0.71]	51.0 [2.01]	44.0 [1.73]	28.0 [1.10]	22.0 [0.87]

Frame D-1

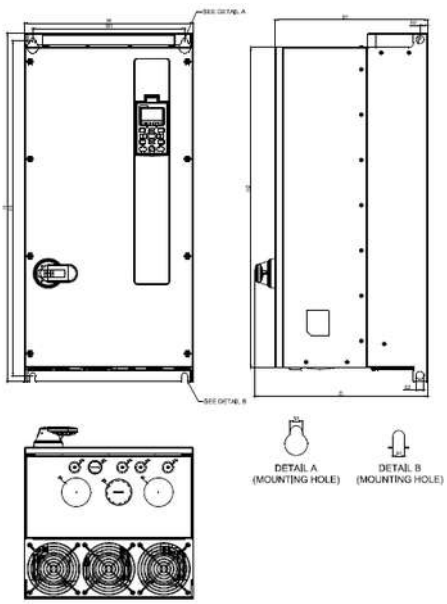


Unit: mm [inch]

Frame	W	W1	H	H1	H2	D
D-1	370.0 [14.57]	334.0 [13.15]	770.0 [30.31]	739.0 [29.09]	707.0 [27.83]	335.0 [13.19]

Frame	D1	S1	S2	Φ1	Φ2	Φ3	Φ4
D-1	17.0 [0.67]	13.0 [0.51]	18.0 [0.71]	64.0 [2.52]	51.0 [2.01]	25.4 [1.00]	20.3 [0.80]

Frame D-2

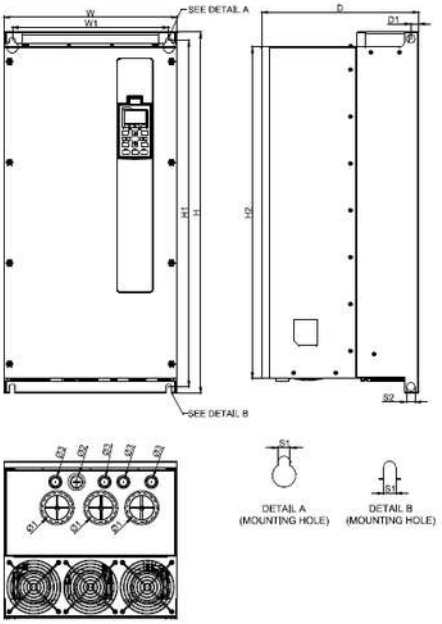


Unit: mm [inch]

Frame	W	W1	H	H1	H2	D	D1
D-2	370.0 [14.57]	334.0 [13.15]	770.0 [30.31]	739.0 [29.09]	707.0 [27.83]	380.0 [14.96]	335.0 [13.19]

Frame	D2	S1	S2	Φ1	Φ2	Φ3	Φ4
D-2	17.0 [0.67]	13.0 [0.51]	18.0 [0.71]	64.0 [2.52]	51.0 [2.01]	25.4 [1.00]	20.3 [0.80]

Frame D-3



Unit: mm [inch]

Frame	W	W1	H	H1	H2	D
D-3	370.0 [14.57]	334.0 [13.15]	770.0 [30.31]	739.0 [29.09]	707.0 [27.83]	335.0 [13.19]

Frame	D1	S1	S2	Φ1	Φ2	Φ3	Φ4
D-3	17.0 [0.67]	13.0 [0.51]	18.0 [0.71]	62.0 [2.44]	28.0 [1.10]	22.0 [0.87]	–

Common data CFP2000

Mains voltage range	VAC	400 V_{AC}: 342 - 528
Mains frequency	Hz	47 - 63
Output frequency range	Hz	0 - 599
Output voltage range	V	0 - Mains
Operating		
Temperature	°C	-15 - +60 (>50 with 2.5%/K derating) side-by-side: -15 - +60 (>40 with 2.5%/K derating)
Atmospheric pressure	kPa	86 - 106
Relative humidity	%	≤ 95 (non-condensing, non-frozen)
Installation location		IEC60364-1/60664-1: Pollution degree 2, Indoor use only
Installation position		±10° to vertical axis
Pollution level		IEC721-3-3: 3C3, 3S2
Storage		
Temperature	°C	-25 - +70
Atmospheric pressure	kPa	86 - 106
Relative humidity	%	≤ 95 (non-condensing, non-frozen)
Pollution level		IEC721-3-3: 1C2, 1S2
Transportation		
Temperature	°C	-25 - +70
Atmospheric pressure	kPa	70 - 106
Relative humidity	%	≤ 95 (non-condensing, non-frozen)
Pollution level		IEC721-3-3: 2C2, 2S2
Vibration		IEC60068-2-6:

Frame	A	B	C, D0, D
2 - 13.2 Hz	1 mm	1 mm	1 mm
13.2 - 55 Hz	0.7 - 2.0 G	0.7 - 1.5 G	0.7 - 1.0 G
55 - 512 Hz	2.0 G	1.5 G	1.0 G

Shock		IEC60068-2-27: Frame A, B, C, D0: 30 G, 11 ms Frame D: 15 G, 11 ms	
Package drop		IEC60068-2-31 ISTA 1A / 1E / 2B (acc. to weight)	
Degree of protection		IP41 / IP55 / NEMA1 / NEMA12 (depending on type number)	
Altitude	m	≤1000 derate 1%/100 m rated current up to 3000m	
Keypad		Detachable (KPC-CC01)	
Signal cable section	mm^2	0.13 - 1.3	
Digital inputs	8x MIx FWD REV	SINK or SOURCE Range Scan time Pull-up (internal) Current (ON) Switching level	Via wiring 24 V_{DC} 0-30 s ca. 3.6 kΩ 3.3 mA (11 V_{DC} switching) NPN ≤ 13 V_{DC} on, ≥ 19 V_{DC} off PNP ≥ 11 V_{DC} on, ≤ 5 V_{DC} off
STO inputs	STO1-SCM1 STO2-SCM2	Range Current (ON)	24 V_{DC} 3.3 mA (11 V_{DC} switching)
Analogue inputs		Accuracy Delay	12 bits 0-20 s
	AVI1	Range Impedance	0-10 V_{DC} / 0/4-20 mA 20 kΩ / 250 Ω
	AVI2	Range Impedance	0-10 V_{DC} 20 kΩ
	ACI	Range Impedance	0/4-20 mA / 0-10 V_{DC} 250 Ω / 20 kΩ
Analogue outputs		Accuracy Delay	10 bits 20 s

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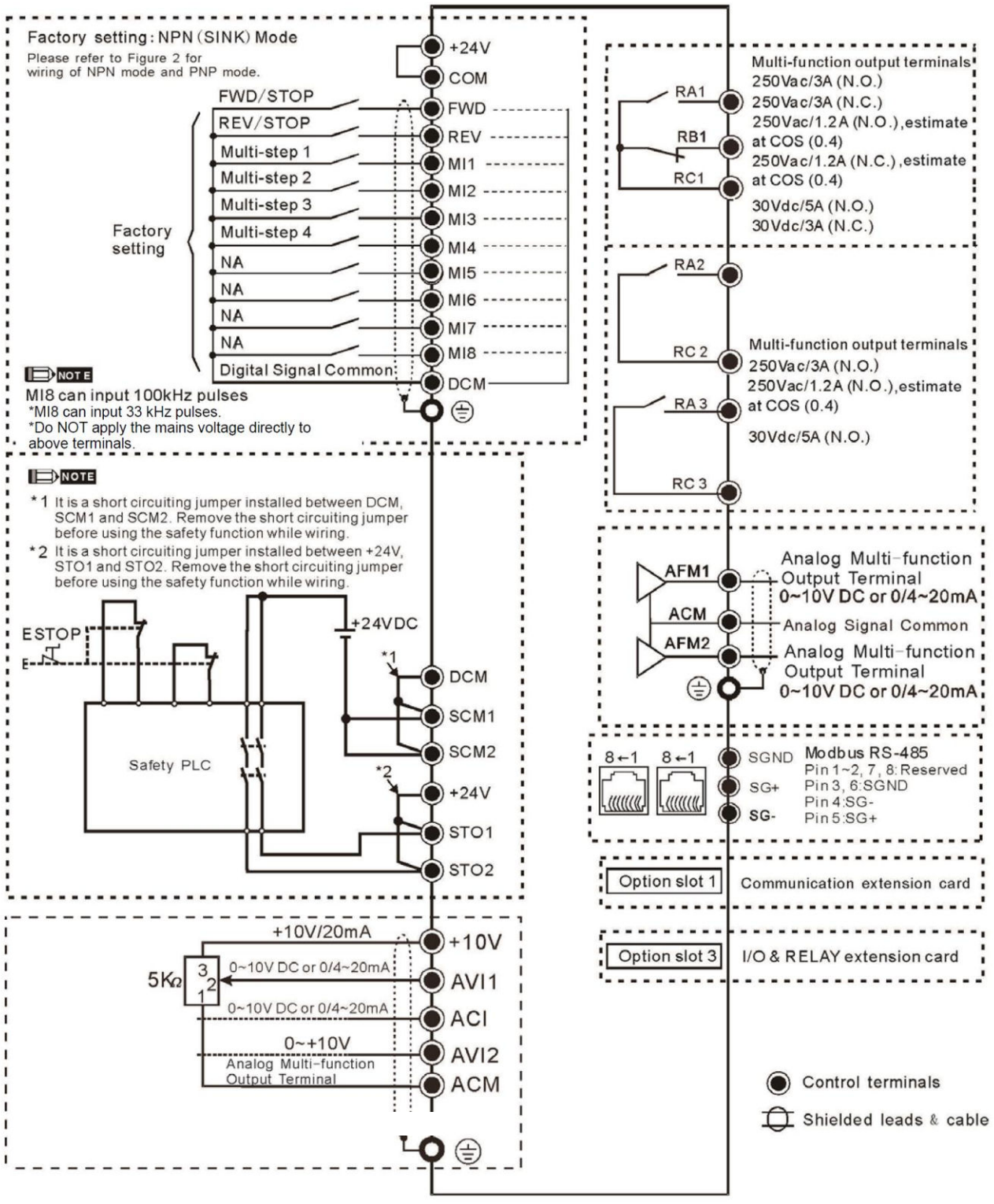
	AFM1	Range Impedance		0-10 V_{DC} 100 Ω	/ 0/4-20 mA (switch) 100 kΩ
	AFM2	Range Impedance			
Relays	3x	1x Change-over			
			NO: R_A-R_C	Resistive 3 A / 250 V_{AC} - 5A / 30 V_{DC} Inductive 1.2 A / 250 V_{AC} - 2A / 30 V_{DC}	
			NC: R_B-R_C	Resistive 3 A / 250 V_{AC} - 3 A / 30 V_{DC} Inductive 1.2A / 250 V_{AC} - 1.2 A / 30 V_{DC}	
		2x Make			
			NO: R_A-R_C	Resistive 3 A / 250 V_{AC} - 5 A / 30 V_{DC} Inductive 1.2A / 250 V_{AC} - 2 A / 30 V_{DC}	
Signal supply	1x	+24 V_{DC} ± 5% / 200 mA			
Potentiometer supply	1x	+10 V_{DC} / 20mA			
Trip memory		Last 6 errors			
Acc/Dec Times	s	0.0 - 6000			
Serial communication	1x RJ45 SG+/SG-	Modbus RS485 COM1			
		Baud rate		4800 - 115200	
		Address		1 - 254	
		Mode	ASCII	7,N,2 / 7,E,1 / 7,O,1 / 7,E,2 / 7,O,2 / 8,N,1 / 8,N,2 / 8,E,1 / 8,O,1 / 8,E,2 / 8,O,2	
			Modbus RTU	8,N,1 / 8,N,2 / 8,E,1 / 8,O,1 / 8,E,2 / 8,O,2	
		BACnet COM1			
		Baud rate		9600 - 76800	
		Address		1 - 127	

Built-in filter

CFP2000			Zero phase reactor*2	CE Cable Length				Radiation Emission
				EN61800-3				
Frame	Model	Rated Input Current (A)		Category C2	Carrier frequency (Hz)	Category C1	Carrier frequency (Hz)	C2
A	VFD007FP4EA-41/-52/-52S	3.0	RF010FP00A	75 m	≤ 8 K	25 m	≤ 4 K*1	Pass
	VFD015FP4EA-41/-52/-52S	4.2						
	VFD022FP4EA-41/-52/-52S	5.5						
	VFD037FP4EA-41/-52/-52S	8.5						
	VFD040FP4EA-41/-52/-52S	10.5						
	VFD055FP4EA-41/-52/-52S	13						
	VFD075FP4EA-41/-52/-52S	18						
B	VFD110FP4EA-41/-52/-52S	24	RF006FP00A					
	VFD150FP4EA-41/-52/-52S	32						
	VFD185FP4EA-41/-52/-52S	38						
	VFD220FP4EA-41/-52/-52S	45						
C	VFD300FP4EA-41/-52/-52S	60	RF002FP00A					
	VFD370FP4EA-41/-52/-52S	73						
D0	VFD450FP4EA-41/-52/-52S	91	-		≤ 10 K		≤ 4 K	
	VFD550FP4EA-41/-52/-52S	110	-					
D	VFD750FP4EA-41/-52/-52S	150	-		≤ 9 K			
	VFD900FP4EA-41/-52/-52S	180	-					

* For C1 an output zero-phase reactor is required.
For cables >25m do not install a zero-phase output reactor, it may overheat.
** For C2 no zero-phase reactor is required.

Basic wiring diagram



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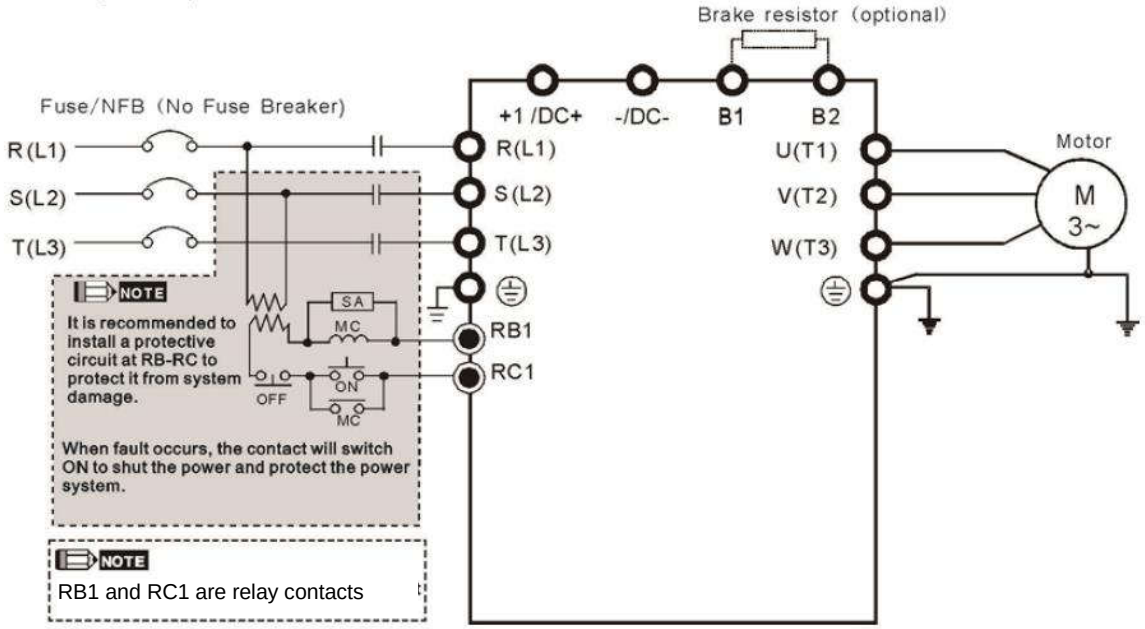
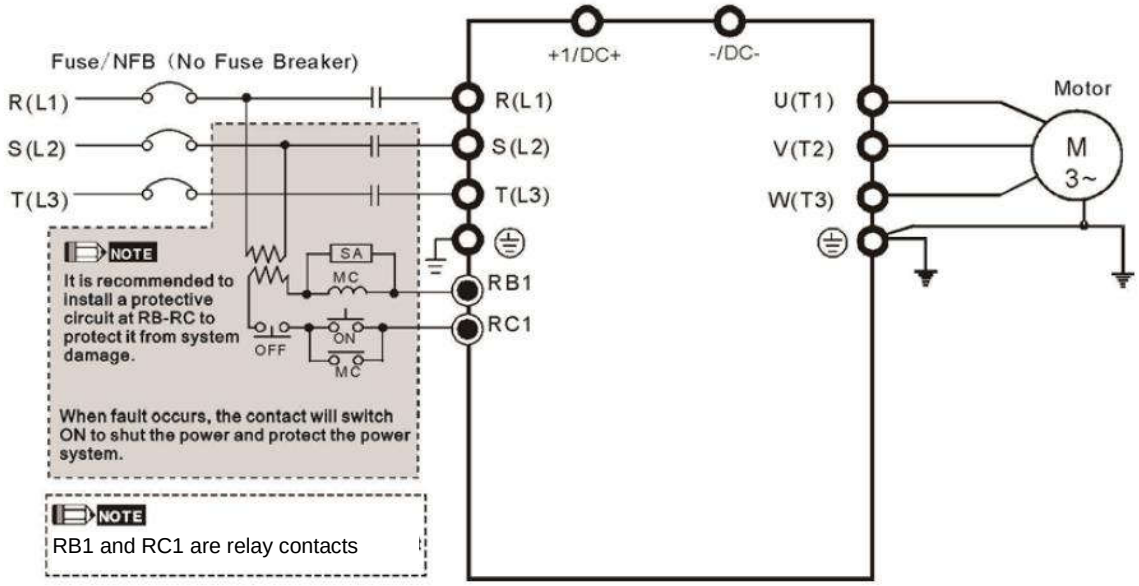
Basic wiring diagram Frame A, B, C

Wiring Diagram for Frame A~C
*It provides 3-phase power



Basic wiring diagram Frame D0 and D

Wiring Diagram for Frame D0 and above
*It provides 3-phase power



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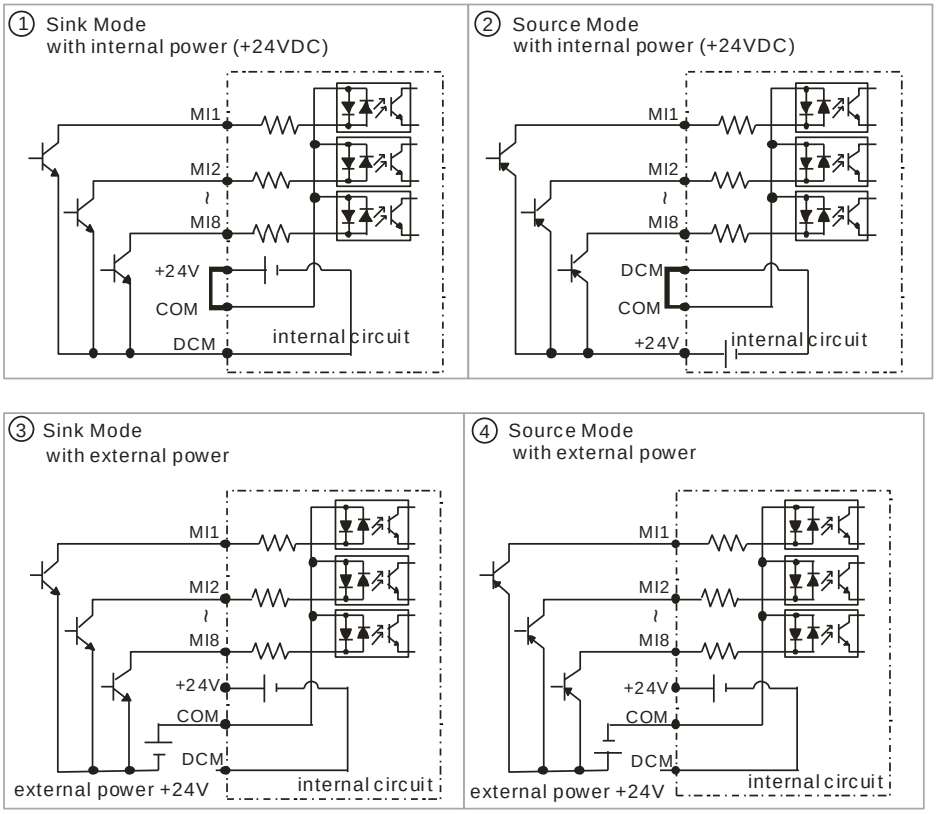
NPN/PNP wiring for MIx

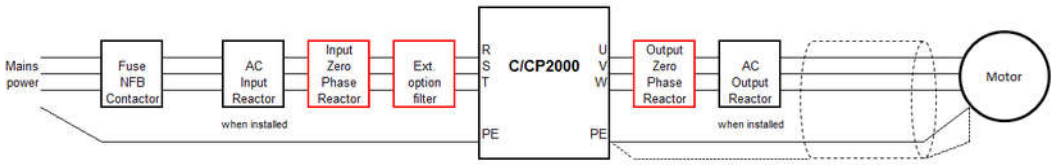


Power terminals (general)

Terminal symbol	Terminal function
R/L1, S/L2, T/L3	Mains input
U/T1, V/T2, W/T3	Motor output
B1 ~ B2	Brake resistor (external option)
+/DC+ ~ -/DC-	VFDB series Brake unit (external option) or DC-bus connection
⏚	Ground

Options

Reactors and cores For external components see the user manual Chapter 7



Braking	Brake resistors and VFDB brake units.	
Keypad&Cables	A standard CAT5 cable (no cross) can be used to connect the keypad to the drive. The standard keypad KPC-CC01 is IP56 when mounted on a flat surface.	
Communication	IFD6500/IFD6530 USB-RS485 converter, Splitters, Cables.	
Fieldbus	CMC-DN01	DeviceNet
	CMC-PD01	Profibus
	EMC-COP01	CANopen
	CMC-PN01	Profinet
	CMC-EIP01	Ethernet/IP & Modbus-TCP, 1 port
	CMC-EIP02	Ethernet/IP & Modbus-TCP, 2 ports
	CMC- EC01	EtherCAT
	eZVFD-CC	BACnet/IP
Option cards	EMC-R6AA	6 programmable relays (A-C, make).
	EMC-D42A	4 prog. Digital Inputs (PNP/NPN), 2 prog. Digital Outputs.
	EMC-D611A	6 prog. Digital Inputs 115V_{AC}.
	EMC-A22A	2 prog. Analog Inputs (0-10VV_{DC}; 0/4-20mA), 2 prog. Analog Outputs.
	EMC-BPS01	24V_{DC} back up power supply card
Software	To read, save, copy, change parameters download the latest version of DIAStudio from the Delta Download Center www.delta-emea.com.	

Programming

Group 00-xx **Drive Parameters**
Drive ID, Software version, Password, Parameter reset, Control Mode, Duty selection, User-defined display, Carrier frequency, Source of frequency/operation, Stop method, Motor direction inhibit, LD/ND selection, etc.

Group 01-xx **Basic Parameters**
V/f-curve (2), Max/Min Voltage and frequency, Acc/Dec times, Jogging, S-curve, 3 Skip frequencies, etc.

Group 02-xx **Digital In-/Output Parameters**
2-3 Wire operation, Function and setting of digital inputs, outputs and relay, Count values, Debounce time, Brake delay, etc.

Group 03-xx **Analogue In-/Output Parameters**
Function, Gain, Bias, Filtering of analogue inputs and outputs.

Group 04-xx **Multi-step Speed and Position**
15 Speed steps and positions.

Group 05-xx **Motor Parameters**
Setting of motor parameters (2 motors), Auto-tuning, Slip compensation, Torque boost, Y-Δ switch-over, Motor operation time, etc.

Group 06-xx **Protection Parameters**
Protection settings, Fault memory and conditions, PTC, Fire mode, etc.

Group 07-xx **Special Parameters**
Brake level, DC-Braking, Power loss override, DEB, Speed search, Auto reset, Fan control, Emergency stop, Auto Energy Saving, AVR, Slip compensation, Auto restart, etc.

Group 08-xx **PID Control Parameters**
PID settings, Sleep function, etc.

Group 09-xx **Communication Parameters**
Modbus Protocol & Address, BACnet station, Transmission speed, Block Transfer, CANopen, Fieldbus settings, etc.

Group 10-xx **PM motor settings**
Current command, Observer, Angle, etc.

Group 12-xx **Pump parameters: Circulative control**
Settings for circulative control (cascading).

Group 13-xx **Application Parameters**
Parameter grouping for specific applications.

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