



Digitized Automation for a Changing World

Delta Compact Drive M300 Series

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Compact and Intelligent

The new standard for micro drives

The automation industry today is facing challenges such as increasing competition and rising costs. In addition to improving productivity and reducing direct labor, the driving force for automation is to achieve higher efficiency, optimal quality, and most importantly, flexibility and compatibility for a wide range of applications.

Delta's M300 series is the new generation compact vector control drive that inherits Delta's superior drive technology with 60% volume reduction.

Various essential functions are built-in as standard, including: PLC capacity for simple programming needs, communication slots for various communication cards, and a USB port to make data uploads and downloads fast and easy. (MH300 & MS300); user-defined parameter groups, single and multi-pump functions, built-in brake chopper and EMC filter (ME300). This saves the need for additional hardware, while providing more installation space for the power cabinet. The other key features include: support for both IM and PM motor control for application flexibility, an STO function to ensure worry-free operation while protecting facilities from damage, and a simplified wiring process with a new screwless wiring design of terminal blocks for quick installation.

User-friendly operation, ultra-compact size, quick installation, and flexible, durable design provide the user with a highly efficient and stable system. The M300 is your key to increased market competitiveness that leads to your success.



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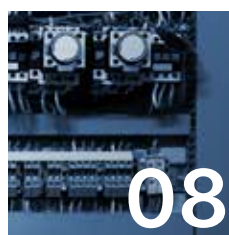
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Models Overview



Standard Models

115V single-phase

Applicable Motor Output (kW)	0.2	0.4	0.75
Applicable Motor Output (HP)	0.25	0.5	1
Frame Size	A		C

230V single-phase

Applicable Motor Output (kW)	0.2	0.4	0.75	1.5	2.2
Applicable Motor Output (HP)	0.25	0.5	1	2	3
Frame Size	A		B	C	

230V single-phase (Built-in EMC filter)

Applicable Motor Output (kW)	0.2	0.4	0.75	1.5	2.2
Applicable Motor Output (HP)	0.25	0.5	1	2	3
Frame Size	B			C	

230V 3-phase

Applicable Motor Output (kW)	0.2	0.4	0.75	1.5	2.2	3.7/4	5.5	7.5	11	15	18.5	22	30	37
Applicable Motor Output (HP)	0.25	0.5	1	2	3	5	7.5	10	15	20	25	30	40	50
Frame Size	A			B	C		D	E		F	G		I	

460V 3-phase

Applicable Motor Output (kW)	0.4	0.75	1.5	2.2	3.7/4	5.5	7.5	11	15	18.5	22	30	37	45	55	75
Applicable Motor Output (HP)	0.5	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100
Frame Size	A		B	C		D		E		F		G	H		I	

460V 3-phase (Built-in EMC filter)

Applicable Motor Output (kW)	0.4	0.75	1.5	2.2	3.7/4	5.5	7.5	11	15	18.5	22	30	37	45	55	75
Applicable Motor Output (HP)	0.5	1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100
Frame Size	B			C		D		E		F		G	H		I	

Exterior Design

Compact design and user-friendly interface

Removable Keypad

Press to remove;
supports remote
operation away from
drive



5 digits 16
segments LCD
display, quick
setting wheel dial,
left-shift function
key

Removable RFI Jumper

Applicable for different
application needs



Built-in USB Port

Easy and fast
programming setting,
update and real-time
monitoring and tuning



Label with Product Details

Including input / output
currents, voltage and
protection level

Screwless Top Cover Design

Press on both side tabs to
remove the cover



Removable Fan

Easy to replace and
maintain for a longer
lifetime



Option Cards

A wide selection of option cards for highly flexible applications

PG Cards

EMM-PG01L
ABZ Signal
Line driver



EMM-PG01O
ABZ Signal
Open collector



EMM-PG01R
Resolver
Suitable for PM motors



I/O Cards

EMM-D33A
I/O



EMM-A22A
Analog



Relay Cards

EMM-R3AA
Form A *3



EMM-R2CA
Form C *2





External Power Supply Card (DC 24V)

EMM-BPS02



Communication Cards

PROFIBUS DP
CMM-PD02



DeviceNet
CMM-DN02



EtherNet/IP
Modbus TCP
CMM-EIP02



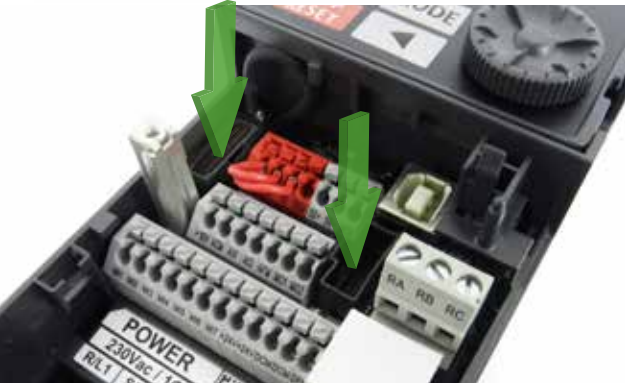
EtherNet/IP
Modbus TCP
CMM-EIP03



EtherCAT
CMM-EC02



Built-in 2 Option Slots

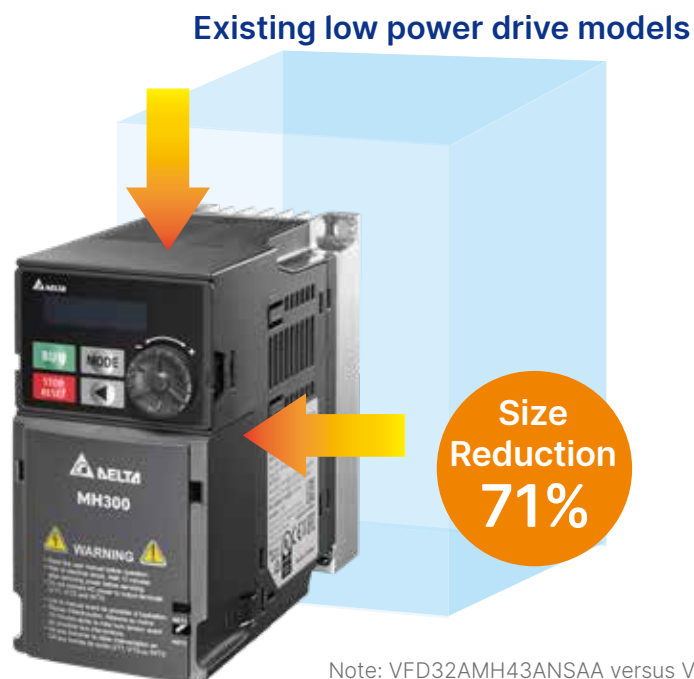


Optimized Space Utilization



Compact Design

Provides more powerful features in smaller sizes with reduction up to 71% that effectively optimizes the installation space



Side-by-Side Installation

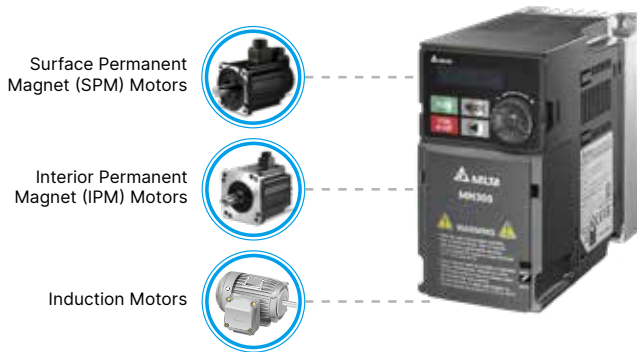
Supports side-by-side installation with operating temperatures of $-20^{\circ}\text{C} \sim 40^{\circ}\text{C}$; enables highly flexible and highly efficient installation



Outstanding Drive Performance

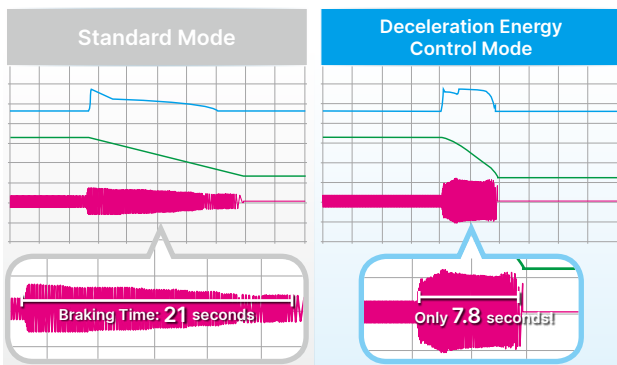
Supports IM and PM Motors

Built-in 4 independent induction motor control parameter sets and supports up to 8 independent induction motor control parameter sets



Enhanced Braking Capability

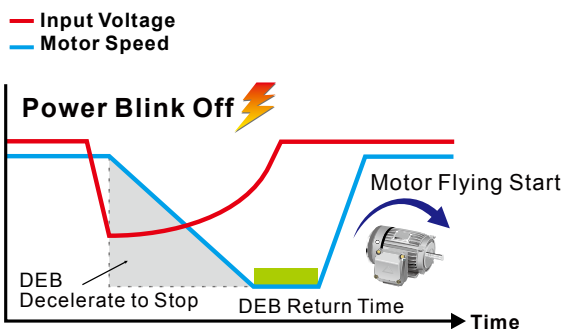
Provides Deceleration Energy Control Mode to shorten braking time by adjusting the motor speed and current, replacing break resistors



* Actual deceleration performance would depend on different system loads

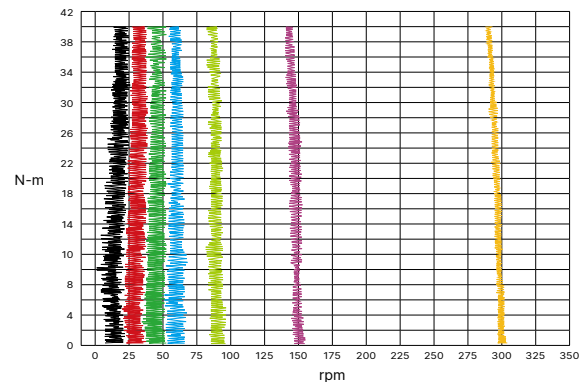
Deceleration Energy Backup (DEB)

Controls the motor deceleration to a stop when an unexpected power shut-down occurs to prevent mechanical damage; the motor will accelerate to its previous speed when power resumes



High Starting Torque

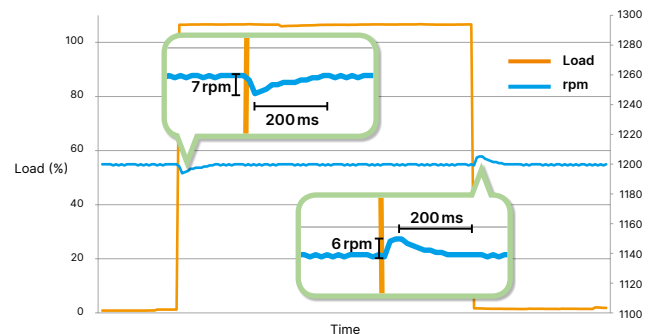
Delivers 200% high starting torque with a low speed control of 0.5 Hz (sensor-less vector control)* and provides outstanding machine stability; suitable for dynamic loading applications



* Note: Additive PG vector control delivers 200% high starting torque with a speed control of 0Hz

Fast Response to Load Impact

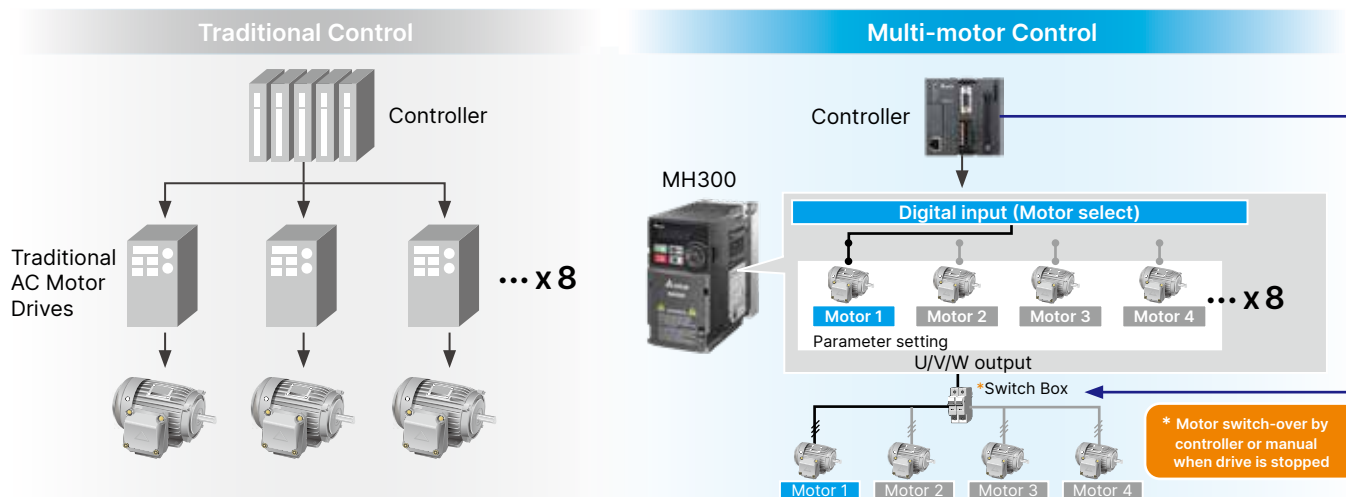
Fast response to sudden load impact at speeds to ensure stable operation and high quality output



Strong System Support

Multi-motor Control

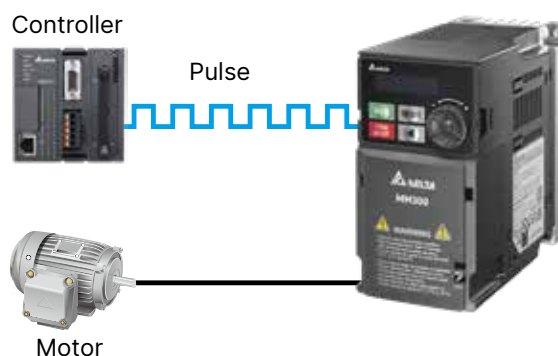
Switching control of 8 induction motors



Note: MH300 features 4 built-in independent parameters sets and through the built-in PLC program, it supports up to 8 independent parameters sets

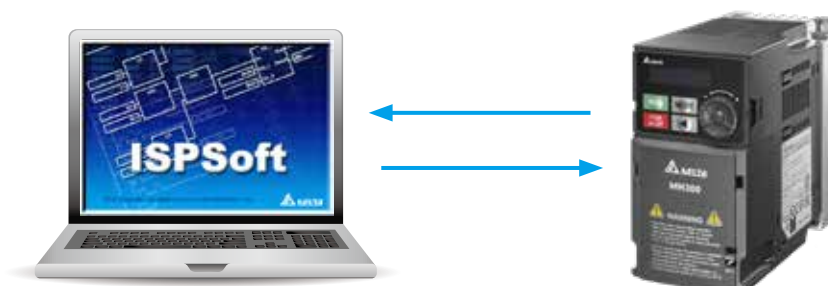
Pulse Input

Supports a dual pulse input signal from controller or a feedback signal from encoder without an additional PG card to achieve simple closed-loop control. Terminal MI7 supports single pulse signal input as a frequency command



Built-in PLC

Built-in PLC capacity (5k steps) provides distributed control and independent operation via network connection



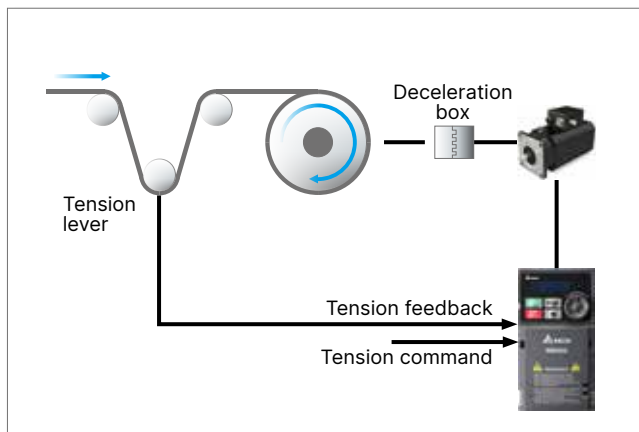
Tension Control

- Built-in coil diameter calculation: through linear velocity, material thickness, and range finder
- 2 PID parameter settings: supports linear adjustment to control tension at the start, between sizes and different linear velocities
- Tensile taper calculation: automatically adjust tension while wrapup to avoid crease folding or deformation
- Auto lap changing: on-power refueling with external signal
- Friction and inertia compensation during torque control: automatically compensate friction and inertia of rewinding and unwinding reels to maintain steady tensions

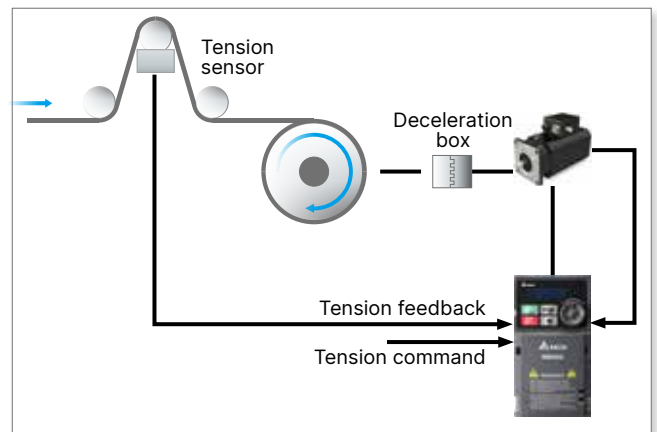


- Supports open/closed-loop, torque and speed tension controls

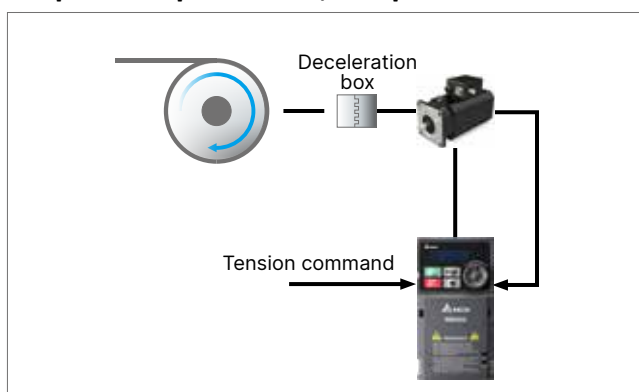
• Closed-loop tension, speed control



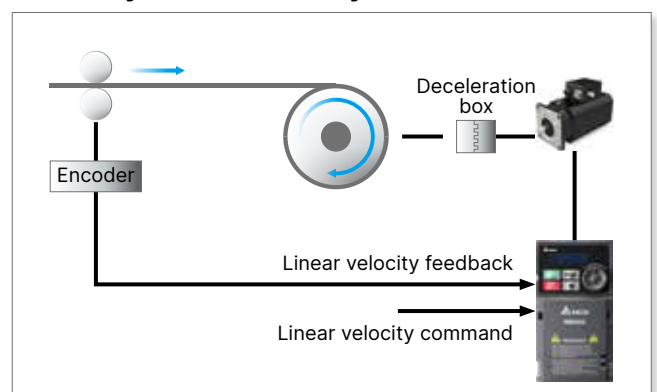
• Closed-loop tension, torque control



• Open-loop tension, torque control

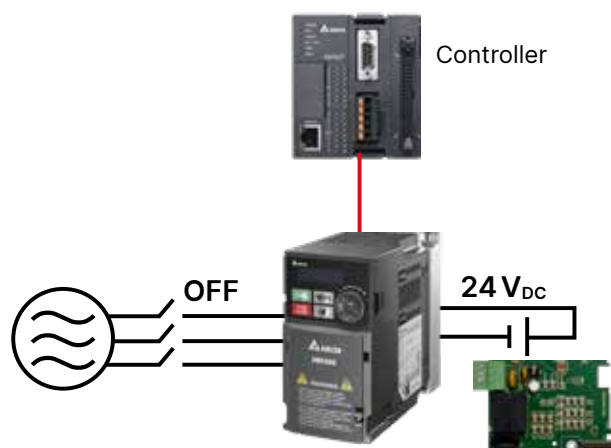


• Steady linear velocity control



DC 24V External Power

External power supply card is available for external power connection to protect the system and ensure uninterrupted communication when mains power failure occurs



High Overload Capability

- Normal duty: rated current 120% for 60 seconds; 150% for 3 seconds
- Heavy duty: rated current 150% for 60 seconds; 200% for 3 seconds

Built-in Braking Chopper

Larger braking torque capability is provided when using an additional braking resistor

Closed-Loop Control

Optional PG card is available to support closed-loop control function and to provide higher precision of motor speed control

Various Communications

Built-in RS-485 (Modbus) and CANopen communication; other communication options are available upon selection

Communication	
Modbus	Built-in
PROFIBUS DP	Optional
DeviceNet	Optional
Modbus TCP	Optional
EtherNet/IP	Optional
CANopen	Built-in
EtherCAT	Optional

Wide Range of Applications



Rewinding Machines

Features and Benefits

- Built-in tension control features for timely response compared to the external controller (ex. PLC); stable tension with coil diameter calculation
- Built-in 2 PID parameter settings for stable tension through the whole production
- Built-in tensile taper calculation to automatically adjust tension while wrapup to avoid crease folding or deformation
- Supports common DC bus to decrease electricity consumption by recovering rewinding energy for unwinding



Slitter Machines

Features and Benefits

- Control by inverters overcomes the drawbacks of a magnetic powder clutch, such as low operating speed, high temperature, and short lifetime
- Timely acceleration/deceleration control improves machinery operation efficiency and supports weak magnetic control to increase slitter speed and save energy
- Automatically compensates friction and inertia of rewinding and unwinding reels to maintain steady tensions
- Supports both induction motors and PM motors



Printing Machines

Features and Benefits

- Built-in 2 PID parameter settings and coil diameter calculation for stable tension with big/small reels, and high/low linear velocity
- Built-in tensile taper calculation to automatically adjust tension while wrapup to avoid crease folding or deformation
- Auto lap changing for on-power refueling with external signal
- Supports common DC bus to decrease electricity consumption by recovering rewinding energy for unwinding



Drawing Machines

Features and Benefits

- Built-in master and sub-carrier frequency control with PID control enables quick response and stable tension to avoid line disconnection
- Low-frequency heavy torque fulfills the torque requirement during low speed and quickly complete threading
- 100% PCB coating to enhances the durability for humid, corrosive, and dusty environments



Coil Cutting Tool

Features and Benefits

- Easy and handy PID control fulfills the requirement of steady tension during high /low linear velocity and avoids belt or cable damages
- Features smart start control to avoid belt damage caused by excessive instantaneous tension during the start
- Built-in brake chopper saves system implementation cost
- Compact design for optimized space efficiency



Machine Tools

Features and Benefits

- Supports PG cards for closed-loop control; suitable for complex and high precision processing applications
- Timely acceleration / deceleration control improves machinery operation efficiency
- Built-in brake chopper saves on purchasing cost
- Built-in PLC capacity for flexible application needs
- Built-in STO function ensures operator safety and effectively reduces accident risk
- Provides deceleration-to-stop function



Woodworking Machines

Features and Benefits

- Timely acceleration / deceleration control improves machinery operation efficiency
- Built-in STO function ensures operator safety and effectively reduces accident risk
- Built-in PLC capacity saves on purchasing cost
- Built-in EMC filter effectively reduces electromagnetic interference
- Compact in size and weight, easy to install and maintain



Textile Machines

Features and Benefits

- IP40 models provide excellent protection from a high dust, fiber or moisture environment
- Improved heatsink design prevents fiber clogging the air way; modular design of fan is easy to clean and provides longer lifetime
- Improved braking capability shortens the deceleration-to-stop time and is suitable for sudden stop requirements
- Built-in STO function ensures operator safety and effectively reduces accident rate
- Supports both induction motors and PM motors
- Provides deceleration-to-stop function to protect the equipment from damage when sudden power failure occurs



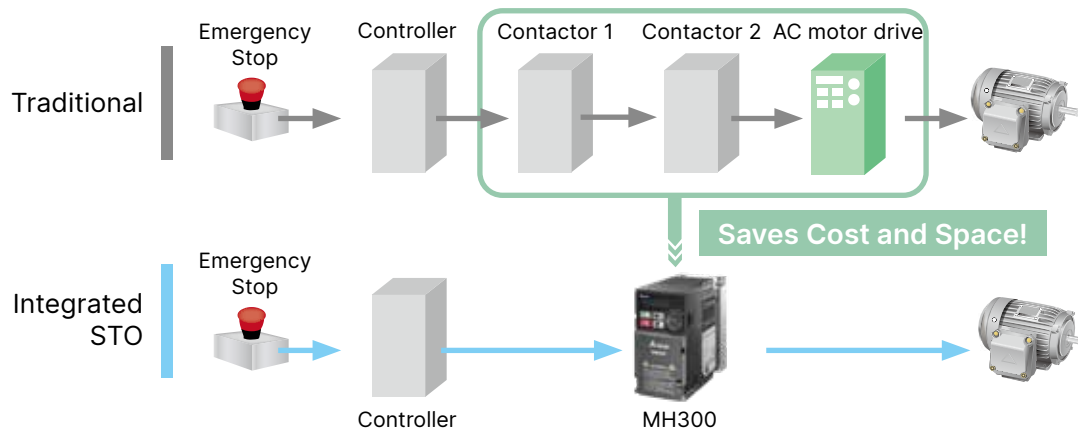
Stable, Safe and Reliable



Safety Standard

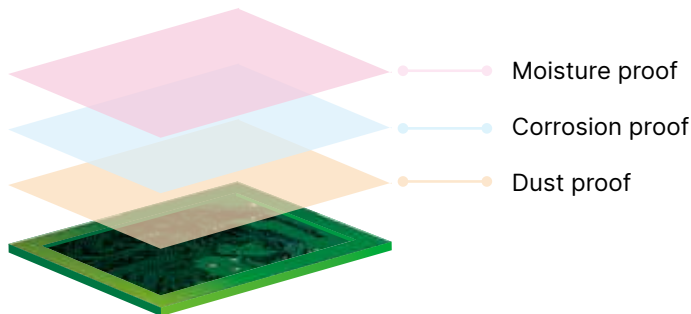
Integrated Safe Torque Off (STO), compliance with:

- ▶ ISO 13849-1: 2015 Category 3 PL d
- ▶ EN 61508 SIL2
- ▶ EN 60204-1 Category 0
- ▶ EN 62061 SIL CL 2



PCB Coating

100% PCB coating (IEC 60721-3-3 class 3C2 standard) ensures drive operation stability and safety in critical environments



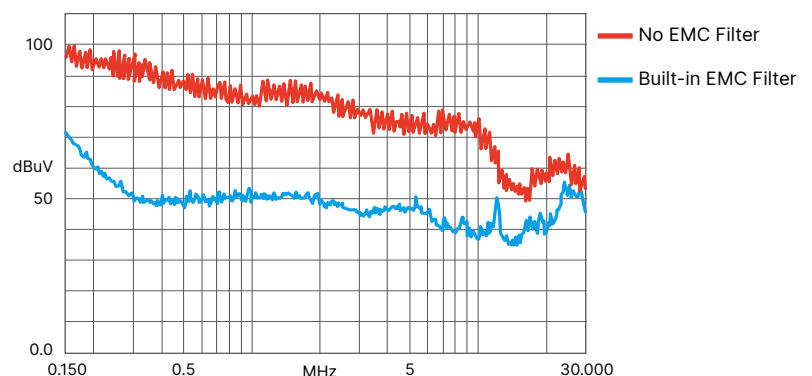
IP 40 Models

Strengthened fan coating and concealed air vent prevent dust and other particles from entering the drive, suitable for critical environment applications



Built-in EMC Filter

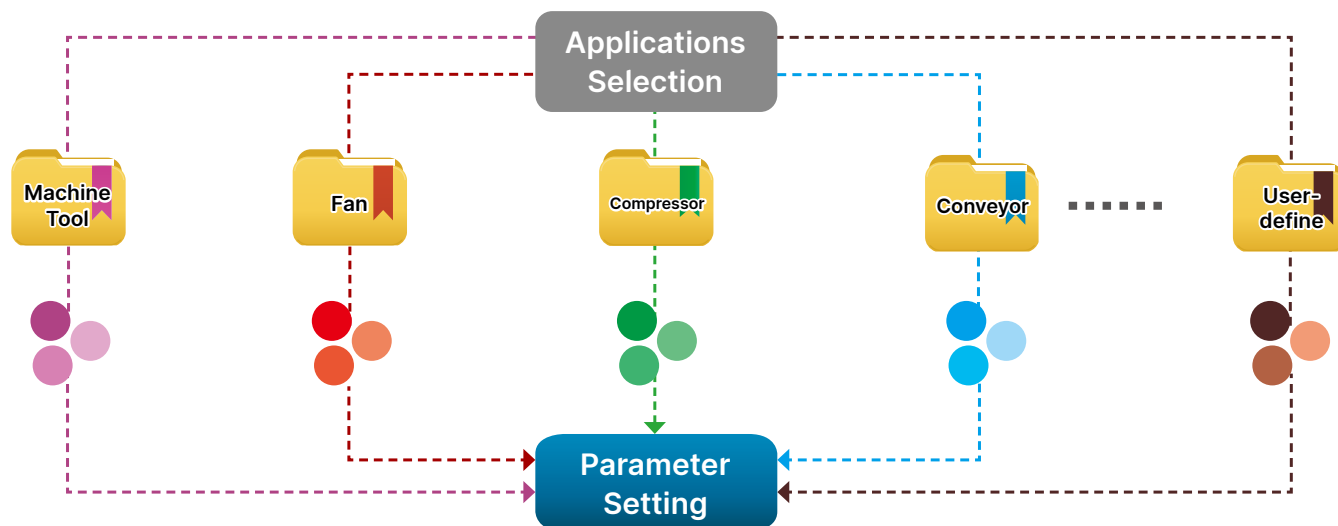
Built-in Class A (C2) standard EMC filter; saves on additional procurement cost and wiring time, and provides more cabinet space for other devices to use



Easy to Install

Application Groups (Macro)

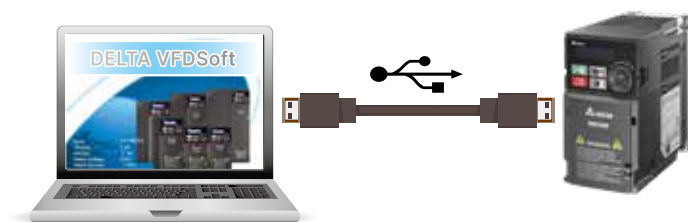
Simplifies the parameter setting process by grouping the parameters for different applications to use



Built-in USB Port

Built-in USB port facilitates the drive setting, updating, real-time monitoring and system tuning process

- No need of USB or RS-485 connectors
- Supports offline (drive power off) parameter setting/copying and system update



Screwless Wiring of Control Terminal

Spring clamp terminal blocks provide fast and easy wiring

No need for special tools and saves wiring time



Specifications



Single-phase
115V

Models w/o Built-in EMC Filter

15V			Frame	A		C
Applicable Motor Output (kW)				0.2	0.4	0.75
Applicable Motor Output (HP)				1/4	1/2	1
Inverter Output	Heavy Duty	Rated Output Current (A)		1.6	2.5	5
	Normal Duty	Rated Output Current (A)		1.8	2.7	5.5
Input	Rated Voltage / Frequency			1-Phase AC 100 V ~120 V (-15% ~ +10%), 50 /60 Hz		
	Mains Input Voltage Range			85 ~ 132 V		
	Mains Frequency Range			47 ~ 63Hz		
Carrier Frequency (kHz)				2 ~ 15 (default 4)		
Brake Chopper				Built-in		
DC Reactor				Optional		
AC Reactor				Optional		
Cooling Method				Natural air cooling		Fan cooling
Size: W × H (mm)				68 × 128		87 × 157
Size: D (mm)				130	144	167

Single-phase
230V

Models with Built-in EMC Filter

Frame			B			C	
Applicable Motor Output (kW)			0.2	0.4	0.75	1.5	2.2
Applicable Motor Output (HP)			1/4	1/2	1	2	3
Inverter Output	Heavy Duty	Rated Output Current (A)	1.6	2.8	5	7.5	11
	Normal Duty	Rated Output Current (A)	1.8	3.2	5.2	8.5	12.5
Input	Rated Voltage / Frequency		1-Phase AC 200 V ~ 240 V (-15% ~ +10%), 50 / 60 Hz				
	Mains Input Voltage Range		170 ~ 265 V				
	Mains Frequency Range		47 ~ 63 Hz				
Carrier Frequency (kHz)			2 ~ 15 (default 4)				
Brake Chopper			Built-in				
DC Reactor			Optional				
AC Reactor			Optional				
Cooling Method			Natural air cooling	Fan cooling			
Size: WxH (mm)			72×142			87×157	
Size: D (mm)			174			194	

Models w/o an EMC Filter

Frame		A	B	C
Cooling Method		Natural air cooling		Fan cooling
Size: W × H (mm)		68 × 128	68 × 128	72 × 142
Size: D (mm)		130	144	162

3-phase
230 V

3 phase 230 V			Models w/o Built-in EMC Filter											
Frame			A				B	C		D	E		F	
Applicable Motor Output (kW)			0.2	0.4	0.75	0.75	1.5	2.2	3.7 / 4	5.5	7.5	11	15	
Applicable Motor Output (HP)			1/4	1/2	1	1	2	3	5	7.5	10	15	20	
Inverter Output	Heavy Duty	Rated Output Current (A)	1.6	2.8	5	5	7.5	11	17	25	33	49	65	
	Normal Duty	Rated Output Current (A)	1.8	3.2	5.2	5.2	8	12.5	19.5	27	36	51	69	
Input	Rated Voltage / Frequency		3-Phase AC 200 V ~ 240 V (-15% ~ +10%), 50 / 60 Hz											
	Mains Input Voltage Range		170 ~ 265 V											
	Mains Frequency Range		47 ~ 63 Hz											
Carrier Frequency (kHz)			2 ~ 15 kHz (default 4 kHz)											
Brake Chopper			Built-in											
DC Reactor			Optional											
AC Reactor			Optional											
Cooling Method			Natural air cooling			Fan cooling								
Size: W × H (mm)			68 x 128				72 x 142	87 x 157	109 x 207	130 x 250	175 x 300			
Size: D (mm)			144	144	162	150	158	167	169	200	207			
Models w/o an EMC Filter														
Frame			G					I						
Applicable Motor Output (kW)			18.5				22		30		37 (45) ^(Note)			
Applicable Motor Output (HP)			25				30		40		50 (60) ^(Note)			
Inverter Output	Heavy Duty	Rated Output Current (A)	75				90		120		146			
	Normal Duty	Rated Output Current (A)	81				102		134		160			
Input	Rated Voltage / Frequency		3-Phase AC 200 V ~ 240 V (-15% ~ +10%), 50 / 60 Hz											
	Mains Input Voltage Range		170 ~ 265 V											
	Mains Frequency Range		47 ~ 63 Hz											
Carrier Frequency (kHz)			2 ~ 15 kHz (default 4 kHz)											
Brake Chopper			Built-in					Optional						
DC Reactor			Optional					Built-in						
AC Reactor			Optional											
Cooling Method			Fan cooling											
Size: W × H (mm)			250 x 400					330 x 550						
Size: D (mm)			225					300						

Note: Values in the brackets are the applicable motor output under normal duty

Models with Built-in EMC Filter

Frame			B				C		D		E		F	
Applicable Motor Output (kW)			0.4	0.75	0.75	1.5	2.2	3.7/4	5.5	7.5	11	15	18.5	22
Applicable Motor Output (HP)			1/2	1	1	2	3	5	7.5	10	15	20	25	30
Inverter Output	Heavy Duty	Rated Output Current (A)	1.5	3	3	4.2	5.7	9	13	17.5	25	32	38	45
	Normal Duty	Rated Output Current (A)	1.8	3.3	3.3	4.6	6.5	10.5	14.5	19.8	28	36	41.5	49
Input	Rated Voltage/Frequency		3-Phase AC 380 V ~ 480 V (-15% ~ +10%), 50/60 Hz											
	Mains Input Voltage Range		323 ~ 528 V											
	Mains Frequency Range		47 ~ 63 Hz											
Carrier Frequency (kHz)			2 ~ 15 kHz (default 4 kHz)											
Brake Chopper			Built-in											
DC Reactor			Optional											
AC Reactor			Optional											
Cooling Method			Fan cooling											
Size: W × H (mm)			72×142				87×157		109×207		130×250		175×300	
Size: D (mm)			174				194		202		234		259	

Models w/o an EMC Filter

Frame			A		B	C	D	E	F	
Cooling Method			Natural air cooling		Fan cooling					
Size: W × H (mm)			68x128		72x142	87x157	109x207	130x250	175x300	
Size: D (mm)			144	162	150	158	167	169	200	207

Models with Built-in EMC Filter

Frame			G	H		I	
Applicable Motor Output (kW)			30	37	45	55	75
Applicable Motor Output (HP)			40	50	60	75	100
Inverter Output	Heavy Duty	Rated Output Current (A)	60	75	91	112	150
	Normal Duty	Rated Output Current (A)	69	85	108	128	180
Input	Rated Voltage/Frequency		3-Phase AC 380 V ~ 48 0V (-15% ~ +10%), 50/60 Hz				
	Mains Input Voltage Range		323 ~ 528 V				
	Mains Frequency Range		47 ~ 63 Hz				
Carrier Frequency (kHz)			2 ~ 15 kHz (default 4 kHz)				
Brake Chopper			Built-in	Optional			
DC Reactor			Optional	Built-in			
AC Reactor			Optional				
Cooling Method			Fan cooling				
Size: W × H (mm)			250 x 400	280 x 500		330 x 550	
Size: D (mm)			225	280		300	

Models w/o an EMC Filter

Model W/S an EMS Plus			
Frame	G	H	I
Cooling Method	Fan cooling		
Size: W × H (mm)	250 x 400	280 x 500	330 x 550
Size: D (mm)	225	280	300

General Specifications and Accessories

Control Functions	Control Methods	V/F, SVC, FOC, V/F+PG, FOC+PG, TQC+PG	
	Applicant Motors	Induction motors (IM), Interior Permanent Magnet (IPM) motors, and Surface Permanent Magnet (SPM) motors	
	Max. Output Frequency	599 Hz	
	Starting Torque*	150% / 3 Hz 200% / 0.5 Hz 200% / 0 Hz 100% / (1/20 of motor rated frequency) 150% / 0 Hz 200% / 0 Hz	(V/f, SVC, V/F+PG control for IM, Heavy duty) (FOC control for IM, Heavy duty) (FOC+PG control for IM, Heavy duty) (SVC control for PM, Heavy duty) (FOC control for PM, Heavy duty) (Closed-loop vector control w/PG for PM, Heavy duty)
	Speed Control Range*	1 : 50 (V/f, SVC, V/F+PG control for IM, Heavy duty) 1 : 100 (FOC control for IM, Heavy duty) 1 : 1000 (FOC+PG control for IM, Heavy duty)	1 : 20 (SVC control for PM, Heavy duty) 1 : 100 (FOC control for PM, Heavy duty) 1 : 1000 (Closed-loop vector control w/PG for PM, Heavy duty)
	Overload Tolerance	Normal Duty (ND): 120% of rated output current for 60 seconds; 150% of rated output current for 3 seconds Heavy Duty (HD): 150% of rated output current for 60 seconds; 200% of rated output current for 3 seconds	
	Frequency Setting Signal	0 ~ +10 V / -10 V ~ +10 V, 4 ~ 20 mA / 0 ~ +10 V, 2 Pulse input (33 kHz), 1 Pulse output (33 kHz)	
	Main Control Functions	Multi-motor control motor switches (max. 8 independent motor parameter settings), fast startup, Deceleration Energy Back (DEB) function, wobble frequency function, fast deceleration function, master and auxiliary frequency source selectable, momentary power loss ride thru, speed search, over-torque detection, torque limit, 16-step speed (max.), accel/decel time switch, S-curve accel/decel, 3-wire sequence, JOG frequency, upper/lower limits for frequency reference, DC injection braking at start and stop, PID control, built-in PLC (5K steps), positioning function, tension control, Modbus and CANopen integrated as standard	
Protection Functions	Motor Protection	Overcurrent protection, overvoltage protection, over-temperature protection, phase failure protection, overload protection, output grounding protection	
	Stall Prevention	Stall prevention during acceleration, deceleration and running independently	
Accessories	Communication Cards	PROFIBUS DP, DeviceNet, Modbus TCP, EtherNet/IP, EtherCAT	
	PG Cards	EMM-PG01L (ABZ, line driver) EMM-PG01O (ABZ, open collector)	EMM-PG01R (resolver)
	I/O Expansion Cards	EMM-D33A (digital card - 3 in/3 out) EMM-A22A (analog card - 2 in/2 out)	EMM-R2CA (relay card (output: A *3)) EMM-R3AA (relay card (output: A *3))
	External DC Power Supply	EMM-BPS02 (DC 24V power supply card)	
Digital Controller		A removable keypad as standard	
Certifications		CE, RCM, REACH, RoHS, TUV, UL	

*Control accuracy may vary depending on the environment, application conditions, different motors or encoder. For details, please contact our company or your local distributor.

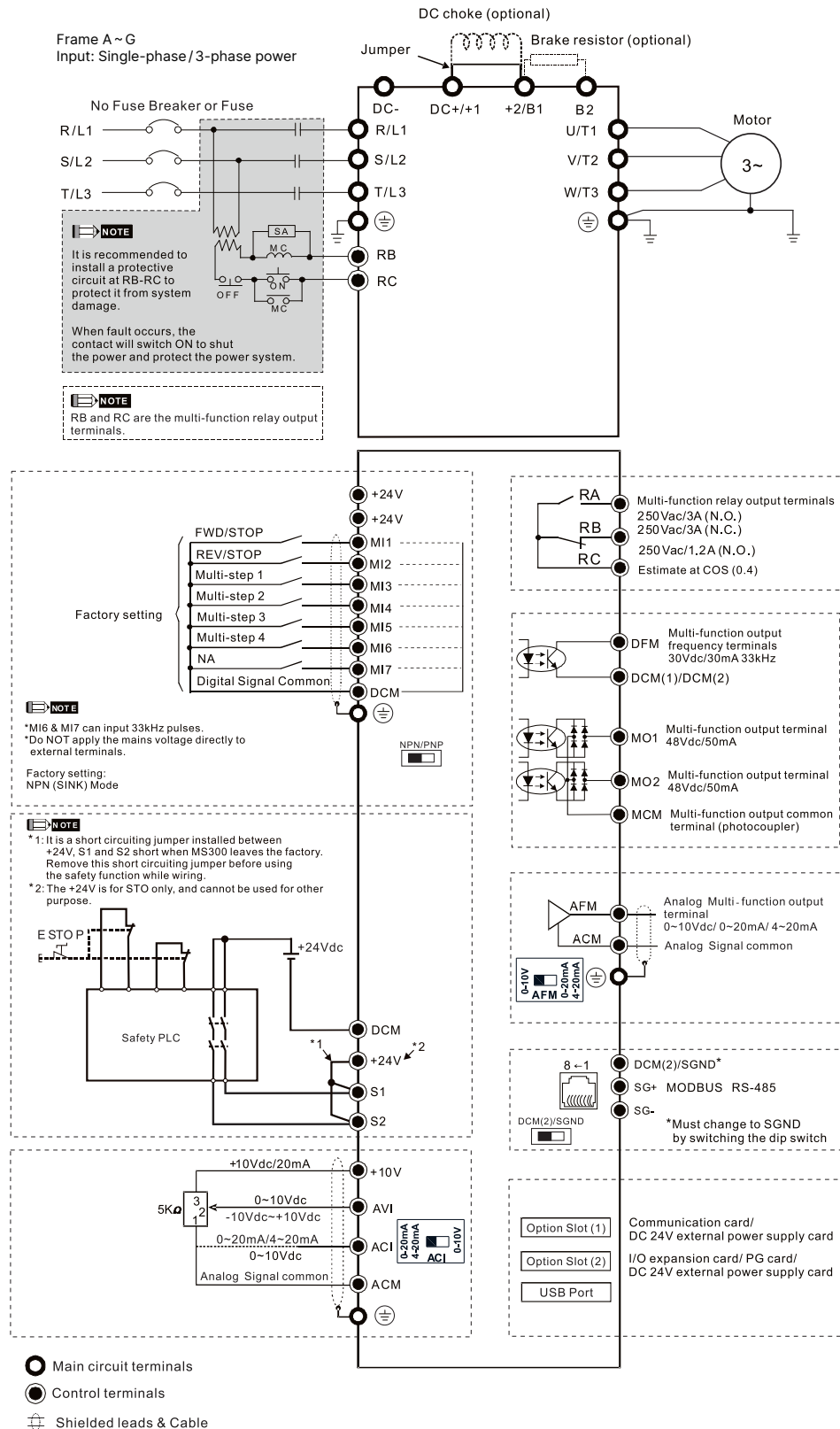
Operating Environment

Operating Environment	Installation Location	IEC60364-1/IEC60664-1 Pollution degree 2, Indoor use only		
	Ambient Temperature	Operation	IP20/UL Open Type	-20 to 50 °C -20 to 60 °C (needs derating)
			IP40/NEMA 1/UL Type 1	-20 to 40 °C
			Zero stacking Installation	-20 to 50 °C (needs derating)
		Storage		-40 to 85 °C
		Transportation		-20 to 70 °C
	Rated Humidity	Operation		Max. 90%
		Storage / Transportation		Max. 95%
	Air Pressure	Operation		86 ~ 106 kPa
		Storage / Transportation		70 ~ 106 kPa
	Pollution Level	Compliance to IEC60721-3-3, 3C2		
	Altitude	An altitude of 0 ~ 1000 m for normal operation (derating is required for installation at an altitude above 1000 m)		
Vibration		Compliance to IEC 60068-2-6		
Shock		Compliance to IEC/EN 60068-2-27		

Please refer to MH300 user manual for more details.

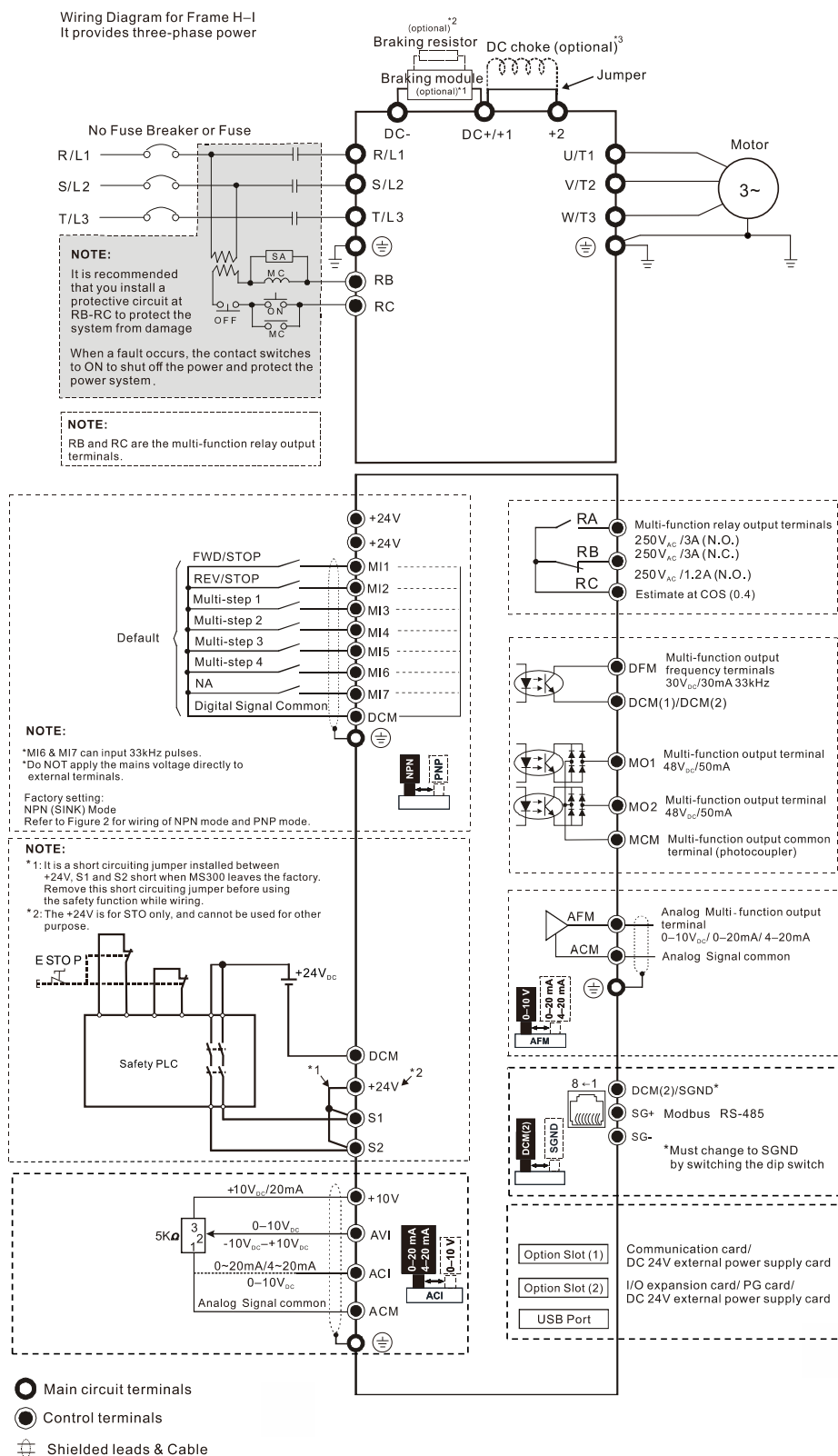
Wiring

Input: Single-phase /3-phase power



Note 1: please refer to MH300 user manual (chapter 7-4) for more details of DC choke
Note 2: please refer to MH300 user manual (chapter 7-1) for more details of brake resistor

Input: Single-phase / 3-phase power

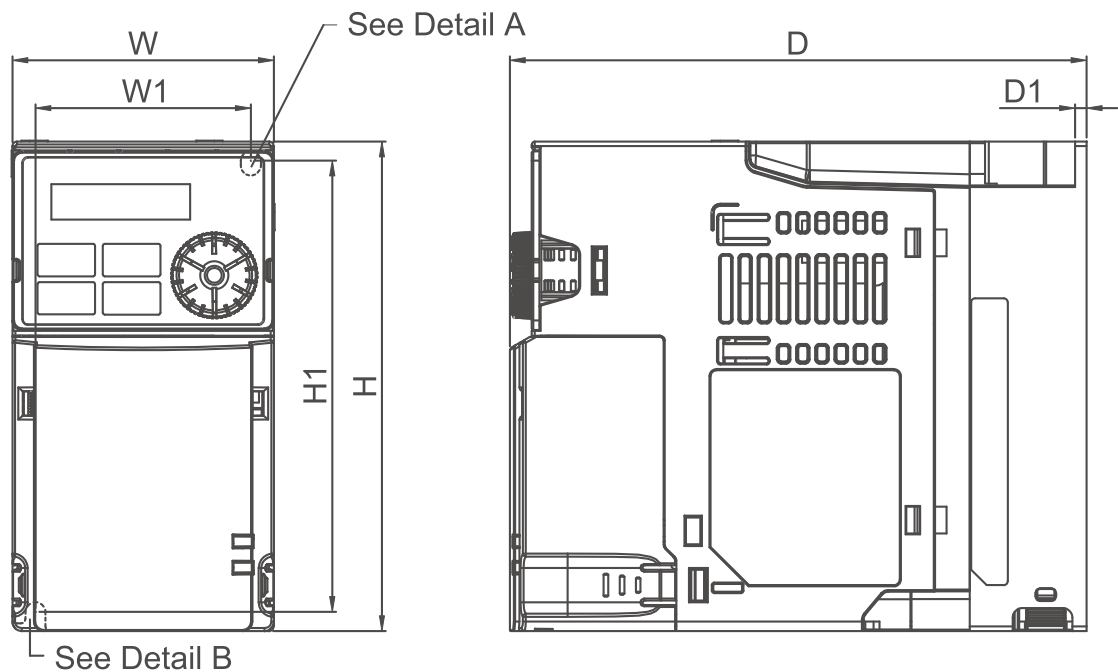


*1 & *2 Refer to Section 7-1 in the user manual for brake units and resistor selection.

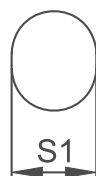
*3 Refer to Section 7-4 in the user manual for DC reactor selection.

Dimensions

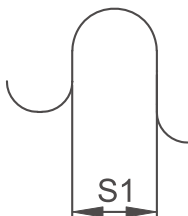
Frame A



Detail A (Mounting Hole)



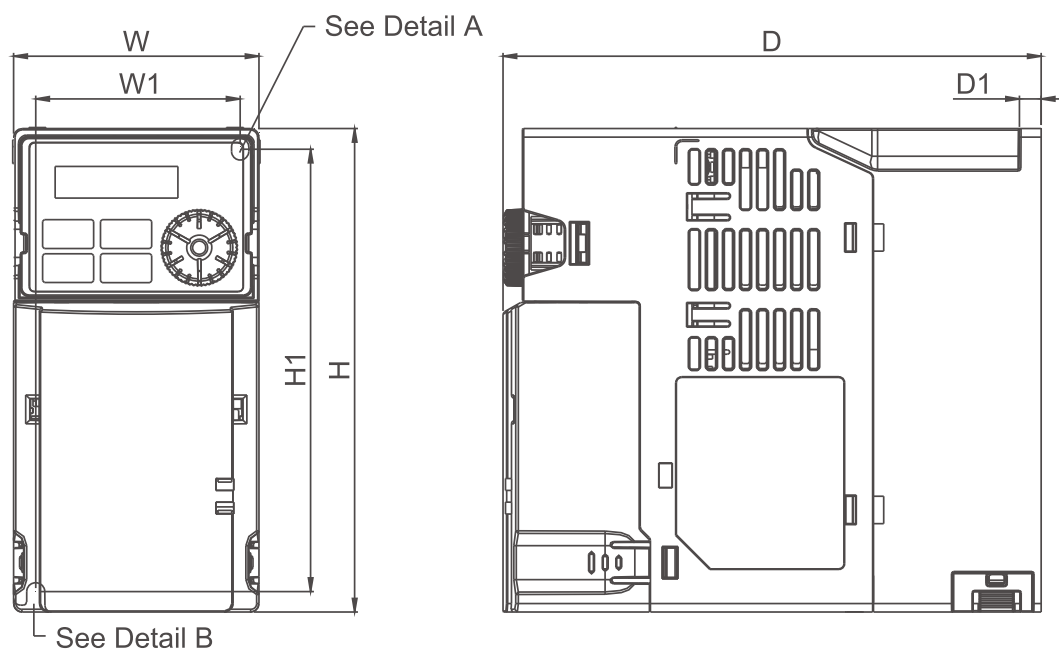
Detail B (Mounting Hole)



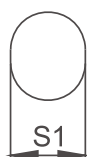
MODEL	FRAME A1	FRAME A2	FRAME A3	FRAME A4
VFD1A6MH11ANSAA	VFD2A5MH11ANSAA	VFD2A5MH11ENSAA	VFD5A0MH23ANSAA	VFD5A0MH23ANSNA
VFD1A6MH11ENSAA	VFD2A8MH21ANSAA	VFD2A8MH21ENSAA	VFD5A0MH23ENSAA	VFD5A0MH23ENSNA
VFD1A6MH21ANSAA	VFD1A6MH23ANSAA	VFD1A6MH23ENSAA	VFD3A0MH43ANSAA	VFD3A0MH43ANSNA
VFD1A6MH21ENSAA	VFD2A8MH23ANSAA	VFD2A8MH23ENSAA	VFD3A0MH43ENSAA	VFD3A0MH43ENSNA
	VFD1A5MH43ANSAA	VFD1A5MH43ENSAA		

Frame		W	H	D	W1	H1	D1	S1
A1	mm	68.0	128.0	130.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	5.12	2.20	4.65	0.12	0.20
Frame		W	H	D	W1	H1	D1	S1
A2	mm	68.0	128.0	144.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	5.67	2.20	4.65	0.12	0.20
Frame		W	H	D	W1	H1	D1	S1
A3	mm	68.0	128.0	150.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	5.91	2.20	4.65	0.12	0.20
Frame		W	H	D	W1	H1	D1	S1
A4	mm	68.0	128.0	162.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	6.38	2.20	4.65	0.12	0.20

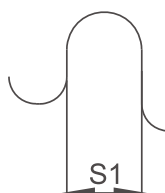
Frame B



Detail A (Mounting Hole)



Detail B (Mounting Hole)

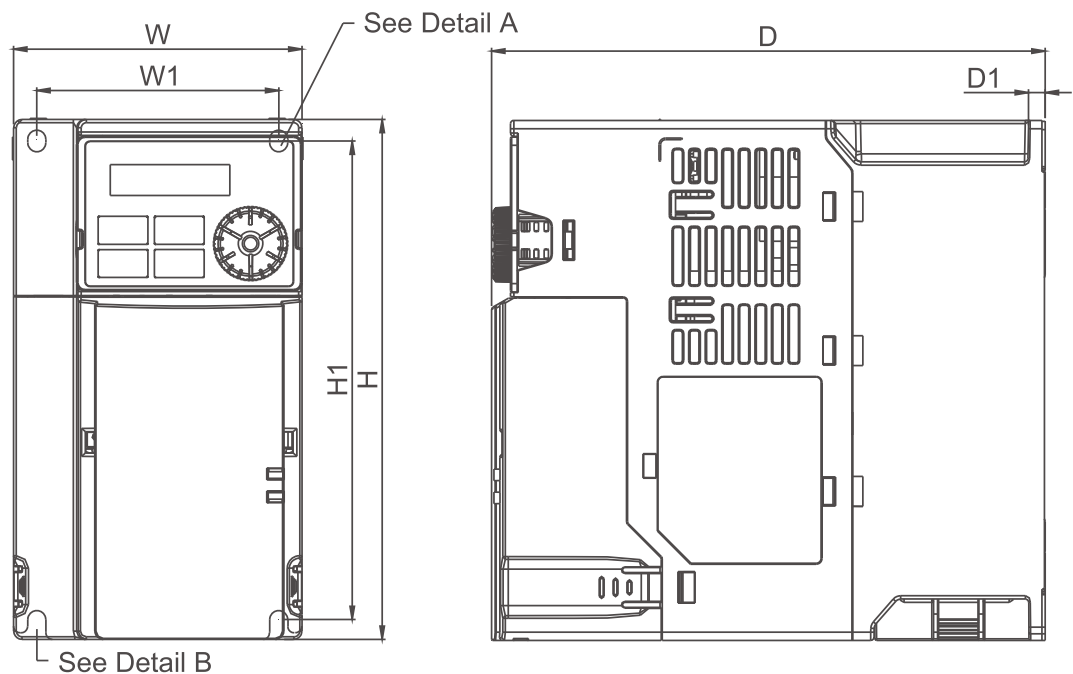


MODEL	FRAME B1	FRAME B2	FRAME B3
VFD7A5MH23ANSAA		Standard Models:	VFD1A6MH21AFSAA
VFD7A5MH23ENSAA		VFD5A0MH21ANSAA	VFD2A8MH21AFSAA
VFD4A2MH43ANSAA		VFD5A0MH21ENSAA	VFD5A0MH21AFSAA
VFD4A2MH43ENSAA			VFD3A0MH43AFSAA
			VFD4A2MH43AFSAA

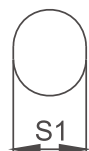
Frame		W	H	D	W1	H1	D1	S1
B1	mm	72.0	142.0	158.0	60.0	130.0	6.4	5.2
	inch	2.83	5.59	6.22	2.36	5.12	0.25	0.20
Frame		W	H	D	W1	H1	D1	S1
B2	mm	72.0	142.0	162.0	60.0	130.0	3.0	5.2
	inch	2.83	5.59	6.38	2.36	5.12	0.12	0.20
Frame		W	H	D	W1	H1	D1	S1
B3	mm	72.0	142.0	174.0	60.0	130.0	4.3	5.2
	inch	2.83	5.59	6.85	2.36	5.12	0.17	0.20

Dimensions

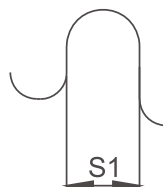
Frame C



Detail A (Mounting Hole)



Detail B (Mounting Hole)



MODEL FRAME C1

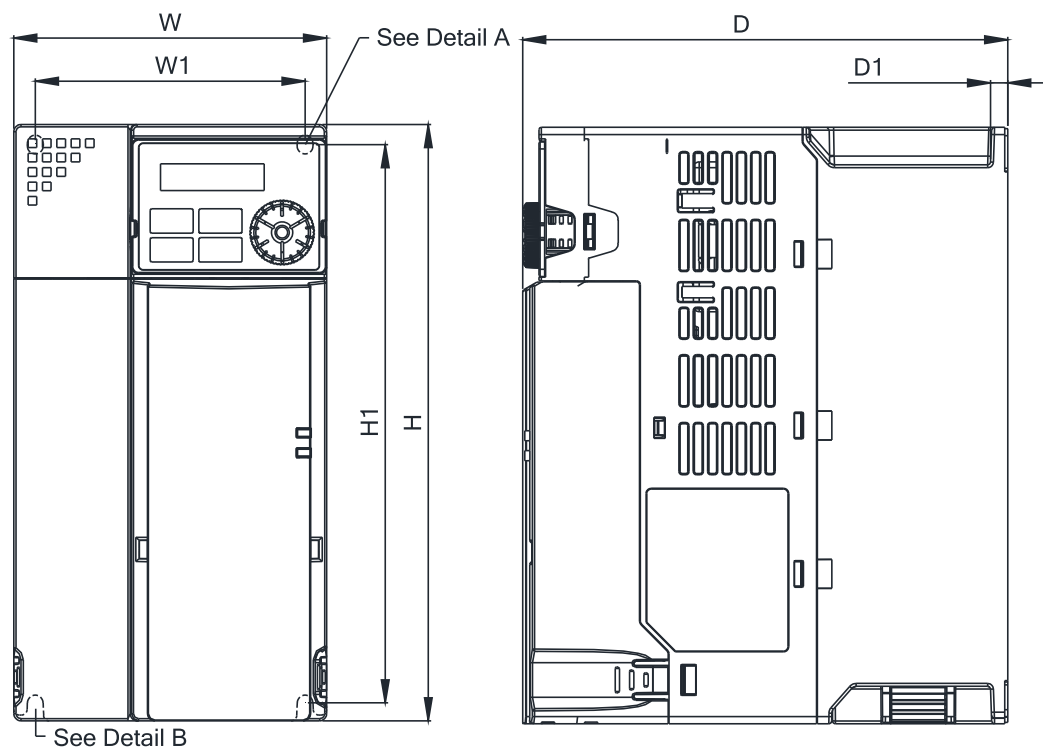
VFD5A0MH11ANSAA VFD5A0MH11ENSAA
VFD7A5MH21ANSAA VFD7A5MH21ENSAA
VFD11AMH21ANSAA VFD11AMH21ENSAA
VFD11AMH23ANSAA VFD11AMH23ENSAA
VFD17AMH23ANSAA VFD17AMH23ENSAA
VFD5A7MH43ANSAA VFD5A7MH43ENSAA
VFD9A0MH43ANSAA VFD9A0MH43ENSAA

FRAME C2

VFD7A5MH21AFSAA
VFD11AMH21AFSAA
VFD5A7MH43AFSAA
VFD9A0MH43AFSAA

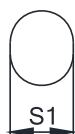
Frame		W	H	D	W1	H1	D1	S1
C1	mm	87.0	157.0	167.0	73.0	144.5	5.0	5.5
	inch	3.43	6.18	6.57	2.87	5.69	0.20	0.22
Frame		W	H	D	W1	H1	D1	S1
C2	mm	87.0	157.0	194.0	73.0	144.5	5.0	5.5
	inch	3.43	6.18	7.64	2.87	5.69	0.20	0.22

Frame D



Detail A (Mounting Hole)

Detail B (Mounting Hole)



MODEL

FRAME D1

VFD25AMH23ANSAA
VFD25AMH23ENSAA
VFD13AMH43ANSAA
VFD13AMH43ENSAA
VFD17AMH43ANSAA
VFD17AMH43ENSAA

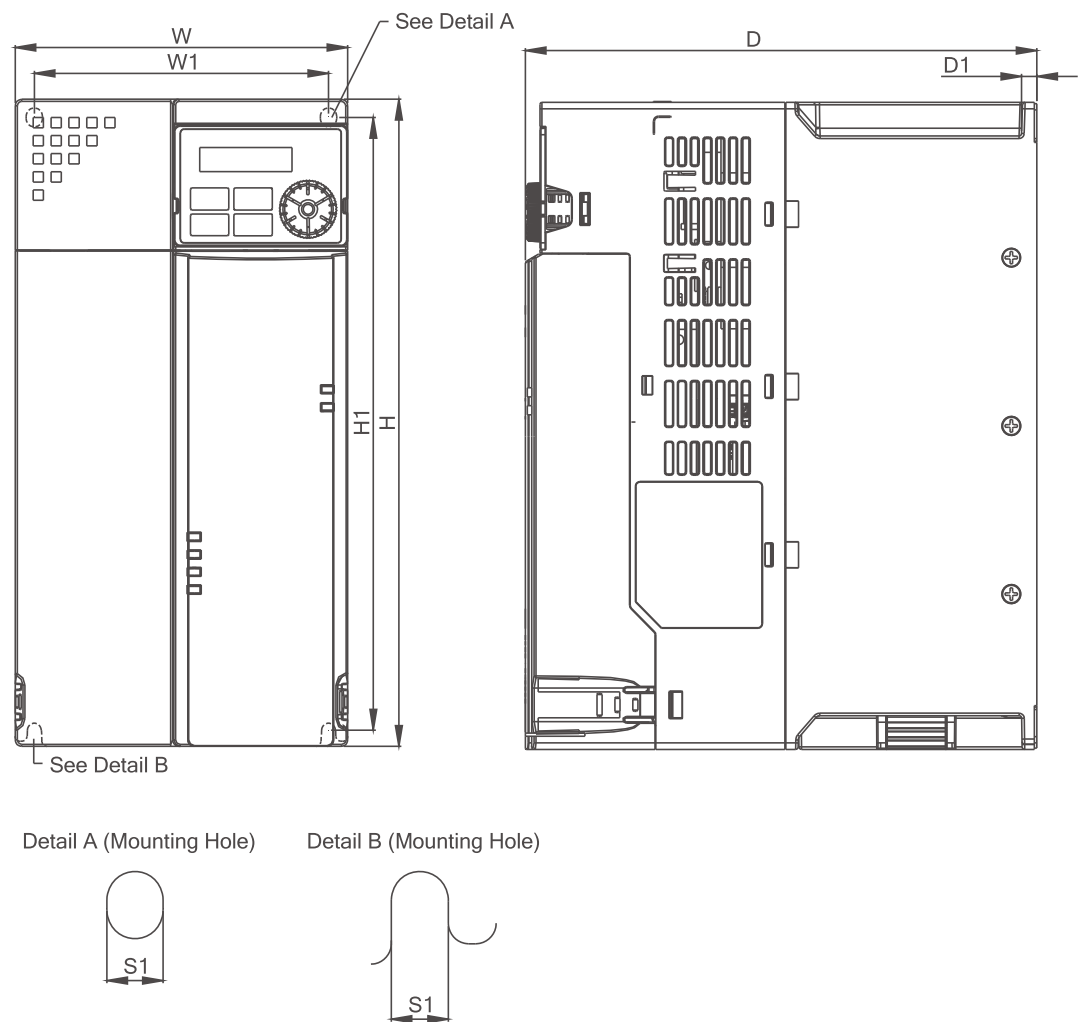
FRAME D2

VFD13AMH43AFSAA
VFD17AMH43AFSAA

Frame		W	H	D	W1	H1	D1	S1
D1	mm	109.0	207.0	169.0	94.0	193.8	6.0	5.5
	inch	4.29	8.15	6.65	3.70	7.63	0.24	0.22
Frame		W	H	D	W1	H1	D1	S1
D2	mm	109.0	207.0	202.0	94.0	193.8	6.0	5.5
	inch	4.29	8.15	7.95	3.70	7.63	0.24	0.22

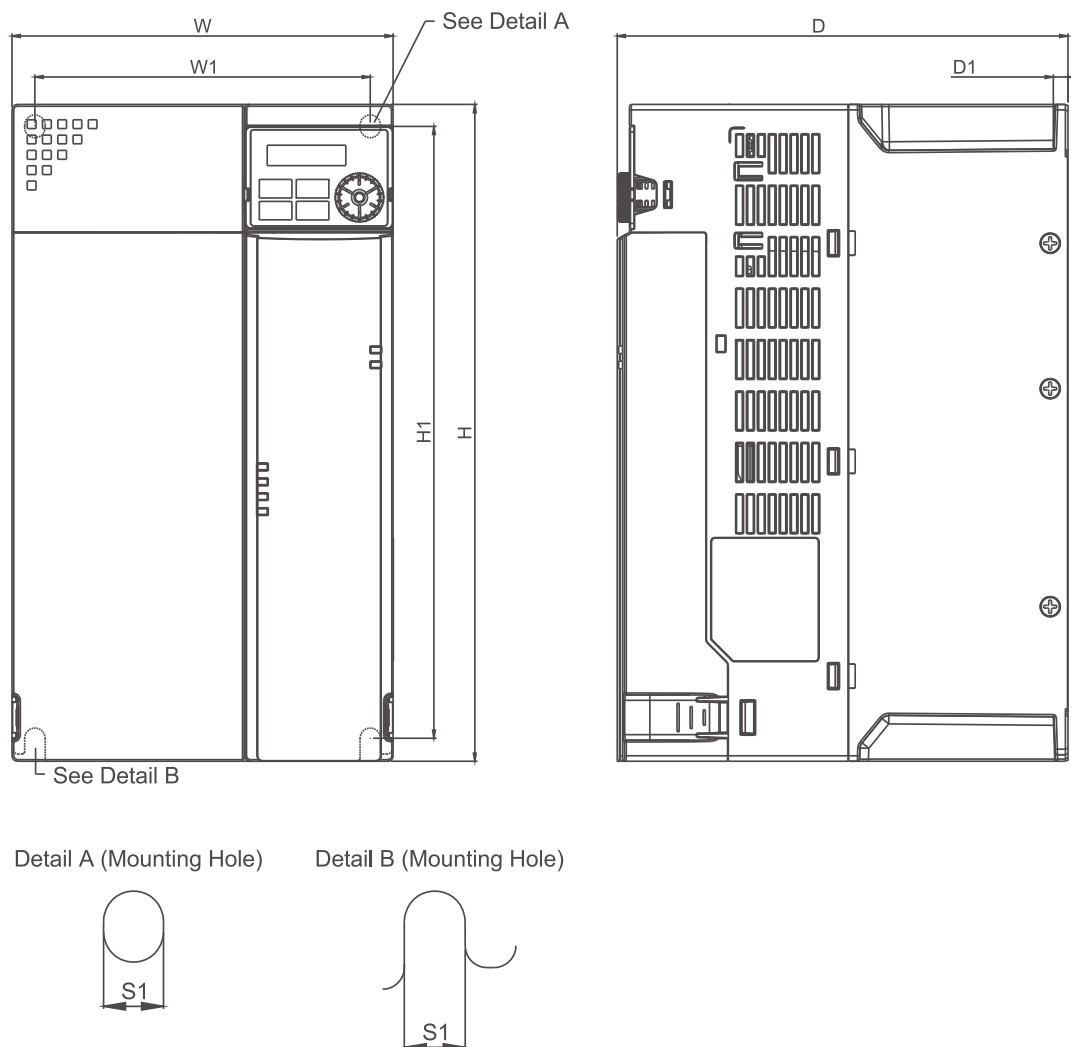
Dimensions

Frame E



MODEL								
FRAME E1		FRAME E2						
VFD33AMH23ANSAA		VFD25AMH43AFSAA						
VFD33AMH23ENSAA		VFD32AMH43AFSAA						
VFD49AMH23ANSAA								
VFD49AMH23ENSAA								
VFD25AMH43ANSAA								
VFD25AMH43ENSAA								
VFD32AMH43ANSAA								
VFD32AMH43ENSAA								
Frame		W	H	D	W1	H1	D1	S1
E1	mm	130.0	250.0	200.0	115.0	236.8	6.0	5.5
	inch	5.12	9.84	7.87	4.53	9.32	0.24	0.22
Frame		W	H	D	W1	H1	D1	S1
E2	mm	130.0	250.0	234.0	115.0	236.8	6.0	5.5
	inch	5.12	9.84	9.21	4.53	9.32	0.24	0.22

Frame F



MODEL FRAME F1

Standard Models:
VFD65AMH23ANSAA
VFD65AMH23ENSAA
VFD38AMH43ANSAA
VFD38AMH43ENSAA
VFD45AMH43ANSAA
VFD45AMH43ENSAA

High Speed Models:
VFD65AMH23ANSHA
VFD65AMH23ENSHA
VFD38AMH43ANSHA
VFD38AMH43ENSHA
VFD45AMH43ANSHA
VFD45AMH43ENSHA

FRAME F2

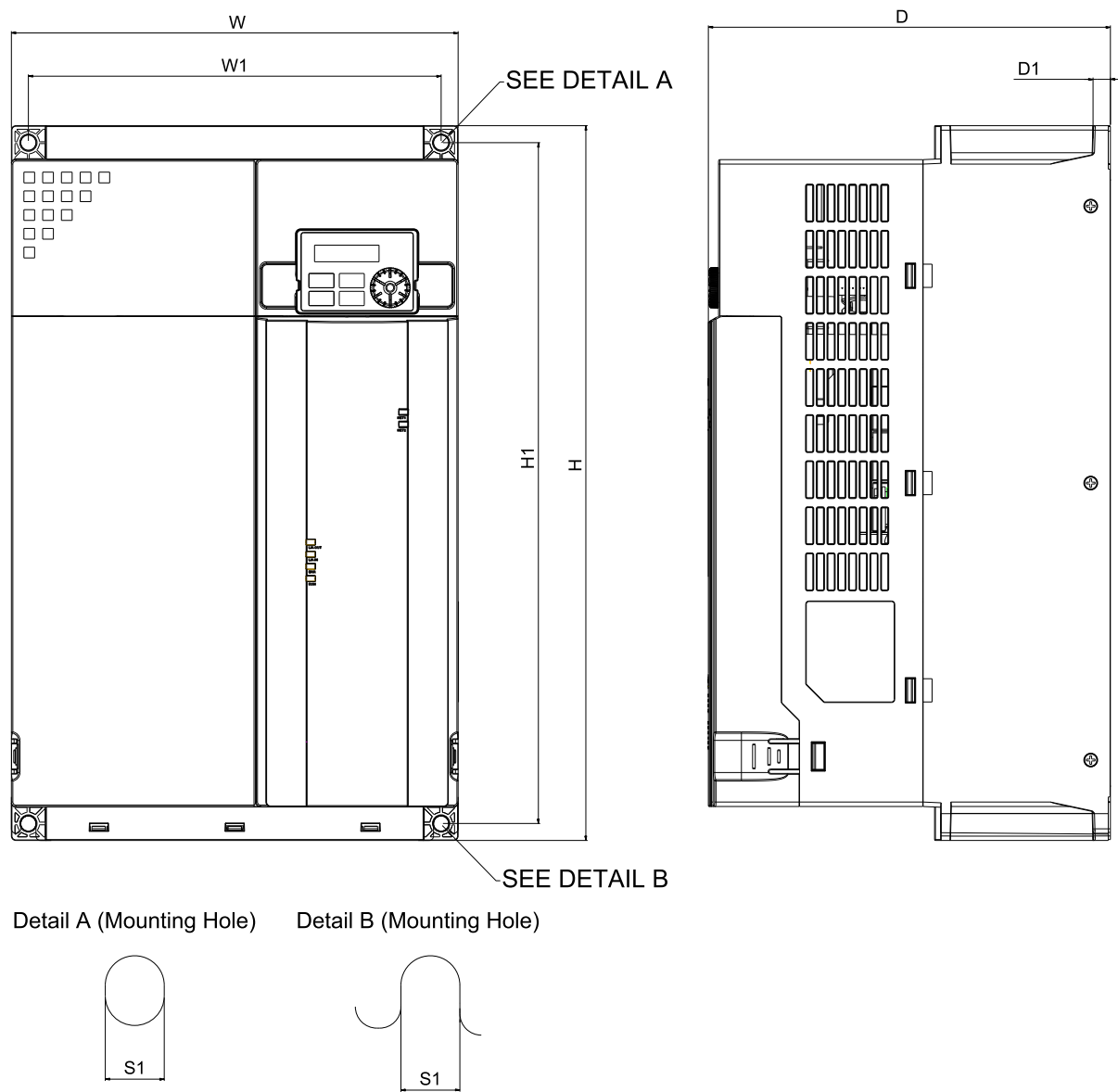
Standard Models:
VFD38AMH43AFSAA
VFD45AMH43AFSAA

High Speed Models:
VFD38AMH43AFSHA
VFD45AMH43AFSHA

Frame		W	H	D	W1	H1	D1	S1
F1	mm	175.0	300.0	207.0	154.0	279.5	6.5	8.4
	inch	6.89	11.81	8.15	6.06	11.00	0.26	0.33
Frame		W	H	D	W1	H1	D1	S1
F2	mm	175.0	300.0	259.0	154.0	279.5	6.5	8.4
	inch	6.89	11.81	10.20	6.06	11.00	0.26	0.33

Dimensions

Frame G

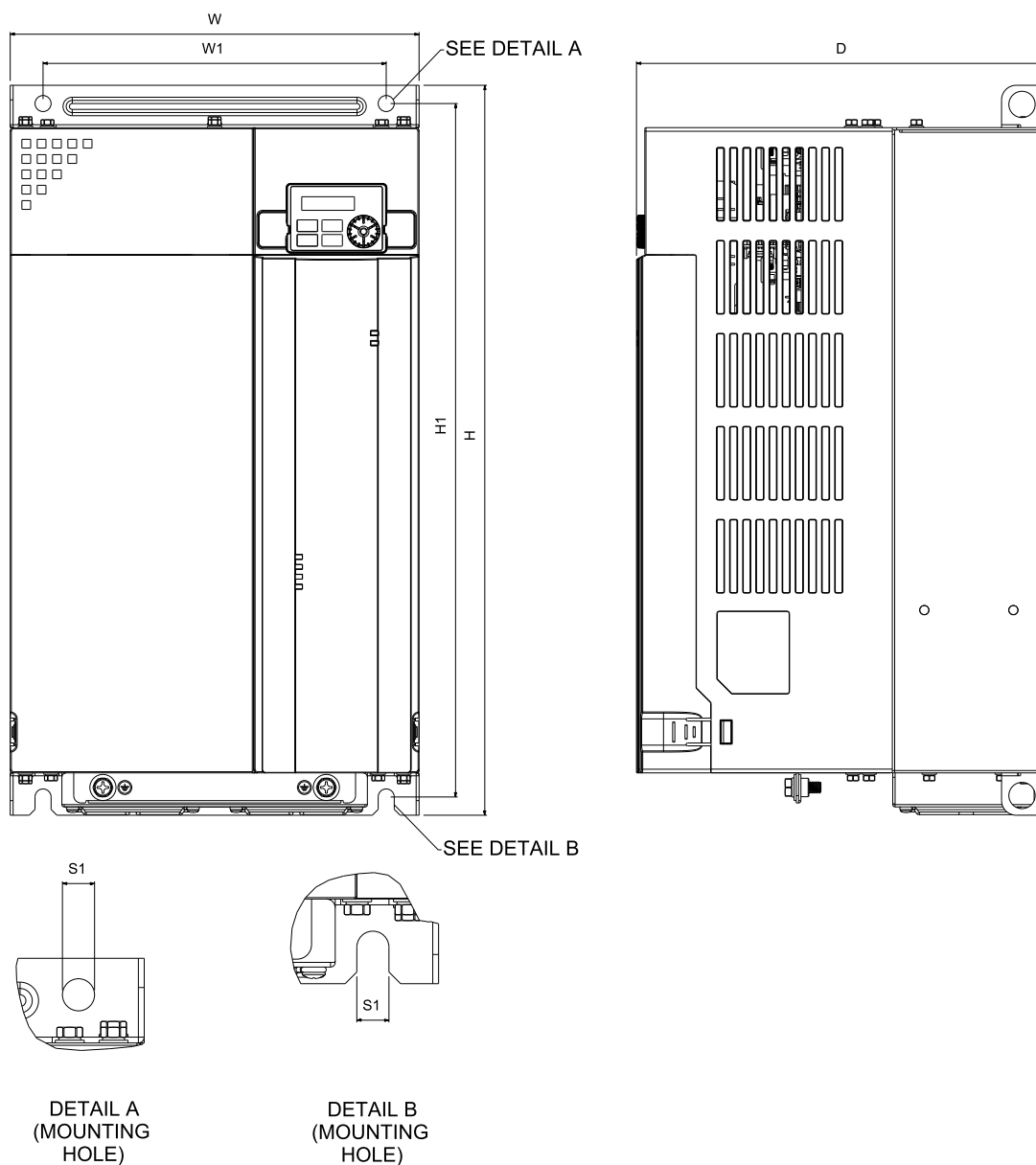


MODEL
FRAME G

VFD60AMH43AFSAA
VFD60AMH43ANSAA
VFD75AMH23ANSAA
VFD90AMH23ANSAA

Frame		W	H	D	W1	H1	D1	S1
G	mm	250.0	400.0	225.0	231.0	381.0	10.0	8.5
	inch	9.84	15.75	8.86	9.09	15.00	0.39	0.33

Frame H



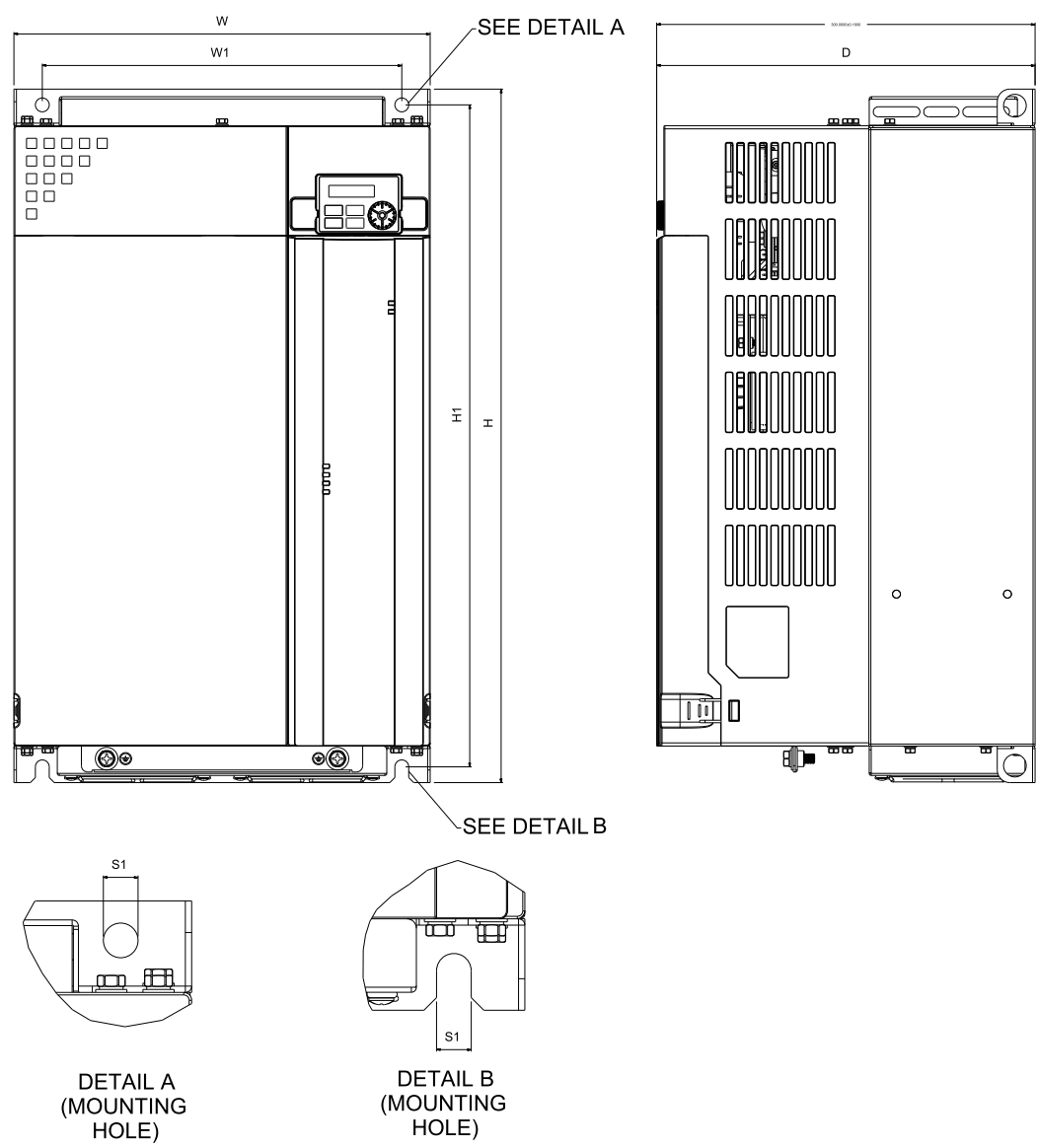
MODEL FRAME H

VFD75AMH43AFSAA
VFD75AMH43ANSAA
VFD91AMH43AFSAA
VFD91AMH43ANSAA

Frame		W	H	D	W1	H1	D1	S1
H	mm	280.0	500.0	280.0	235.0	475.0	11.0	8.4
	inch	11.02	19.69	11.02	9.25	18.70	0.43	0.33

Dimensions

Frame I



MODEL FRAME I

VFD112MH43AFSAA
VFD112MH43ANSAA
VFD120MH23ANSAA
VFD146MH23ANSAA
VFD150MH43AFSAA
VFD150MH43ANSAA

Frame		W	H	D	W1	H1	S1
I	mm	330.0	550.0	300.0	285.0	525.0	11.0
	inch	12.99	21.65	11.81	11.22	20.67	0.43

Accessories

PG Cards: EMM-PG01L

Terminals		Description
PG1	VP	Output voltage for power: +5V/+12V $\pm$ 5% (use FSW3 to switch +5V/+12V, default +5V) Max. output current: 200mA
	DCM	Common for power and signal
	A1,/A1 B1,/B1 Z1,/Z1	Encoder input signal (Line Driver or Open Collector) Open collector input: +5V ~ 24V (Note 1) 1-phase or 2-phase input / Max. input frequency: 300 kHz
	A2,/A2 B2,/B2	Pulse input signal (line driver or open collector) Open collector input: +5V/+12V (Note 1) 1-phase or 2-phase input/Max. input frequency: 300 kHz
PG2	A2,/A2 B2,/B2	Pulse input signal (line driver or open collector) Open collector input: +5V/+12V (Note 1) 1-phase or 2-phase input/Max. input frequency: 300 kHz
	A2,/A2 B2,/B2	Pulse input signal (line driver or open collector) Open collector input: +5V/+12V (Note 1) 1-phase or 2-phase input/Max. input frequency: 300 kHz
PG OUT	AO,/AO BO,/BO ZO,/ZO SG	PG card output signals/Division frequency function: 1 ~ 255 times Max. output voltage for line driver: 5V _{DC} Max. output current: 15mA/Max. output frequency: 300 kHz SG: The GND of PG card is the same as the host controller or PLC, and a common output signal is attained
	Ground	PE
Ground		PE

PG Cards: EMM-PG01O

Terminals		Description
PG1	VP	Output voltage for power: +5V/+12V $\pm$ 5% (use SSW320 to switch +5V/+12V, the default is +5V) Max. output current: 200mA
	DCM	Common for power and signal
	A1,/A1 B1,/B1 Z1,/Z1	Encoder input signal (line driver or open collector) Open collector input: +5V ~ +12V (Note 1) 1-phase or 2-phase input/Max. input frequency: 300 kHz
	A2,/A2 B2,/B2	Pulse input signal (line driver or open collector) Open collector input: +5V ~ +12V (Note 1) 1-phase or 2-phase input/Max. input frequency: 300 kHz
PG2	A2,/A2 B2,/B2	Pulse input signal (line driver or open collector) Open collector input: +5V ~ +12V (Note 1) 1-phase or 2-phase input/Max. input frequency: 300 kHz
	A2,/A2 B2,/B2	Pulse input signal (line driver or open collector) Open collector input: +5V ~ +12V (Note 1) 1-phase or 2-phase input/Max. input frequency: 300 kHz
PG OUT	V+	Needs external power source for PG OUT circuit. Input voltage of power: +7V ~ +24V
	V-	Negative power supply input
PG OUT	/AO /BO /ZO SG	PG card output signals/Division frequency function: 1 ~ 255 times Add a pull-up resistor (1.8K Ω /1W) to the open collector output signals to avoid signal interferences Max. Output current: 20mA/Max output frequency: 300 kHz SG: The GND of PG card is the same as the host controller or PLC, and a common output signal is attained
	Ground	PE
Ground		PE

PG Cards: EMM-PG01R

Terminals		Description
PG1	R1- R2	Resolver output power 7Vrms, 10kHz
	S1, S2, S3, S4	Resolver input signal 3.5 $\pm$ 0.175 Vrms, 10kHz
PG2	A2,/A2 B2,/B2	Pulse input signal (line driver or open collector) Open collector input : +5V ~ +12V (Note 1) 1-phase or 2-phase input/Max. input frequency: 300kHz
	A2,/A2 B2,/B2	Pulse input signal (line driver or open collector) Open collector input : +5V ~ +12V (Note 1) 1-phase or 2-phase input/Max. input frequency: 300kHz
PG OUT	AO,/AO BO,/BO ZO,/ZO SG	PG card output signals/Division frequency function: 1 ~ 255 times Max. output voltage for line driver: 5V _{DC} Max. output current: 50mA/Max. output frequency: 300 kHz SG: The GND of PG card is the same as the host controller or PLC, and a common output signal is attained
	Ground	PE
Ground		PE

External Power Supply Card (DC 24V): EMM-BPS02

Terminals		Description
PE GND 24V		When the AC motor drive power is off, the external power supply card provides external power to the network system, PLC function, and other functions to allow continued operations Input power: 24V $\pm$ 5% Maximum input current: 0.5A Note: 1) Do not connect the control terminal +24V (Digital control signal common: SOURCE) directly to the EMC-BPS02 input terminal 24V 2) Do not connect control terminal GND directly to the EMC-BPS02 input terminal GND in order to achieve good isolation

Note 1: For the open collector, set input voltage to 5~15mA and install a pull-up resistor

[5V] Recommend pull-up resistor: 100 ~ 220 Ω , 1/2W and above

[12V] Recommend pull-up resistor: 510 ~ 1.35K Ω , 1/2W and above

[24V] Recommend pull-up resistor: 1.8K ~ 3.3K Ω , 1/2W and above

Accessories

■ Digital I/O Card: EMM-D33A

	Terminals	Description
	24V, DCM	Output power: +24 V _{DC} ± 5% 200mA, 5W
	MI10 ~ MI12	Refer to Pr. 02-26 ~ Pr. 02-28 to program the multi-function Choose SINK (NPN) / SOURCE (PNP) from SSW1 Internal power is supplied by terminal 24V: +24 V _{DC} ± 5% 200mA, 5W If external power is +24 V _{DC} , the max. voltage is 30 V _{DC} and the min. voltage is 19 V _{DC} ON: the activation current is 6.5 mA OFF: leakage current tolerance is 10 μA
	MO10 ~ MO12	Refer to Pr. 02-36 ~ Pr. 02-38 to program the multi-function The motor drive releases various monitor signals, such as drive in operation, frequency attained and overload indication, via transistor (open collector) MO output signal: each MO terminal needs a pull-up resistor, the max. external power voltage is 48 V _{DC} / 50 mA
	MCM	Common for multi-function output terminals MO10 ~ MO12 (photocoupler)
	PE	Earthing terminal to reduce noise; this terminal should also be grounded

■ Analog I/O Card: EMM-A22A

	Terminals	Description
	ACM	Common output signal and input signal terminals
	AI10, AI11	Refer to Pr. 14-00 ~ Pr. 14-01 to program the multi-function Two AI ports: switch between J9, J19 for AVI or ACI AVI10 ~ AVI11: input 0 ~ 10.00 V ± 0.05 V ACI10 ~ ACI11: input 0 ~ 20.00 mA ± 0.05 mA
	AO10, AO11	Refer to Pr. 14-12 ~ Pr. 14-13 to program the multi-function Two AO ports: switch between J2, J22 for AVO or ACO AVO10 ~ AVO11: output 0 ~ 10.00 V ± 0.05 V ACO10 ~ ACO11: output 0 ~ 20.00 mA ± 0.05 mA
	PE	Earthing terminal to reduce noise; this terminal should also be grounded

■ Relay Cards: EMM-R2CA

	Terminals	Description
	RA10 ~ RA11 RB10 ~ RB11 RC10 ~ RC11	Refer to Pr. 02-36 ~ Pr. 02-37 to program the multi-function Resistive load: 5 A (N.O.) / 240 V _{AC} Function: To output each monitor signal, such as drive is in operation, frequency attained or overload indication

EMM-R3AA

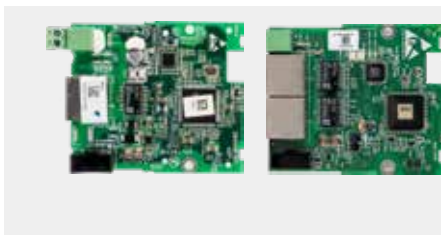
	Terminals	Description
	RA10 ~ RA12 RC10 ~ RC12	Refer to Pr. 02-36 ~ Pr. 02-38 to program the multi-function Resistive load: 6 A (N.O.) / 250 V _{AC} Function: To output each monitor signal, such as drive is in operation, frequency attained or overload indication

■ Screw Specification of Option Card Terminals

Screw Specification of Option Card Terminals	Wire Gauge	Torque	Screw Specification of Option Card Terminals	Wire Gauge	Torque
EMM-PG01L	30 ~ 16 AWG (0.0509 ~ 1.31 mm ²)	2 Kg-cm [1.74 lb-in]	EMM-BPS02	30 ~ 16 AWG (0.0509 ~ 1.31 mm ²)	8 Kg-cm [6.94 lb-in]
EMM-PG01O			EMM-R2CA	24 ~ 12 AWG (0.205 ~ 3.31 mm ²)	5 Kg-cm [4.34 lb-in]
EMM-PG01R			EMM-R3AA		
EMM-A22A					
EMM-D33A					
CMM-EIP02					
CMM-EIP03					
CMM-EC02					
CMM-PD02					
CMM-DN02					

Option cards require working with the cables models of CBM-CLxxA / CBM-CCxxA. For more details, please refer to the MH300 user manual.

▪ EtherNet/IP, Modbus TCP Option Card CMM-EIP02 / CMM-EIP03



Features

- ▶ Supports max. 32 words input and 32 words output of I/O connection
- ▶ User-defined parameter mapping
- ▶ IP Filter, basic firewall function
- ▶ Supports DLR ring node * applied to CMM-EIP03

Network Interface

Network Protocol	DHCP、BOOTP、EtherNet/IP、Modbus TCP	Interface	RJ-45
Transmission Speed	10/100Mbps	Number of Ports	1 (CMM-EIP02) / 2 (CMM-EIP03)
Transmission Method	I/O connection / Explicit message	Transmission Cable	Category 5e shielding
Transmission Distance	100m, extension is allowed via switch		

▪ DeviceNet Option Card CMM-DN02



Features

- ▶ Supports Group 2 only connection method and cyclic I/O data exchange
- ▶ Provides EDS file to identify DeviceNet equipment information
- ▶ Supports max. 32 words input and 32 words output of parameter mapping and remote I/O function
- ▶ Node address and baud rate can be set in the AC motor drive

Network Interface

Network Protocol	DeviceNet	Interface	Terminal block
Transmission Speed	500k / 250k / 125k / 100k / 50k bps and extendable baud rate mode of 1M	Number of Ports	1
Transmission Method	Explicit message / Implicit message	Transmission Cable	Delta standard
Transmission Distance	25 m / 1Mbps		

▪ PROFIBUS DP Card CMM-PD02



Features

- ▶ Supports PZD cyclic data exchange
- ▶ Supports PKW read/write to AC motor drive parameters
- ▶ Supports user diagnosis function
- ▶ Auto-detects baud rates; supports max. 12 Mbps
- ▶ Supports remote I/O function

Network Interface

Network Protocol	PROFIBUS DP	Interface	DB9
Transmission Speed	9.6k / 19.2k / 93.75k / 187.5k / 500k / 1.5M / 3M / 6M / 12Mbps	Number of Ports	1
Transmission Method	Cyclic / non-cyclic data exchange	Transmission Cable	Delta standard
Transmission Distance	100m / 12Mbps		

Accessories

▪ EtherCAT Option Card CMM-EC02



Features

- ▶ Supports Ethernet CAT protocol
- ▶ Supports standard CiA402 speed mode
- ▶ Supports SDO (Service Data Objects) function:
Drive status reading and parameters editing
- ▶ Auto shutdown function for interruptions during data transmission
- ▶ Supports remote I/O function

Network Interface

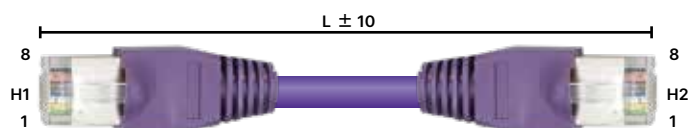
Interface	RJ-45	Transmission Cable	Category 5e shielding 100 M
Number of Ports	2	Transmission Speed	100Mbps
Transmission Method	IEEE 802.3, IEEE 802.3u	Network Protocol	EtherCAT

▪ Standard Fieldbus Cables

Delta Cables	Part Number	Description	Length
CANopen Cable	UC-CmC003-01A	CANopen cable, RJ45 connector	0.3m
	UC-CmC005-01A		0.5m
	UC-CmC010-01A		1m
	UC-CmC015-01A		1.5m
	UC-CmC020-01A		2m
	UC-CmC030-01A		3m
	UC-CmC050-01A		5m
	UC-CmC100-01A		10m
	UC-CmC200-01A		20m
DeviceNet Cable	UC-DN01Z-01A	DeviceNet cable	305m
	UC-DN01Z-02A		305m
EtherNet/EtherCAT Cable	UC-EmC003-02A	EtherNet/EtherCAT cable, Shielding	0.3m
	UC-EmC005-02A		0.5m
	UC-EmC010-02A		1m
	UC-EmC020-02A		2m
	UC-EmC050-02A		5m
	UC-EmC100-02A		10m
	UC-EmC200-02A		20m
CANopen/DeviceNet TAP	TAP-CN01	1 in 2 out, built-in 121 Ω terminal resistor	1 in 2 out
	TAP-CN02		1 in 2 out, RJ45
	TAP-CN03	1 in 4 out, RJ45 connector, built-in 121 Ω terminal resistor	1 in 4 out
PROFIBUS Cable	UC-PF01Z-01A	PROFIBUS DP cable	305 m

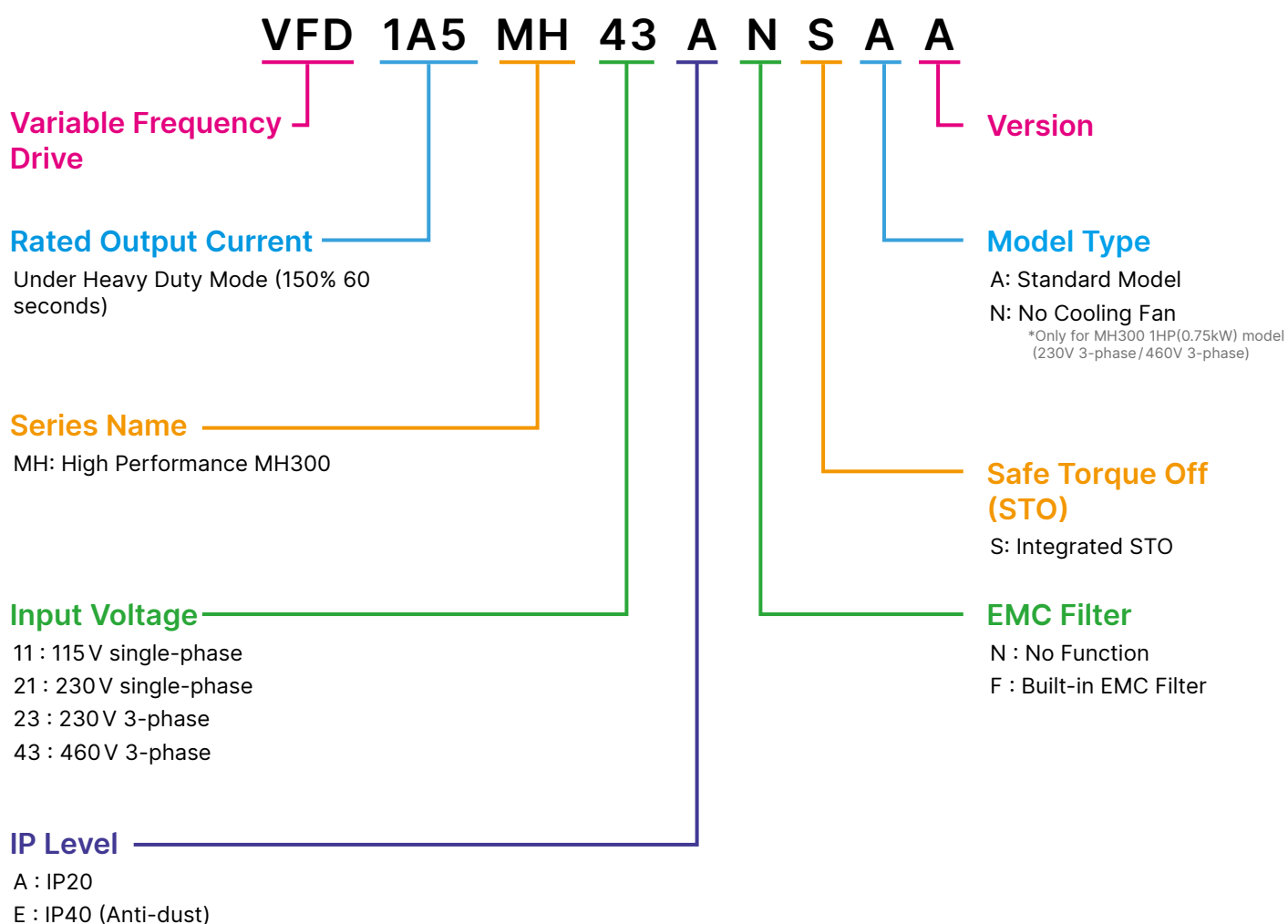
Extension Cable for Digital Keypad

- RJ45 Extension Cable / CANopen Communication Cable



Part No.	L	
	mm	inch
UC-CMC003-01A	300	11.8
UC-CMC005-01A	500	19.6
UC-CMC010-01A	1,000	39
UC-CMC015-01A	1,500	59
UC-CMC020-01A	2,000	78.7
UC-CMC030-01A	3,000	118.1
UC-CMC050-01A	5,000	196.8
UC-CMC100-01A	10,000	393.7
UC-CMC200-01A	20,000	787.4

Model Name Explanation



Ordering Information

Power Range			Frame Size	Model Name	Standard Models (0 ~ 599 Hz)		
Max. Applicable Motor Capacity		Drive Rated Output Current			Built-in EMC Filter	IP40 Models	F: Forced air cooling N: Natural air cooling
[HP]	[kW]	[A]					
115 V / single-phase							
0.25	0.2	1.6	A	VFD1A6MH11ANSAA	-	-	N
				VFD1A6MH11ENSAA	-	V	N
0.5	0.4	2.5	A	VFD2A5MH11ANSAA	-	-	N
				VFD2A5MH11ENSAA	-	V	N
1	0.75	5.0	C	VFD5A0MH11ANSAA	-	-	F
				VFD5A0MH11ENSAA	-	V	F
230 V / single-phase							
0.25	0.2	1.6	A	VFD1A6MH21ANSAA	-	-	N
			A	VFD1A6MH21ENSAA	-	V	N
			B	VFD1A6MH21AFSAA	V	-	N
0.5	0.4	2.8	A	VFD2A8MH21ANSAA	-	-	N
			A	VFD2A8MH21ENSAA	-	V	N
			B	VFD2A8MH21AFSAA	V	-	F
1	0.75	5.0	B	VFD5A0MH21ANSAA	-	-	N
				VFD5A0MH21AFSAA	V	-	F
				VFD5A0MH21ENSAA	-	V	N
2	1.5	7.5	C	VFD7A5MH21ANSAA	-	-	F
				VFD7A5MH21AFSAA	V	-	F
				VFD7A5MH21ENSAA	-	V	F
3	2.2	11.0	C	VFD11AMH21ANSAA	-	-	F
				VFD11AMH21AFSAA	V	-	F
				VFD11AMH21ENSAA	-	V	F
230 V / 3-phase							
0.25	0.2	1.6	A	VFD1A6MH23ANSAA	-	-	N
				VFD1A6MH23ENSAA	-	V	N
0.5	0.4	2.8	A	VFD2A8MH23ANSAA	-	-	N
				VFD2A8MH23ENSAA	-	V	N
1	0.75	5.0	A	VFD5A0MH23ANSAA	-	-	F
				VFD5A0MH23ENSAA	-	V	F
				VFD5A0MH23ANSNA			N
				VFD5A0MH23ENSNA		V	N
2	1.5	7.5	B	VFD7A5MH23ANSAA	-	-	F
				VFD7A5MH23ENSAA	-	V	F
3	2.2	11.0	C	VFD11AMH23ANSAA	-	-	F
				VFD11AMH23ENSAA	-	V	F
5	3.7/4	17.0	C	VFD17AMH23ANSAA	-	-	F
				VFD17AMH23ENSAA	-	V	F
7.5	5.5	25.0	D	VFD25AMH23ANSAA	-	-	F
				VFD25AMH23ENSAA	-	V	F
10	7.5	33.0	E	VFD33AMH23ANSAA	-	-	F
				VFD33AMH23ENSAA	-	V	F
15	11	49.0	E	VFD49AMH23ANSAA	-	-	F
				VFD49AMH23ENSAA	-	V	F
20	15	65.0	F	VFD65AMH23ANSAA	-	-	F
				VFD65AMH23ENSAA	-	V	F
25	18.5	75	G	VFD75AMH23ANSAA	-	-	F
30	22	90		VFD90AMH23ANSAA	-	-	F
40	30	120	I	VFD120MH23ANSAA	-	-	F
50	37	146		VFD146MH23ANSAA	-	-	F

Power Range			Frame Size	Model Name	Standard Models (0 ~ 599Hz)		
Max. Applicable Motor Capacity		Drive Rated Output Current			Built-in EMC Filter	IP40 Models	F: Forced air cooling N: Natural air cooling
[HP]	[kW]	[A]					
460V/3-phase							
0.5	0.4	1.5	A	VFD1A5MH43ANSAA	-	-	N
			A	VFD1A5MH43ENSAA	-	V	N
			B	VFD1A5MH43AFSAA	V	-	F
1	0.75	3.0	A	VFD3A0MH43ANSAA	-	-	F
			A	VFD3A0MH43ENSAA	-	V	F
			B	VFD3A0MH43AFSAA	V	-	F
			A	VFD3A0MH43ANSNA			N
			A	VFD3A0MH43ENSNA		V	N
2	1.5	4.2	B	VFD4A2MH43ANSAA	-	-	F
				VFD4A2MH43ENSAA	-	V	F
				VFD4A2MH43AFSAA	V	-	F
3	2.2	5.7	C	VFD5A7MH43ANSAA	-	-	F
				VFD5A7MH43ENSAA	-	V	F
				VFD5A7MH43AFSAA	V	-	F
5	3.7/4	9.0	C	VFD9A0MH43ANSAA	-	-	F
				VFD9A0MH43ENSAA	-	V	F
				VFD9A0MH43AFSAA	V	-	F
7.5	5.5	13.0	D	VFD13AMH43ANSAA	-	-	F
				VFD13AMH43ENSAA	-	V	F
				VFD13AMH43AFSAA	V	-	F
10	7.5	17.5	D	VFD17AMH43ANSAA	-	-	F
				VFD17AMH43ENSAA	-	V	F
				VFD17AMH43AFSAA	V	-	F
15	11	25.0	E	VFD25AMH43ANSAA	-	-	F
				VFD25AMH43ENSAA	-	V	F
				VFD25AMH43AFSAA	V	-	F
20	15	32.0	E	VFD32AMH43ANSAA	-	-	F
				VFD32AMH43ENSAA	-	V	F
				VFD32AMH43AFSAA	V	-	F
25	18.5	38.0	F	VFD38AMH43ANSAA	-	-	F
				VFD38AMH43ENSAA	-	V	F
				VFD38AMH43AFSAA	V	-	F
30	22	45.0	F	VFD45AMH43ANSAA	-	-	F
				VFD45AMH43ENSAA	-	V	F
				VFD45AMH43AFSAA	V	-	F
40	30	60	G	VFD60AMH43AFSAA	V	-	F
				VFD60AMH43ANSAA	-	-	F
50	37	75	H	VFD75AMH43AFSAA	V	-	F
				VFD75AMH43ANSAA	-	-	F
60	45	91	H	VFD91AMH43AFSAA	V	-	F
				VFD91AMH43ANSAA	-	-	F
75	55	112	I	VFD112MH43AFSAA	V	-	F
				VFD112MH43ANSAA	-	-	F
100	75	150	I	VFD150MH43AFSAA	V	-	F
				VFD150MH43ANSAA	-	-	F



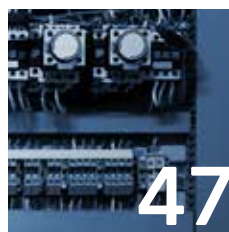
Standard Compact Drive MS300 Series



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Models Overview

Standard Models
High Speed Models
Exterior Design and Interfaces
Optional Cards



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Optimized Space Utilization

Compact Design
Side-by-Side Installation



48

Outstanding Drive Performance

Supports IM and PM Motors
High Starting Torque
Deceleration Energy Backup (DEB)
Enhanced Braking Capability



49

Strong System Support

Multi-motor Control
Pulse Control
Built-in PLC
High Speed Applications
24 V_{DC} External Power
High Overload Capability
Built-in Brake Chopper
Versatile Communications



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Stable, Safe and Reliable

Safety Standards
Enhanced Conformal Coating
IP40 Models
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Easy to Install

Application Groups
Built-in USB Port
Screwless Wiring of Control Terminal



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Wide Range of Applications

Machine Tools
Woodworking Machines
Automatic Tool Changers (ATC)
Pumps
Packaging Machines
Textile Machines



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Specifications

Product Specifications
Wiring
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Accessories
Model Name Explanation
Ordering Information

Models Overview



Standard Models (IP20 / IP40)

115V single-phase

Applicable Motor Output (kW)	0.2	0.4	0.75
Applicable Motor Output (HP)	0.25	0.5	1
Frame Size	A		C

230V single-phase

Applicable Motor Output (kW)	0.2	0.4	0.75	1.5	2.2
Applicable Motor Output (HP)	0.25	0.5	1	2	3
Frame Size	A		B	C	

230V single-phase (Built-in EMC filter)

Applicable Motor Output (kW)	0.2	0.4	0.75	1.5	2.2
Applicable Motor Output (HP)	0.25	0.5	1	2	3
Frame Size	B			C	

230V 3-phase

Applicable Motor Output (kW)	0.2	0.4	0.75	1.5	2.2	3.7 / 4	5.5	7.5	11	15
Applicable Motor Output (HP)	0.25	0.5	1	2	3	5	7.5	10	15	20
Frame Size	A			B	C		D	E		F

460V 3-phase

Applicable Motor Output (kW)	0.4	0.75	1.5	2.2	3.7 / 4	5.5	7.5	11	15	18.5	22
Applicable Motor Output (HP)	0.5	1	2	3	5	7.5	10	15	20	25	30
Frame Size	A		B	C		D		E		F	

460V 3-phase (Built-in EMC filter)

Applicable Motor Output (kW)	0.4	0.75	1.5	2.2	3.7 / 4	5.5	7.5	11	15	18.5	22
Applicable Motor Output (HP)	0.5	1	2	3	5	7.5	10	15	20	25	30
Frame Size	B			C		D		E		F	

575V 3-phase

Applicable Motor Output (kW)	0.75	1.5	2.2	3.7	5.5	7.5
Applicable Motor Output (HP)	1	2	3	5	7.5	10
Frame Size	A	B	C	C	D	D

Standard Models (IP66)

230V single-phase

Applicable Motor Output (kW)	0.4	0.75	1.5	2.2
Applicable Motor Output (HP)	0.5	1	2	3
Frame Size	A			B

Standard Models (IP66)

230V single-phase (Built-in EMC filter)

Applicable Motor Output (kW)	0.4	0.75	1.5	2.2
Applicable Motor Output (HP)	0.5	1	2	3
Frame Size	A		B	

230V 3-phase

Applicable Motor Output (kW)	0.4	0.75	1.5	2.2	3.7/4	5.5
Applicable Motor Output (HP)	0.5	1	2	3	5	7.5
Frame Size	A			B		C

460V 3-phase

Applicable Motor Output (kW)	0.4	0.75	1.5	2.2	3.7/4	5.5	7.5
Applicable Motor Output (HP)	0.5	1	2	3	5	7.5	10
Frame Size	A				B	C	

460V 3-phase (Built-in EMC filter)

Applicable Motor Output (kW)	0.4	0.75	1.5	2.2	3.7/4	5.5	7.5
Applicable Motor Output (HP)	0.5	1	2	3	5	7.5	10
Frame Size	A				B	C	

High-speed Models (IP20 /IP40)

230V single-phase

Applicable Motor Output (kW)	1.5	2.2
Applicable Motor Output (HP)	2	3
Frame Size	C	

230V single-phase (Built-in EMC filter)

Applicable Motor Output (kW)	1.5	2.2
Applicable Motor Output (HP)	2	3
Frame Size	C	

230V 3-phase

Applicable Motor Output (kW)	1.5	2.2	3.7/4	5.5	7.5	11	15
Applicable Motor Output (HP)	2	3	5	7.5	10	15	20
Frame Size	B	C		D	E		F

460V 3-phase

Applicable Motor Output (kW)	1.5	2.2	3.7/4	5.5	7.5	11	15	18.5	22
Applicable Motor Output (HP)	2	3	5	7.5	10	15	20	25	30
Frame Size	B	C		D		E		F	

460V 3-phase (Built-in EMC filter)

Applicable Motor Output (kW)	1.5	2.2	3.7/4	5.5	7.5	11	15	18.5	22
Applicable Motor Output (HP)	2	3	5	7.5	10	15	20	25	30
Frame Size	B	C		D		E		F	

Hardware Design

Compact design and user-friendly interface

Removable Keypad

Press to remove;
supports remote
operation away from
drive



5 digits 7 segments
LED display,
frequency knob,
Up and Left/Down
function keys

Removable RFI Jumper

Applicable for different
application needs



Built-in USB Port

Easy and fast
programming setting,
update and real-time
monitoring and tuning



Screwless Top Cover Design

Press on both side tabs to
remove the cover



Removable Fan

Easy to replace and
maintain for a longer
lifetime



Option Cards

A wide selection of option cards for highly flexible applications



External Power Supply Card (DC 24V)

EMM-BPS02



Communication Cards

PROFIBUS DP

CMM-PD02



DeviceNet

CMM-DN02



EtherNet/IP &
Modbus TCP

CMM-EIP02



EtherNet/IP &
Modbus TCP **NEW**

CMM-EIP03



CANopen

CMM-COP02



EtherCAT **NEW**

CMM-EC02



Built-in 1 Option Slot



Optimized Space Utilization

Compact Design

Provides more powerful features in smaller sizes with reduction up to 40% that effectively optimizes the installation space



Side-by-Side Installation

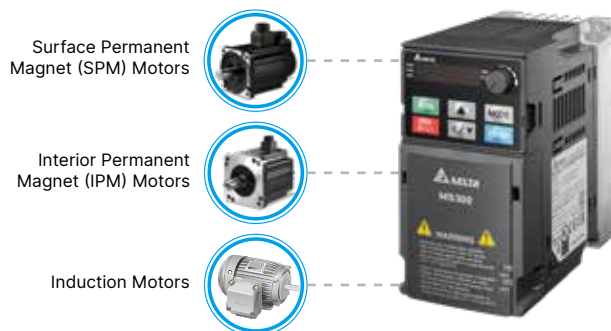
Supports side-by-side installation with operating temperatures of $-20^{\circ}\text{C} \sim 40^{\circ}\text{C}$; enables highly flexible and highly efficient installation



Outstanding Drive Performance

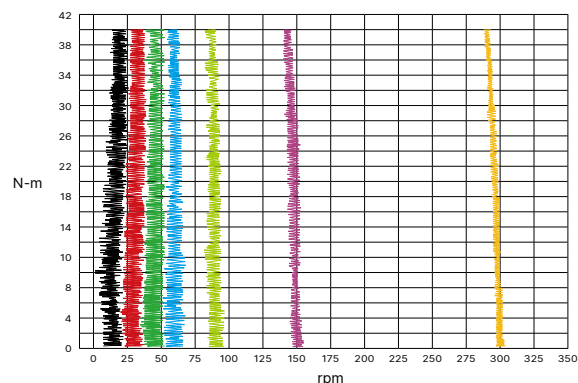
Supports IM and PM Motors

Supports 4 independent induction motor control parameter sets



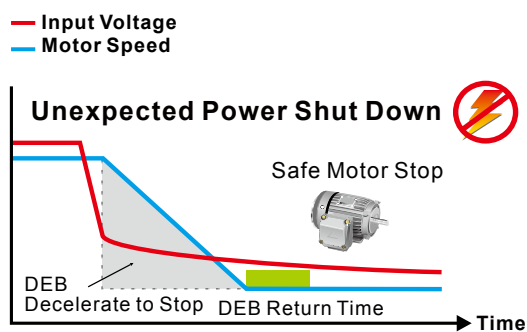
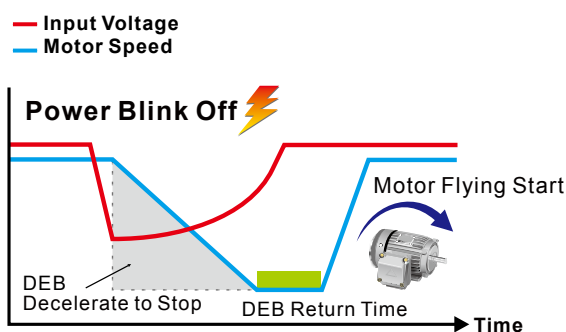
High Starting Torque

Delivers 200% high starting torque with a low speed control of 0.5 Hz and provides outstanding machine stability; suitable for dynamic loading applications



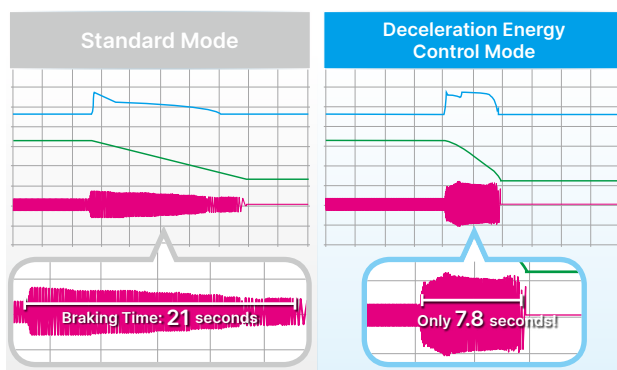
Deceleration Energy Backup (DEB)

Controls the motor deceleration to a stop when an unexpected power shut-down occurs to prevent mechanical damage. When power resumes, the motor will accelerate to its previous speed



Enhanced Braking Capability

Provides Deceleration Energy Control Mode to shorten braking time by adjusting the motor speed and current, replacing break resistors

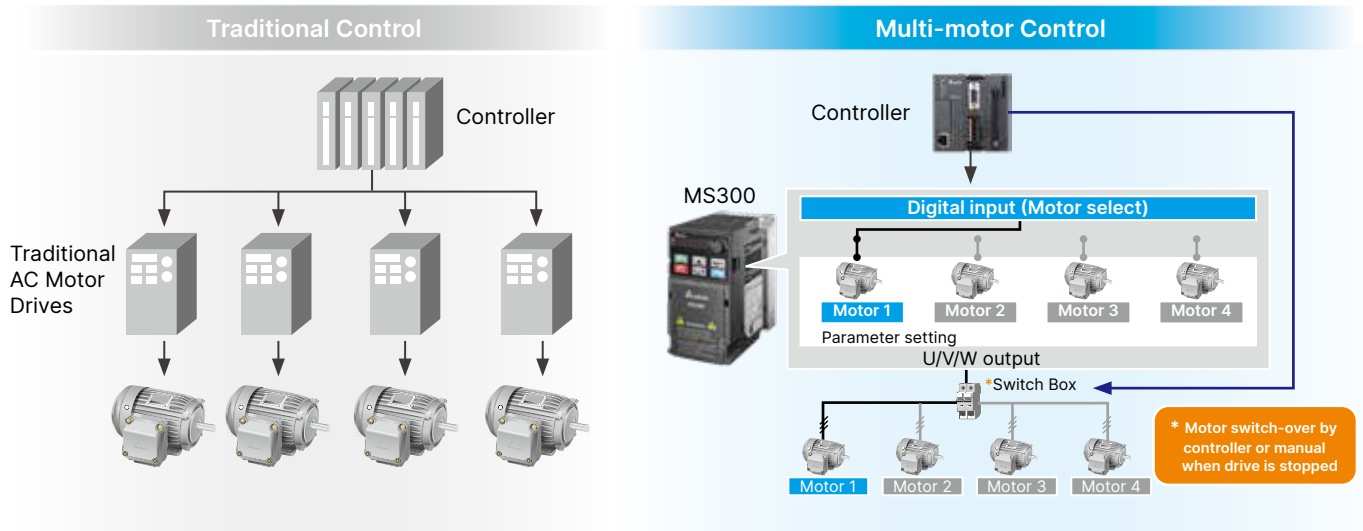


* Actual deceleration performance varies upon different system loads

Strong System Support

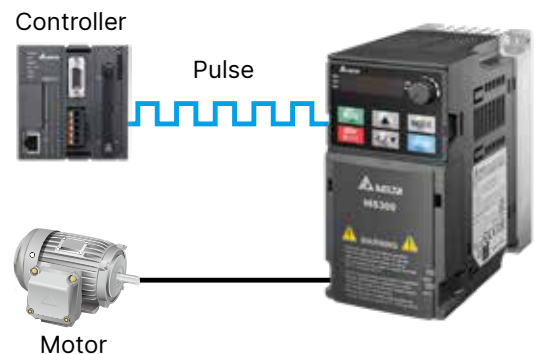
Multi-motor Control

Supports 4 induction motors switching control



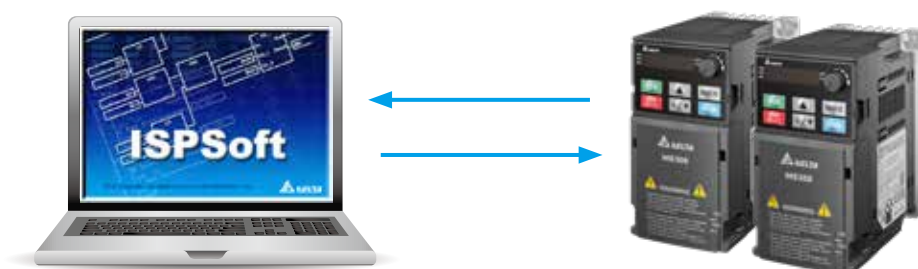
Pulse Input

Supports single pulse input signal from controller as frequency command



Built-in PLC

Built-in PLC capacity (2k steps) to provide distributed control and independent operation via network connection



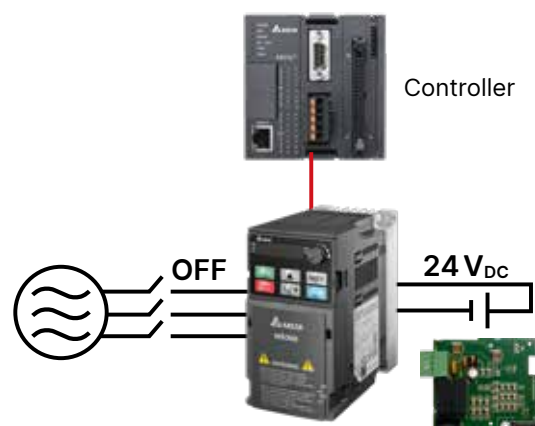
High-Speed Applications

High-speed models are available to support high-speed processing

Type	Model	Frequency Setting
Standard	VFD □□□ MS □□□□ SAA	0 ~ 599 Hz
High-speed	VFD □□□ MS □□□□ SHA	0 ~ 1500 Hz

DC 24V External Power

External power supply card is available for external power connection to protect the system and ensure uninterrupted communication when mains power failure occurs



High Overload Capability

- Normal duty: rated current 120% for 60 seconds; 150% for 3 seconds
- Heavy duty: rated current 150% for 60 seconds; 200% for 3 seconds

Built-in Braking Chopper

Larger braking torque capability is provided by using an additional braking resistor

Versatile Communication Interfaces

Built-in RS-485 (Modbus) and various communication card options

Communication	MS300
Modbus	Built-in
PROFIBUS DP	Optional
DeviceNet	Optional
Modbus TCP	Optional
EtherNet/IP	Optional
CANopen	Optional
EtherCAT	Optional

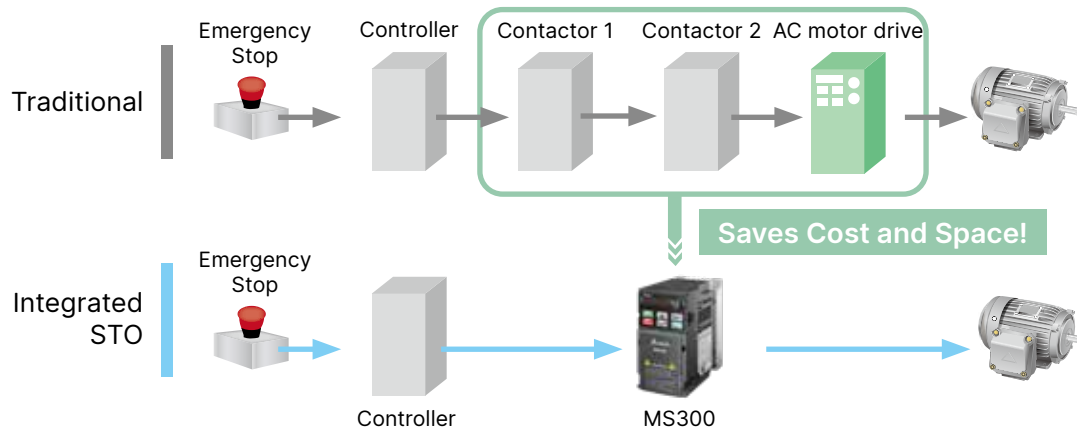
Stable, Safe and Reliable



Safety Standard

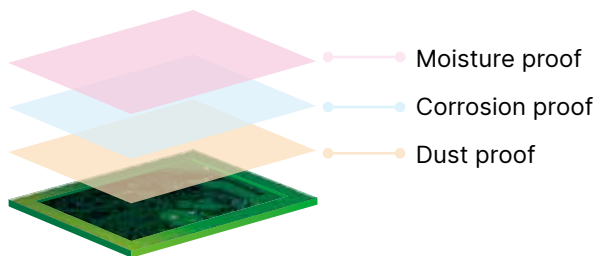
Integrated Safe Torque Off (STO), compliance with:

- ▶ ISO 13849-1:2015 Category 3 PL d
- ▶ EN 60204-1 Category 0
- ▶ EN 61508 SIL2
- ▶ EN 62061 SIL CL 2



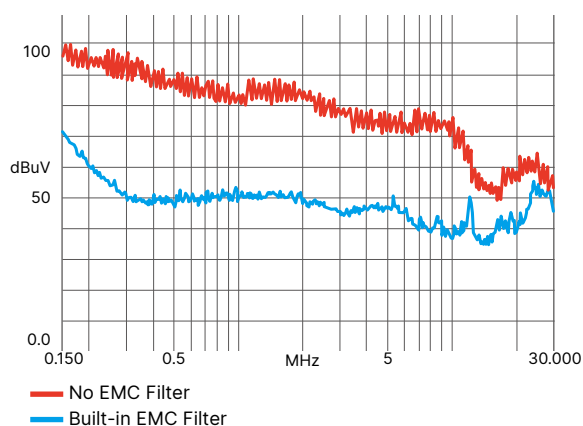
PCB Coating

100% PCB coating (IEC 60721-3-3 class 3C2 standard) ensures drive operation stability and safety in critical environments



Built-in EMC Filter

Built-in Class A (C2) standard EMC filter; saves on additional procurement cost and wiring time, and provides more cabinet space for other devices to use



IP40 Models

Strengthened fan coating and concealed air vent prevent dust and other particles from entering the drive, suitable for critical environment applications



IP66 Models

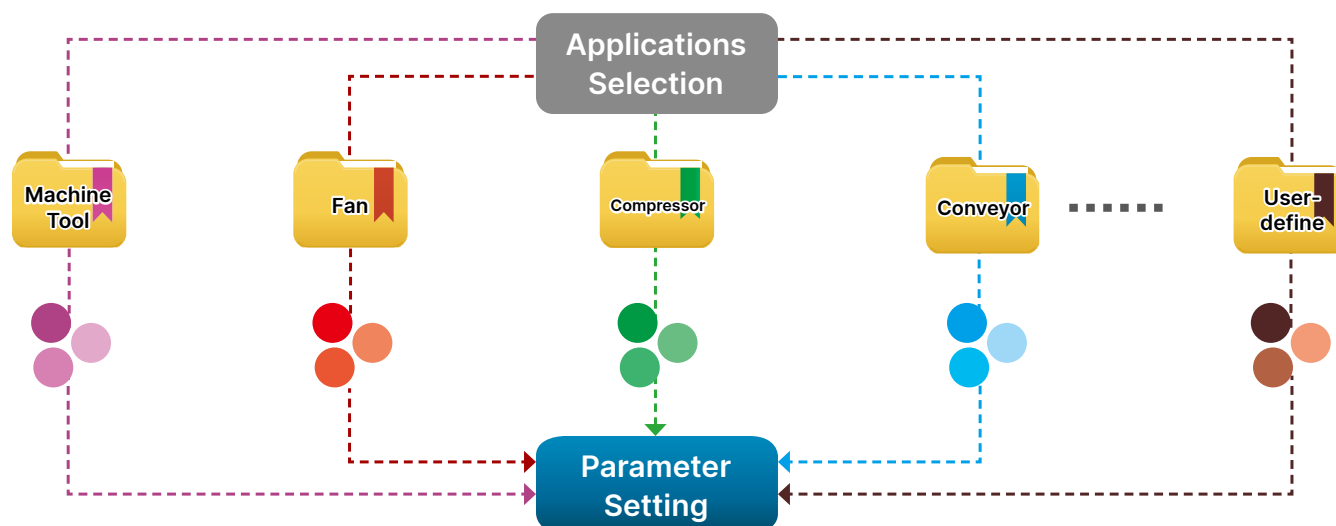
IP66/NEMA4X water-proof and dust-proof design enables stable operation under harsh environment. Quick installation without control cabinet saves cost



Easy to Install

Application Groups (Macro)

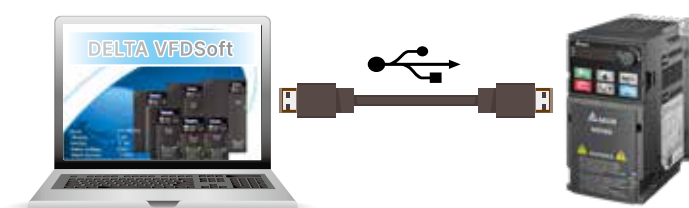
Simplifies the parameter setting process by grouping the parameters for different applications to use



Built-in USB Port

Built-in USB port facilitates the drive setting, updating, real-time monitoring and system tuning process

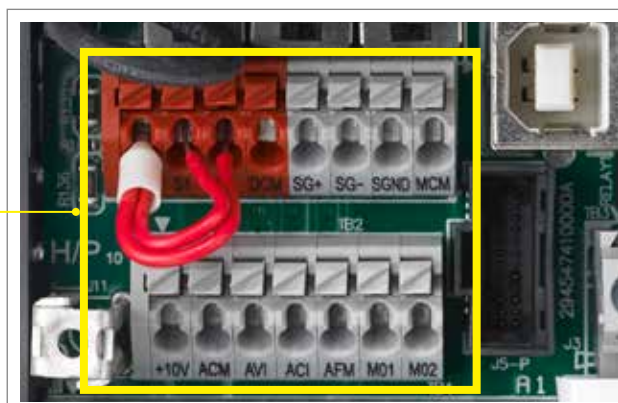
- No need of USB or RS-485 connectors
- Supports offline (drive power off) parameter setting/copying and system update



Screwless Wiring of Control Terminal

Spring clamp terminal blocks provide fast and easy wiring

No special tools needed, time-saving



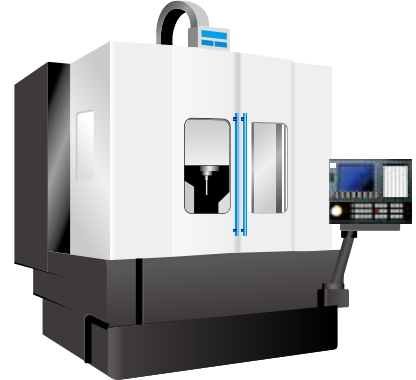
Wide Range of Applications



Machine Tools

Features and Benefits

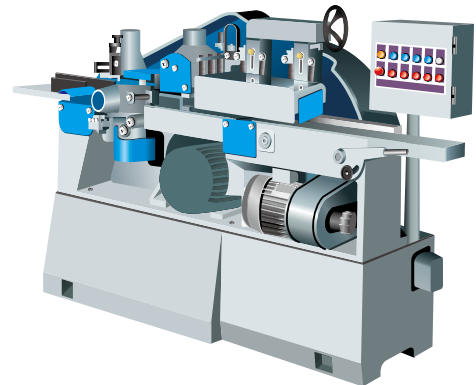
- High-speed models support main spindle 1500Hz frequency output; suitable for complex and high precision processing applications
- Timely acceleration/deceleration control to improve machinery operation efficiency
- Built-in brake chopper to save on purchasing cost
- Built-in PLC capacity for flexible application needs
- Built-in STO function ensures operator safety and effectively reduces accident risk
- Provides deceleration-to-stop function to protect tools from damage and ensure operator safety



Woodworking Machines

Features and Benefits

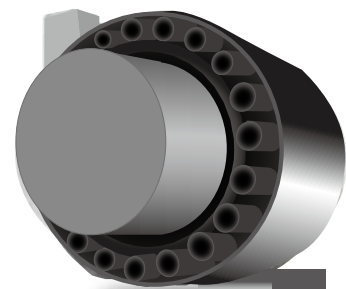
- Timely acceleration/deceleration control improves machinery operation efficiency
- Built-in STO function ensures operator safety and effectively reduces accident risk
- Built-in PLC capacity saves on purchasing cost
- Built-in EMC filter effectively reduces electromagnetic interference
- Compact in size and weight, easy to install and maintain



Automatic Tool Changers (ATC)

Features and Benefits

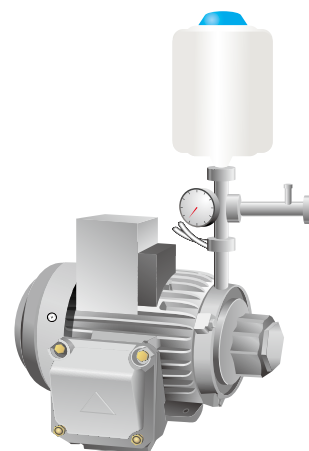
- Compact design of drive provides more cabinet space for other devices to use
- Quick start and timely acceleration/deceleration control function effectively shortens tool changing time and improves system efficiency and productivity
- Simple structure is easy to install and maintain
- Built-in STO function ensures operator safety and effectively reduces accident risk
- Built-in brake chopper saves on purchasing cost



Pump Applications

Features and Benefits

- Built-in PID feedback control
- Built-in PLC capacity saves on purchasing cost of PLC and simpler wiring
- Supports a wide range of input voltages, suitable for various types of pumps application and use in different countries
- Deceleration energy control mode shortens deceleration time and reduces cost and installation space for braking resistor



Packaging Machines

Features and Benefits

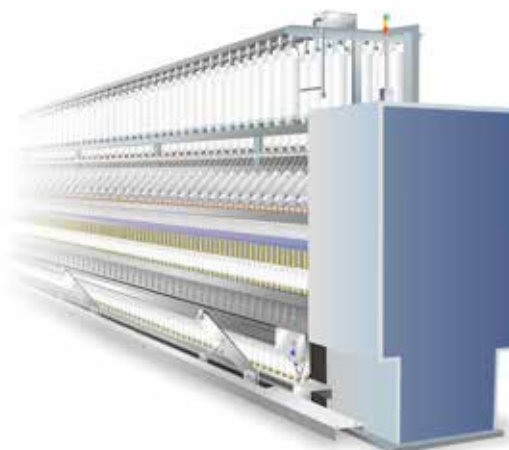
- Compact design to save installation space
- Built-in STO function ensures operator safety and effectively reduces accident rate
- Built-in brake chopper saves on system construction cost
- Built-in RS-485 (Modbus) and various communication cards upon selection (optional)
- High-speed pulse input
- Supports frequency command by pulse input to improve control precision



Textile Machines

Features and Benefits

- IP40 models provide excellent protection from a high dust, fiber or moisture environment
- Improved heatsink design prevents fiber clogging the airway; modular design of fan is easy to clean and provides longer lifetime
- Improved braking capability shortens the deceleration-to-stop time and is suitable for sudden stop requirements
- Built-in STO function ensures operator safety and effectively reduces accident rate
- Supports both induction motors and PM motors
- Provides deceleration-to-stop function to protect the equipment from damage when sudden power failure occurs



Specifications

IP20/IP40 Models

Single-phase 115 V (Models w/o Built-in EMC Filter)					
Frame			A		C
Applicable Motor Output (kW)			0.2	0.4	0.75
Applicable Motor Output (HP)			1/4	1/2	1
Inverter Output	Heavy Duty	Rated Output Current (A)	1.6	2.5	4.8
	Normal Duty	Rated Output Current (A)	1.8	2.7	5.5
Input	Rated Voltage/Frequency		1-phase AC 100 V ~120 V (-15% ~ +10%), 50/60 Hz		
	Mains Input Voltage Range		85 ~ 132 V		
	Mains Frequency Range		47 ~ 63 Hz		
Carrier Frequency (kHz)			2 ~ 15 (default 4)		
Brake Chopper			Built-in		
DC Reactor			Optional		
AC Reactor			Optional		
Cooling Method			Natural air cooling		Fan cooling
Size: W x H (mm)			68 × 128		87 × 157
Size: D (mm)			96	125	152

Single-phase 230 V (Models with Built-in EMC Filter)							
Frame			B			C	
Applicable Motor Output (kW)			0.2	0.4	0.75	1.5	2.2
Applicable Motor Output (HP)			1/4	1/2	1	2	3
Inverter Output	Heavy Duty	Rated Output Current (A)	1.6	2.8	4.8	7.5	11
	Normal Duty	Rated Output Current (A)	1.8	3.2	5	8.5	12.5
Input	Rated Voltage/Frequency		1-phase AC 200 V ~240 V (-15% ~ +10%), 50/60 Hz				
	Mains Input Voltage Range		170 ~ 265 V				
	Mains Frequency Range		47 ~ 63Hz				
Carrier Frequency (kHz)			2 ~15 (default 4)				
Brake Chopper			Built-in				
DC Reactor			Optional				
AC Reactor			Optional				
Cooling Method			Natural air cooling	Fan cooling			
Size: W x H (mm)			72 × 142			87 × 157	
Size: D (mm)			159			179	

Single-phase 230 V (Models w/o an EMC Filter)				
Frame	A		B	C
Cooling Method	Natural air cooling			Fan cooling
Size: W x H (mm)	68 × 128	68 × 128	72 × 142	87 × 157
Size: D (mm)	96	125	143	152

3-phase 230 V (Models w/o Built-in EMC Filter)													
Frame			A			B	C		D	E		F	
Applicable Motor Output (kW)			0.2	0.4	0.75	1.5	2.2	3.7/4	5.5	7.5	11	15	
Applicable Motor Output (HP)			1/4	1/2	1	2	3	5	7.5	10	15	20	
Inverter Output	Heavy Duty	Rated Output Current (A)	1.6	2.8	4.8	7.5	11	17	25	33	49	65	
	Normal Duty	Rated Output Current (A)	1.8	3.2	5	8	12.5	19.5	27	36	51	69	
Input	Rated Voltage/Frequency		3-phase AC 200 V ~ 240 V (-15% ~ +10%), 50/60 Hz										
	Mains Input Voltage Range		170 ~ 265 V										
	Mains Frequency Range		47 ~ 63 Hz										
Carrier Frequency (kHz)			2 ~ 15 (default 4)										
Brake Chopper			Built-in										
DC Reactor			Optional										
AC Reactor			Optional										
Cooling Method			Natural air cooling			Fan cooling							
Size: W x H (mm)			68 × 128			72 × 142	87 × 157		109 × 207	130 × 250		175 × 300	
Size: D (mm)			96	110	143	143	152		154	185		192	
3-phase 460 V (Models with Built-in EMC Filter)													
Frame			B			C		D		E		F	
Applicable Motor Output (kW)			0.4	0.75	1.5	2.2	3.7/4	5.5	7.5	11	15	18.5	22
Applicable Motor Output (HP)			1/2	1	2	3	5	7.5	10	15	20	25	30
Inverter Output	Heavy Duty	Rated Output Current (A)	1.5	2.7	4.2	5.5	9	13	17	25	32	38	45
	Normal Duty	Rated Output Current (A)	1.8	3	4.6	6.5	10.5	15.7	20.5	28	36	41.5	49
Input	Rated Voltage/Frequency		3-phase AC 380 V ~ 480 V (-15% ~ +10%), 50/60 Hz										
	Mains Input Voltage Range		323 ~ 528 V										
	Mains Frequency Range		47 ~ 63 Hz										
Carrier Frequency (kHz)			2 ~ 15 (default 4)										
Brake Chopper			Built-in										
DC Reactor			Optional										
AC Reactor			Optional										
Cooling Method			Fan cooling										
Size: W x H (mm)			72 × 142			87 × 157		109 × 207		130 × 250		175 × 300	
Size: D (mm)			159			179		187		219		244	
3-phase 460 V (Models w/o an EMC Filter)													
Frame			A		B	C		D		E		F	
Cooling Method			Natural air cooling		Fan cooling								
Size: W x H (mm)			68 × 128		72 × 142	87 × 157		109 × 207		130 × 250		175 × 300	
Size: D (mm)			129	143	143	152		154		185		192	
3-phase 575 V (Models w/o an EMC Filter)													
Frame			A		B		C			D			
Applicable Motor Output (kW)			0.75		1.5		2.2		3.7		5.5		7.5
Applicable Motor Output (HP)			1		2		3		5		7.5		10
Inverter Output	Heavy Duty	Rated Output Current (A)	1.7		3		4.2		6.6		9.9		12.2
	Normal Duty	Rated Output Current (A)	2.1		3.6		5		8		11.5		15
Input	Rated Voltage/Frequency		3-phase AC 500 V ~ 600 V (-15% ~ +10 %), 50/60 Hz										
	Mains Input Voltage Range		425 ~ 660										
	Mains Frequency Range		47 ~ 63										
Carrier Frequency (kHz)			2~15 (default 4)										
Brake Chopper			Built-in										
DC Reactor			Optional										
AC Reactor			Optional										
Cooling Method			Natural air cooling		Fan cooling								
Size: W x H (mm)			68 × 128		72 × 142		87 × 157			109 × 207			
Size: D (mm)			143		143		152			154			

IP66/NEMA 4X Models

Single-phase 230 V										
Frame			A					B		
VFD_ _ _ _ _ SAA			2A8MS21_ _		4A8MS21_ _		7A5MS 21MN	7A5MS 21MF	11AMS21_ _	
			<u>M</u> <u>N</u>	<u>M</u> <u>F</u>	<u>M</u> <u>N</u>	<u>M</u> <u>F</u>			<u>M</u> <u>N</u>	<u>M</u> <u>F</u>
Applicable Motor Output (kW)			0.4		0.75		1.5	1.5	2.2	
Applicable Motor Output (HP)			0.5		1		2	2	3	
Inverter Output	Heavy Duty	Rated Output Current (A)	1.1		1.8		2.9	2.9	4.2	
		Rated Output Current (A)	2.8		4.8		7.5	7.2	11	
		Carrier Frequency (kHz)	2 ~ 15 (default 4)							
	Normal Duty	Rated Output Current (A)	1.2		1.9		3.2	3.2	4.8	
		Rated Output Current (A)	3.2		5		8.5	8.5	12.5	
		Carrier Frequency (kHz)	2 ~ 15 (default 4)							
Input	Heavy Duty	Rated Output Current (A)	7.3		10.8		16.5	16.5	24.2	
	Normal Duty	Rated Output Current (A)	8.3		11.3		18.5	18.5	27.5	
	Rated Voltage/Frequency		1-phase AC 200 V ~ 240 V, 50/60Hz							
	Operating Voltage (V _{AC})		170 ~ 264 (-15% ~ +10%)							
	Mains Frequency Range (Hz)		47 ~ 63							
Net Weight (kg)			2.25	2.65	2.6	2.9	3.1	3.95	3.5	4.0
Cooling Method			Natural air cooling					Fan cooling		
EMC Filter			Optional	Built-in	Optional	Built-in	Optional	Built-in	Optional	Built-in
Protection Rating			IP66 / NEMA 4X							

3-phase 230 V								
Frame			A			B		C
VFD_ _ _ _ _ SAA			2A8MS23MN	4A8MS23MN	7A5MS23MN	11AMS23MN	17AMS23NB	25AMS23MN
Applicable Motor Output (kW)			0.4	0.75	1.5	2.2	3.7	5.5
Applicable Motor Output (HP)			0.5	1	2	3	5	7.5
Inverter Output	Heavy Duty	Rated Output Current (A)	1.1	1.8	2.9	4.2	6.5	9.5
		Rated Output Current (A)	2.8	4.8	7.5	11	17	25
		Carrier Frequency (kHz)	2 ~ 15 (default 4)					
	Normal Duty	Rated Output Current (A)	1.2	1.9	3.0	4.8	7.4	10.3
		Rated Output Current (A)	3.2	5	8	12.5	19.5	27
		Carrier Frequency (kHz)	2 ~ 15 (default 4)					
Input	Heavy Duty	Rated Output Current (A)	3.4	5.8	9.0	13.2	20.4	30
	Normal Duty	Rated Output Current (A)	3.8	6.0	9.6	15	23.4	32.4
	Rated Voltage/Frequency		3-phase AC 200 V ~240 V , 50/60 Hz					
	Operating Voltage (V _{AC})		170 ~ 264 (-15% ~ +10%)					
	Mains Frequency Range (Hz)		47 ~ 63					
Net Weight (kg)			2.3	2.45	2.75	3.4	3.5	4.25
Cooling Method			Natural air cooling			Fan cooling		
EMC Filter			Optional					
Protection Rating			IP66 / NEMA 4X					

3-phase 460 V												
Frame			A						B			
VFD_ _ _ _ _SAA			1A5MS43_ _		2A7MS43_ _		4A2MS43_ _		5A5MS 43MN	5A5MS 43MF	9A0MS43_ _	
			M N	M F	M N	M F	M N	M F			M N	M F
Applicable Motor Output (kW)			0.4		0.75		1.5		2.2	2.2	3.7	
Applicable Motor Output (HP)			0.5		1		2		3	3	5	
Inverter Output	Heavy Duty	Rated Output Current (A)	1.1		2.1		3.2		4.2	4.2	6.9	
		Rated Output Current (A)	1.5		2.7		4.2		5.5	5.5	9	
		Carrier Frequency (kHz)	2 ~ 15 (default 4)									
	Normal Duty	Rated Output Current (A)	1.4		2.3		3.5		5.0	5.0	8.0	
		Rated Output Current (A)	1.8		3		4.6		6.5	6.5	10.5	
		Carrier Frequency (kHz)	2 ~ 15 (default 4)									
Input	Heavy Duty	Rated Output Current (A)	2.1		3.7		5.8		6.1	6.1	9.9	
	Normal Duty	Rated Output Current (A)	2.5		4.2		6.4		7.2	7.2	11.6	
	Rated Voltage / Frequency		3-phase AC 380 V ~ 480 V , 50 / 60 Hz									
	Operating Voltage (V _{AC})		323 ~ 528 (-15% ~ +10%)									
	Mains Frequency Range (Hz)		47 ~ 63									
Net Weight (kg)			2.35	2.65	2.6	2.8	2.8	3.1	3.6	3.8	3.45	3.95
Cooling Method			Natural air cooling						Fan cooling			
EMC Filter			Optional	Built-in	Optional	Built-in	Optional	Built-in	Optional	Built-in	Optional	Built-in
Protection Rating			IP66 / NEMA 4X									

3-phase 460 V						
Frame			c			
VFD_ _ _ _ _SAA			13AMS43_ _		17AMS43_ _	
			<u>M</u> <u>N</u>	<u>M</u> <u>F</u>	<u>M</u> <u>N</u>	<u>M</u> <u>F</u>
Applicable Motor Output (kW)			5.5		7.5	
Applicable Motor Output (HP)			7.5		10	
Inverter Output	Heavy Duty	Rated Output Current (A)	9.9		13	
		Rated Output Current (A)	13		17	
		Carrier Frequency (kHz)	2 ~ 15 (default 4)			
	Normal Duty	Rated Output Current (A)	12		15.6	
		Rated Output Current (A)	15.7		20.5	
		Carrier Frequency (kHz)	2 ~ 15 (default 4)			
Input	Heavy Duty	Rated Output Current (A)	14.3		18.7	
	Normal Duty	Rated Output Current (A)	17.3		22.3	
	Rated Voltage / Frequency		3-phase AC 380V ~480V , 50/60Hz			
	Operating Voltage (V _{AC})		323 ~ 528 (-15% ~ +10%)			
	Mains Frequency Range (Hz)		47 ~ 63			
Net Weight (kg)			4.25	4.95	4.25	5.05
Cooling Method			Fan cooling			
EMC Filter			Optional	Built-in	Optional	Built-in
Protection Rating			IP66 / NEMA 4X			

General Specifications and Accessories

Control Functions	Control Methods	V/F, SVC, FOC Sensorless
	Applicant Motors	Induction motors (IM), interior permanent magnet (IPM) motors, and surface permanent magnet (SPM) motors
	Max. Output Frequency	Standard model: 599.00 Hz/High speed model: 1500.0 Hz (with derating, V/F control only)
	Starting Torque*	150% / 3 Hz (V/f, SVC control for IM, heavy duty) 100% / (1/20 of motor rated frequency) (SVC control for PM, heavy duty) 200% / 0.5 Hz (FOC Sensorless control for IM, heavy duty)
	Speed Control Range*	1:50 (V/f, SVC control for IM, heavy duty) 1:20 (SVC control for PM, heavy duty) 1:100 (FOC Sensorless control for IM, heavy duty)
	Overload Tolerance	Normal Duty (ND): 120% of rated output current for 60 seconds; 150% of rated output current for 3 seconds Heavy Duty (HD): 150% of rated output current for 60 seconds; 200% of rated output current for 3 seconds
	Frequency Setting Signal	0 ~ +10 V / -10 V ~ +10 V, 4 ~ 20 mA / 0 ~ +10 V, 1 pulse input (33 kHz), 1 pulse output (33 kHz)
	Main Control Functions	Multiple motor switches (max. 4 independent motor parameter settings), fast run, Deceleration Energy Back (DEB) function, wobble frequency function, fast deceleration function, master and auxiliary frequency source selectable, momentary power loss ride thru, speed search, over-torque detection, 16-step speed (max.), accel/decel time switch, S-curve accel/decel, 3-wire sequence, JOG frequency, upper/lower limits for frequency reference, DC injection braking at start and stop, 2 sets of PID controls, built-in PLC (2k steps), simple positioning function, Modbus integrated as standard
Protection Functions	Motor Protection	Overcurrent protection, overvoltage protection, over-temperature protection, phase failure protection
	Stall Prevention	Stall prevention during acceleration, deceleration and running independently
Accessories	Communication Cards	PROFIBUS DP, DeviceNet, Modbus TCP, EtherNet/IP, CANopen, EtherCAT
	External DC power supply	EMM-BPS01 (DC 24V power supply card)
Digital Controller		A removable keypad as standard
Certifications		UL, CE, RoHS, RCM, TUV, REACH

*Control accuracy may vary depending on the environment, application conditions, different motors or encoder. For details, please contact our company or your local distributor.

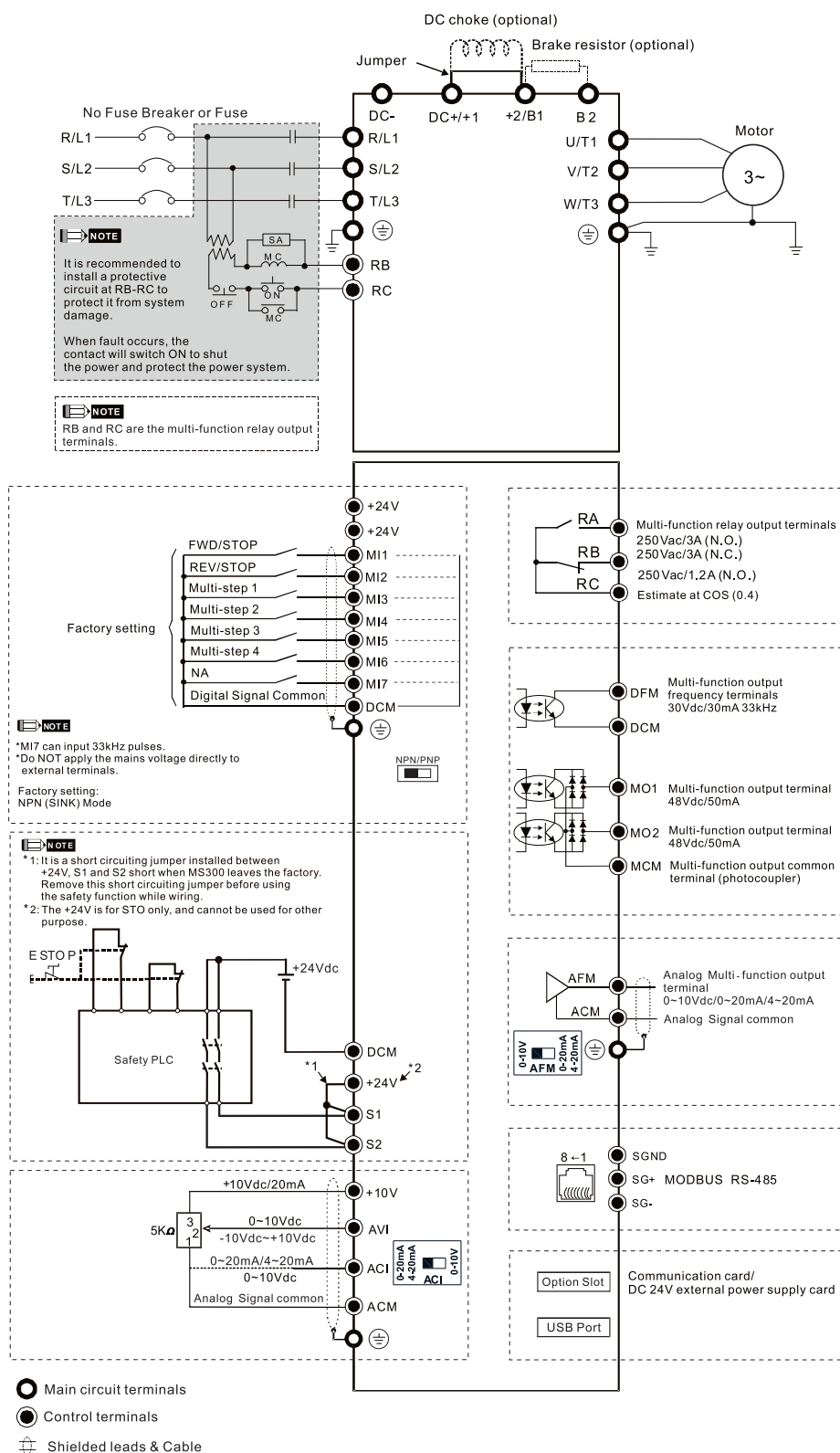
MS300 Operating Environment

Operating Environment	Installation Location		IEC60364-1/IEC60664-1 Pollution degree 2, Indoor use only	
	Ambient Temperature (°C)	Operation	IP20/UL Open Type	-20 to 50 -20 to 60 (needs derating)
			IP40/NEMA 1/UL Type 1	-20 to 40 -20 to 50 (needs derating)
			IP66/NEMA 4X/UL Type 4X	
			Zero stacking Installation	
		Storage		-40 to 85
	Transportation		-20 to 70	
	Rated Humidity	Operation		Max. 90%
		Storage/Transportation		Max. 95%
	Air Pressure (kPa)	Operation		86 ~ 106
		Storage/Transportation		70 ~ 106
	Pollution Level		Compliance to IEC60721-3-3, 3C2	
	Altitude		An altitude of 0 ~ 1000 m for normal operation (derating is required for installation at an altitude above 1000 m)	
Vibration		Compliance to IEC 60068-2-6		
Shock		Compliance to IEC/EN 60068-2-27		

Please refer to MS300 user manual for more details.

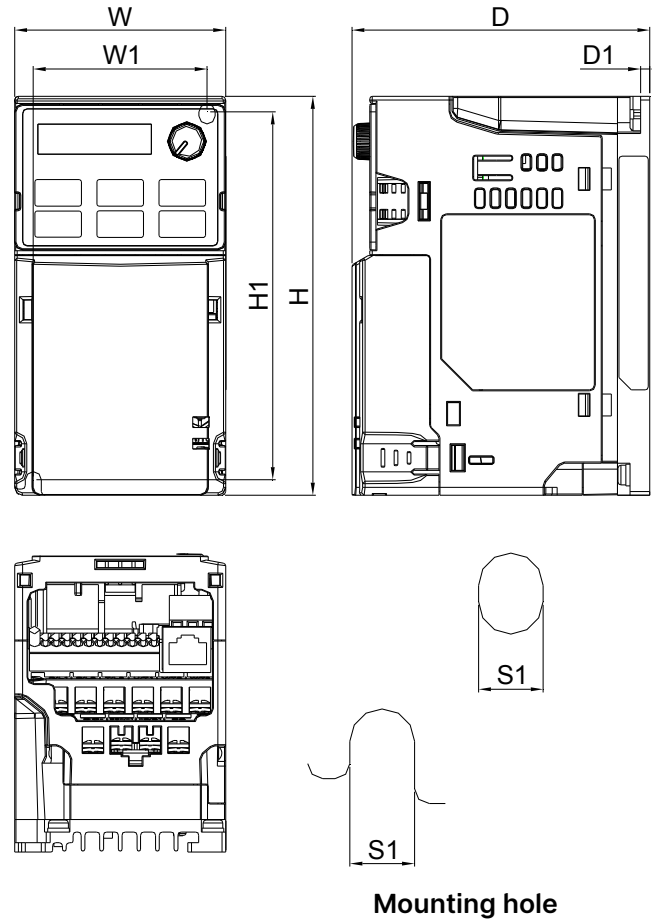
Wiring

Input: Single-phase / 3-phase power



Dimensions - IP20 / IP40 Models

Frame A

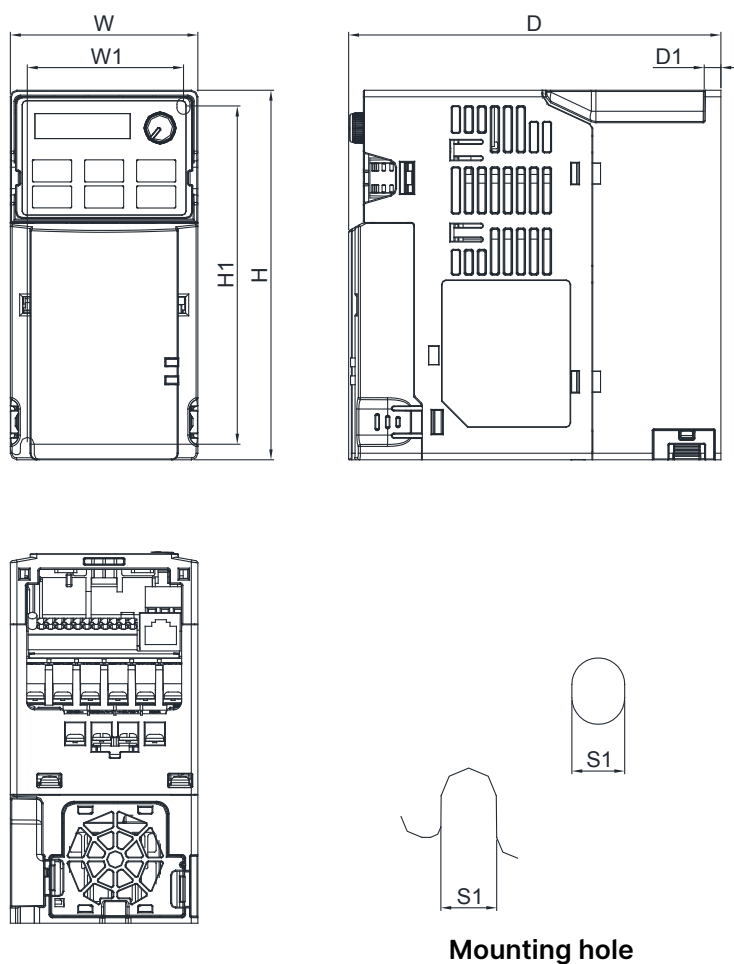


MODEL	FRAME A2	FRAME A3	FRAME A4	FRAME A5
FRAME A1				
VFD1A6MS11ANSAA	VFD2A8MS23ANSAA	VFD2A5MS11ANSAA	VFD1A5MS43ANSAA	VFD4A8MS23ANSAA
VFD1A6MS11ENSAA	VFD2A8MS23ENSAA	VFD2A5MS11ENSAA	VFD1A5MS43ENSAA	VFD4A8MS23ENSAA
VFD1A6MS21ANSAA		VFD2A8MS21ANSAA		VFD2A7MS43ANSAA
VFD1A6MS21ENSAA		VFD2A8MS21ENSAA		VFD2A7MS43ENSAA
VFD1A6MS23ANSAA				VFD1A7MS53ANSAA
VFD1A6MS23ENSAA				

Frame	W	H	D	W1	H1	D1	S1
A1	mm	68.0	128.0	96.0	56.0	118.0	5.2
	inch	2.68	5.04	3.78	2.20	4.65	0.20
Frame	W	H	D	W1	H1	D1	S1
A2	mm	68.0	128.0	110.0	56.0	118.0	5.2
	inch	2.68	5.04	4.33	2.20	4.65	0.20
Frame	W	H	D	W1	H1	D1	S1
A3	mm	68.0	128.0	125.0	56.0	118.0	5.2
	inch	2.68	5.04	4.92	2.20	4.65	0.20

Frame	W	H	D	W1	H1	D1	S1
A4	mm	68.0	128.0	129.0	56.0	118.0	5.2
	inch	2.68	5.04	5.08	2.20	4.65	0.20
Frame	W	H	D	W1	H1	D1	S1
A5	mm	68.0	128.0	143.0	56.0	118.0	5.2
	inch	2.68	5.04	5.63	2.20	4.65	0.20

Frame B



Mounting hole

MODEL FRAME B1

Standard Models:
VFD7A5MS23ANSAA
VFD7A5MS23ENSAA
VFD4A2MS43ANSAA
VFD4A2MS43ENSAA
VFD3A0MS53ANSAA

High Speed Models:
VFD7A5MS23ANSHA
VFD7A5MS23ENSHA
VFD4A2MS43ANSHA
VFD4A2MS43ENSHA

FRAME B2

Standard Models:
VFD4A8MS21ANSAA
VFD4A8MS21ENSAA

FRAME B3

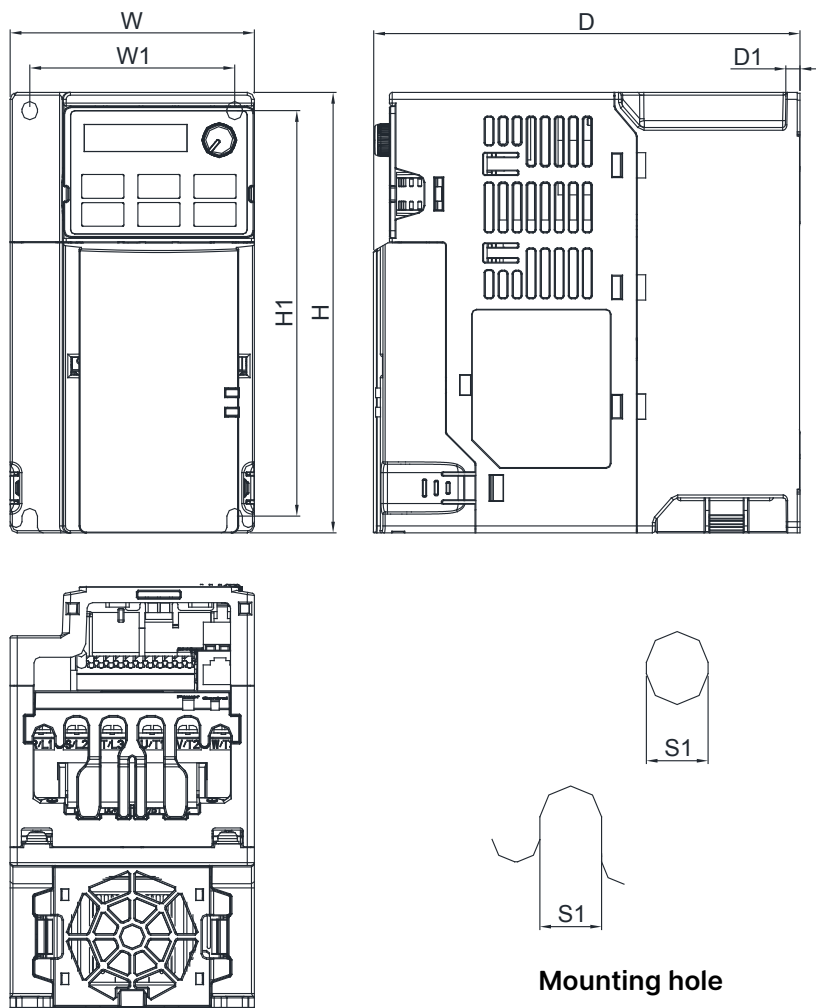
Standard Models:
VFD1A6MS21AFSAA
VFD2A8MS21AFSAA
VFD4A8MS21AFSAA
VFD1A5MS43AFSAA
VFD2A7MS43AFSAA
VFD4A2MS43AFSAA

High Speed Models:
VFD4A2MS43AFSHA

Frame		W	H	D	W1	H1	D1	S1
B1	mm	72.0	142.0	143.0	60.0	130.0	6.4	5.2
	inch	2.83	5.59	5.63	2.36	5.12	0.25	0.20
Frame		W	H	D	W1	H1	D1	S1
B2	mm	72.0	142.0	143.0	60.0	130.0	3.0	5.2
	inch	2.83	5.59	5.63	2.36	5.12	0.12	0.20
Frame		W	H	D	W1	H1	D1	S1
B3	mm	72.0	142.0	159.0	60.0	130.0	4.3	5.2
	inch	2.83	5.59	6.26	2.36	5.12	0.17	0.20

Dimensions - IP20 / IP40 Models

Frame C



MODEL FRAME C1

Standard Models:
VFD4A8MS11ANSAA VFD4A8MS11ENSAA
VFD7A5MS21ANSAA VFD7A5MS21ENSAA
VFD11AMS21ANSAA VFD11AMS21ENSAA
VFD11AMS23ANSAA VFD11AMS23ENSAA
VFD17AMS23ANSAA VFD17AMS23ENSAA
VFD5A5MS43ANSAA VFD5A5MS43ENSAA
VFD9A0MS43ANSAA VFD9A0MS43ENSAA
VFD4A2MS53ANSAA VFD6A6MS53ANSAA

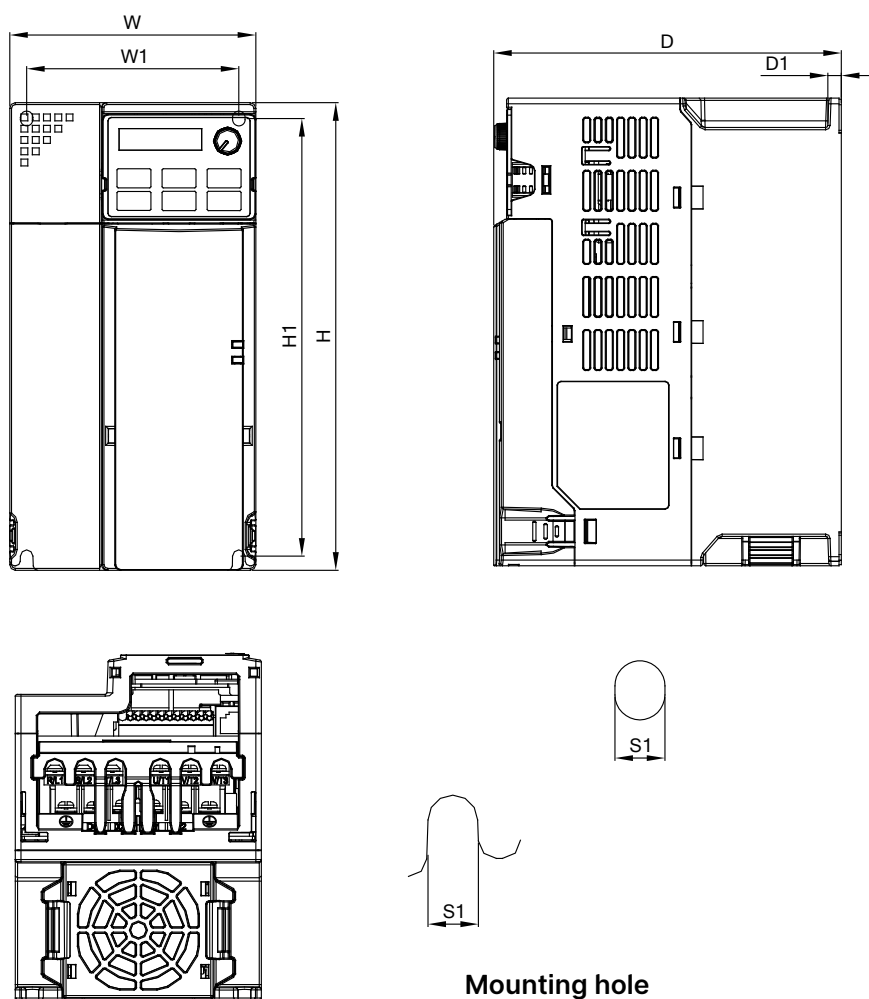
High Speed Models:
VFD7A5MS21ANSHA VFD7A5MS21ENSHA
VFD11AMS21ANSHA VFD11AMS21ENSHA
VFD11AMS23ANSHA VFD11AMS23ENSHA
VFD17AMS23ANSHA VFD17AMS23ENSHA
VFD5A5MS43ANSHA VFD5A5MS43ENSHA
VFD9A0MS43ANSHA VFD9A0MS43ENSHA

FRAME C2

Standard Models:
VFD7A5MS21AFSAA VFD7A5MS21AFSHA
VFD11AMS21AFSAA VFD11AMS21AFSHA
VFD5A5MS43AFSAA VFD5A5MS43AFSHA
VFD9A0MS43AFSAA VFD9A0MS43AFSHA

Frame		W	H	D	W1	H1	D1	S1
C1	mm	87.0	157.0	152.0	73.0	144.5	5.0	5.5
	inch	3.43	6.18	5.98	2.87	5.69	0.20	0.22
Frame		W	H	D	W1	H1	D1	S1
C2	mm	87.0	157.0	179.0	73.0	144.5	5.0	5.5
	inch	3.43	6.18	7.05	2.87	5.69	0.20	0.22

Frame D



MODEL FRAME D1

Standard Models:
VFD25AMS23ANSAA
VFD25AMS23ENSAA
VFD13AMS43ANSAA
VFD13AMS43ENSAA
VFD17AMS43ANSAA
VFD17AMS43ENSAA
VFD9A9MS53ANSAA

High Speed Models:
VFD25AMS23ANSHA
VFD25AMS23ENSHA
VFD13AMS43ANSHA
VFD13AMS43ENSHA
VFD17AMS43ANSHA
VFD17AMS43ENSHA
VFD12AMS53ANSAA

FRAME D2

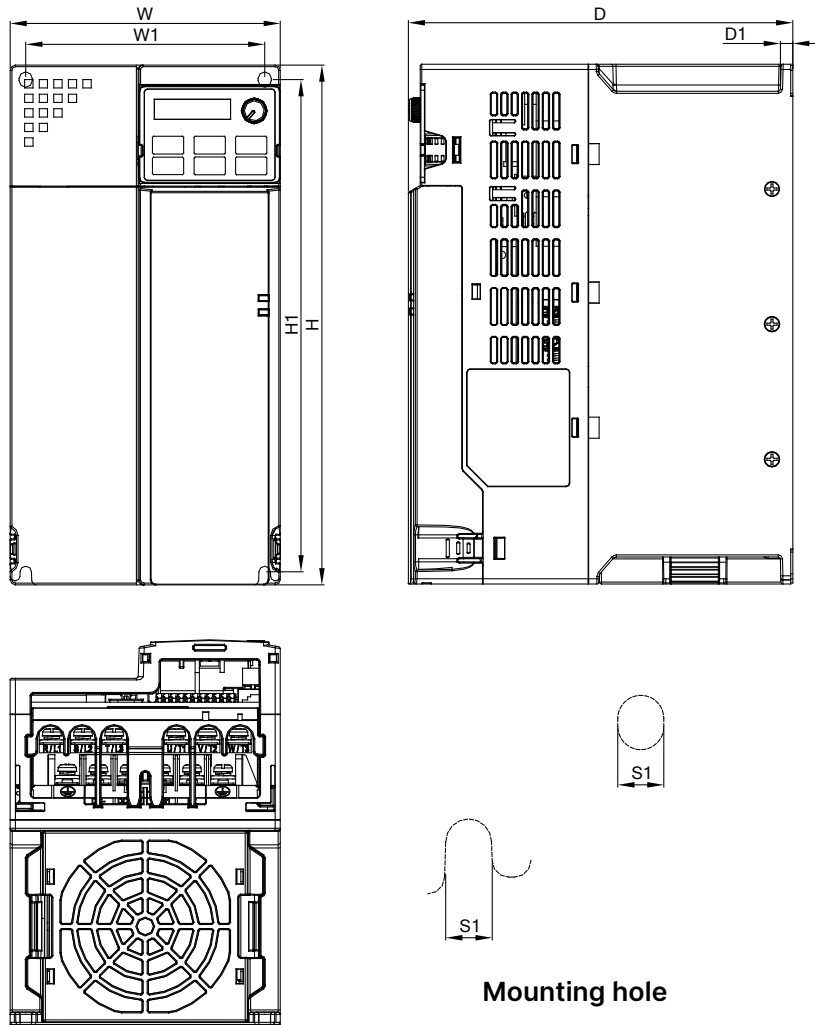
Standard Models:
VFD13AMS43AFSAA
VFD17AMS43AFSAA

High Speed Models:
VFD13AMS43AFSHA
VFD17AMS43AFSHA

Frame		W	H	D	W1	H1	D1	S1
D1	mm	109.0	207.0	154.0	94.0	193.8	6.0	5.5
	inch	4.29	8.15	6.06	3.70	7.63	0.24	0.22
Frame		W	H	D	W1	H1	D1	S1
D2	mm	109.0	207.0	187.0	94.0	193.8	6.0	5.5
	inch	4.29	8.15	7.36	3.70	7.36	0.24	0.22

Dimensions - IP20 / IP40 Models

Frame E



MODEL FRAME E1

Standard Models:
VFD33AMS23ANSAA
VFD33AMS23ENSAA
VFD49AMS23ANSAA
VFD49AMS23ENSAA
VFD25AMS43ANSAA
VFD25AMS43ENSAA
VFD32AMS43ANSAA
VFD32AMS43ENSAA

High Speed Models:
VFD33AMS23ANSHA
VFD33AMS23ENSHA
VFD49AMS23ANSHA
VFD49AMS23ENSHA
VFD25AMS43ANSHA
VFD25AMS43ENSHA
VFD32AMS43ANSHA
VFD32AMS43ENSHA

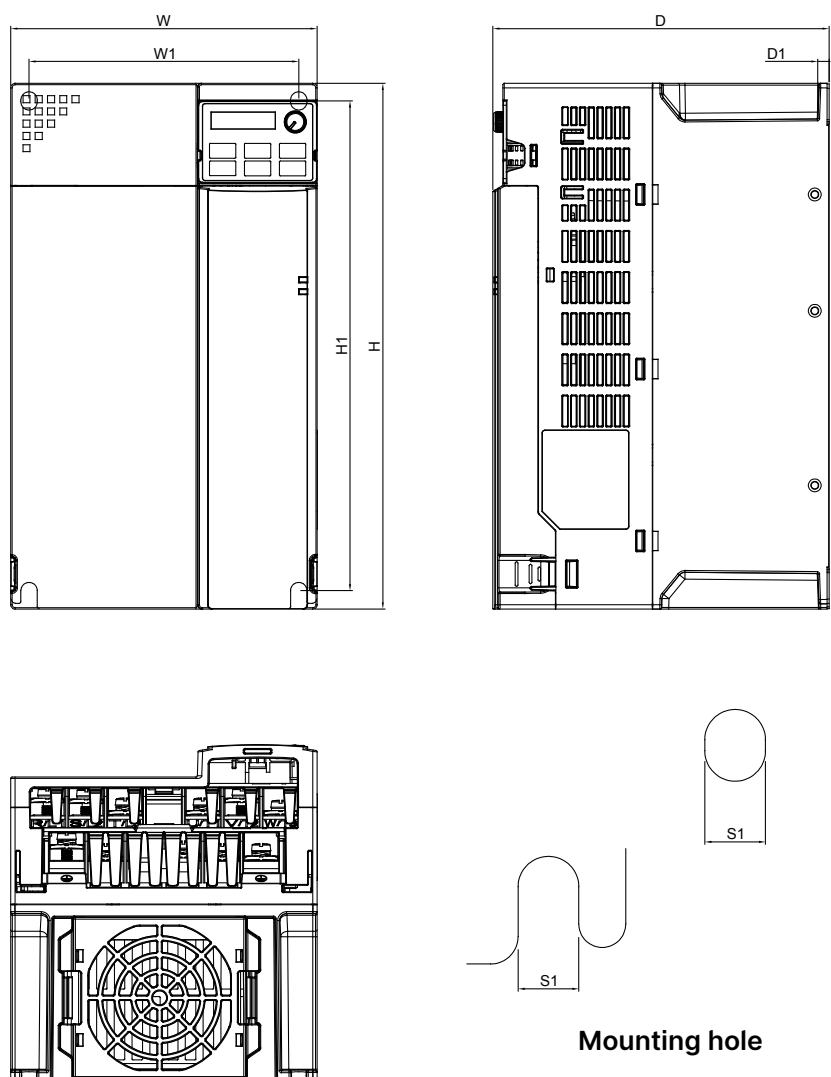
FRAME E2

Standard Models:
VFD25AMS43AFSAA
VFD32AMS43AFSAA

High Speed Models:
VFD25AMS43AFSHA
VFD32AMS43AFSHA

Frame		W	H	D	W1	H1	D1	S1
E1	mm	130.0	250.0	185.0	115.0	236.8	6.0	5.5
	inch	5.12	9.84	7.83	4.53	9.32	0.24	0.22
Frame		W	H	D	W1	H1	D1	S1
E2	mm	130.0	250.0	219.0	115.0	236.8	6.0	5.5
	inch	5.12	9.84	8.62	4.53	9.32	0.24	0.22

Frame F



MODEL FRAME F1

Standard Models:
VFD65AMS23ANSAA
VFD65AMS23ENSAA
VFD38AMS43ANSAA
VFD38AMS43ENSAA
VFD45AMS43ANSAA
VFD45AMS43ENSAA

High Speed Models:
VFD65AMS23ANSHA
VFD65AMS23ENSHA
VFD38AMS43ANSHA
VFD38AMS43ENSHA
VFD45AMS43ANSHA
VFD45AMS43ENSHA

FRAME F2

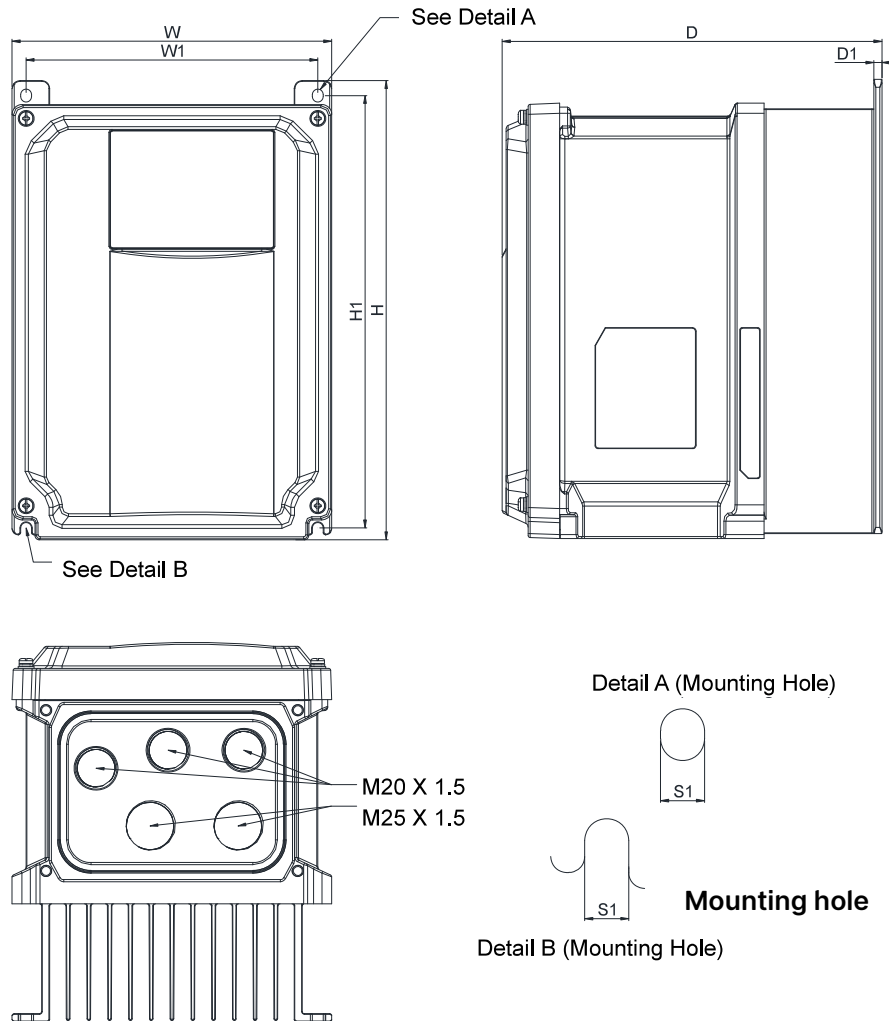
Standard Models:
VFD38AMS43AFSAA
VFD45AMS43AFSAA

High Speed Models:
VFD38AMS43AFSHA
VFD45AMS43AFSHA

Frame		W	H	D	W1	H1	D1	S1
F1	mm	175.0	300.0	192.0	154.0	279.5	6.5	8.4
	inch	6.89	11.81	7.56	6.06	11.00	0.26	0.33
Frame		W	H	D	W1	H1	D1	S1
F2	mm	175.0	300.0	244.0	154.0	279.5	6.5	8.4
	inch	6.89	11.81	9.61	6.06	11.00	0.26	0.33

Dimensions - IP66 / NEMA 4X Models

Frame A



MODEL
FRAME A1

VFD2A8MS21MNSAA
VFD1A5MS43MFSAA
VFD2A7MS43MNSAA
VFD2A8MS21MFSAA
VFD4A8MS21MNSAA
VFD2A7MS43MFSAA

FRAME A2

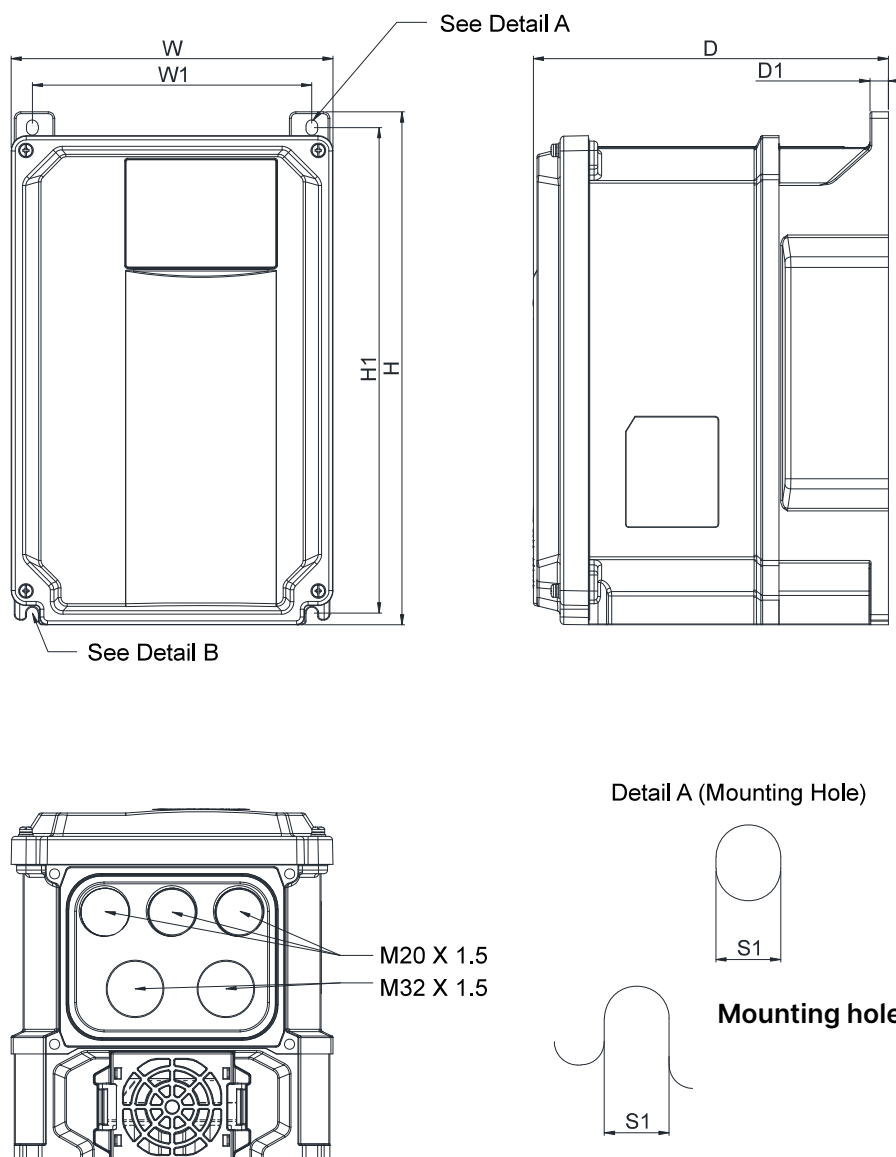
VFD2A8MS23MNSAA
VFD4A8MS21MFSAA
VFD1A5MS43MNSAA
VFD4A8MS23MNSAA

FRAME A3

VFD5A5MS43MNSAA

Frame		W	H	D	W1	H1	D1	S1
A1	mm	160.0	230.0	151.0	146.0	216.5	4.0	5.5
	inch	6.30	9.06	6.57	5.75	8.52	0.16	0.22
Frame		W	H	D	W1	H1	D1	S1
A2	mm	160.0	230.0	167.0	146.0	216.5	4.0	5.5
	inch	6.30	9.06	6.57	5.75	8.52	0.16	0.22
Frame		W	H	D	W1	H1	D1	S1
A3	mm	160.0	230.0	190.0	146.0	216.5	4.0	5.5
	inch	6.30	9.06	7.48	5.75	8.52	0.16	0.22

Frame B



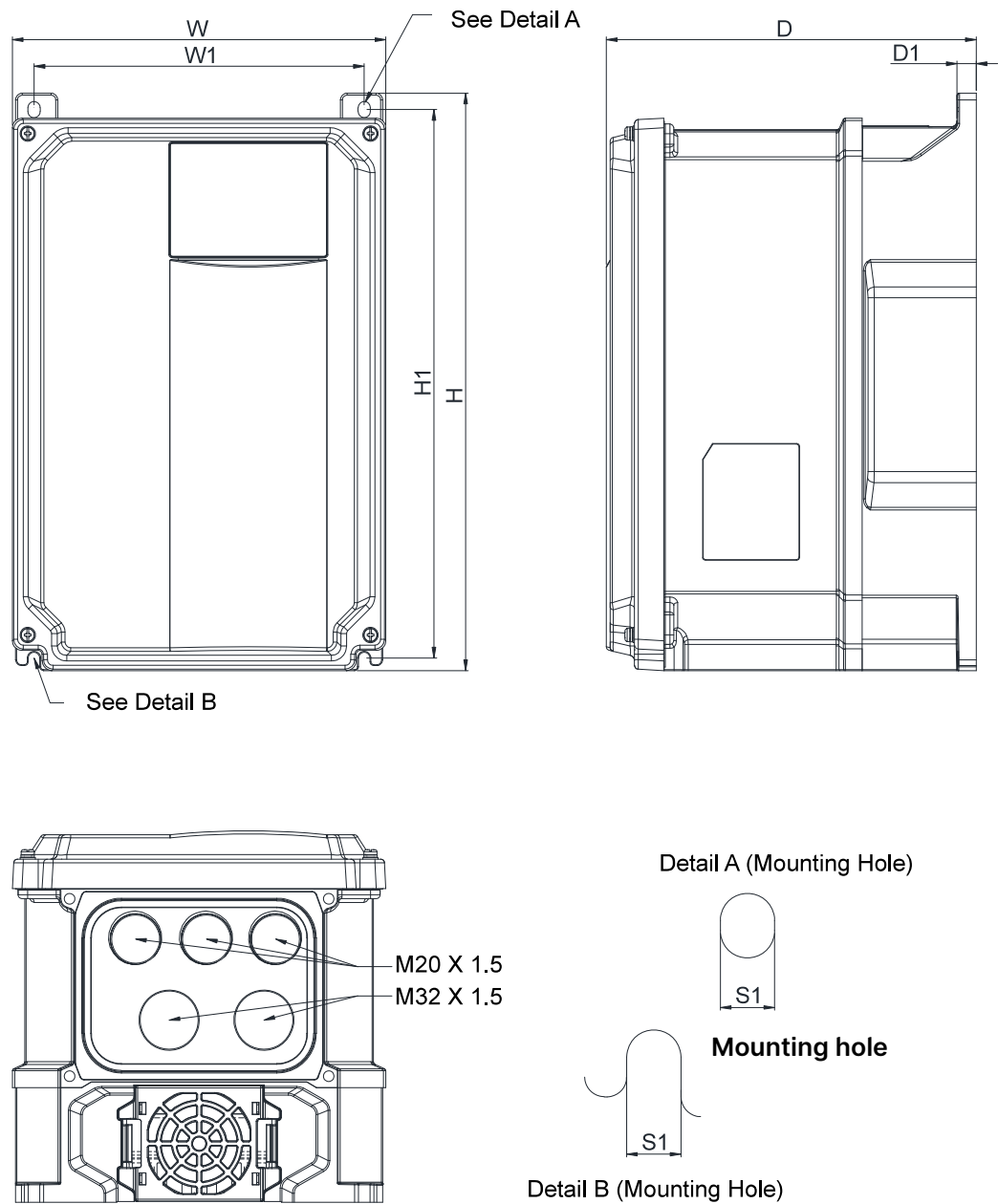
MODEL FRAME B

VFD7A5MS21MFSAA	VFD11AMS21MNSAA	VFD11AMS21MFSAA	VFD11AMS23MNSAA
VFD5A5MS43MFSAA	VFD17AMS23MNSAA	VFD9A0MS43MNSAA	VFD9A0MS43MFSAA

Frame		W	H	D	W1	H1	D1	S1
B	mm	175.0	280.0	193.0	152.0	266.0	10	6.4
	inch	6.89	11.02	7.60	5.98	10.43	0.39	0.25

Dimensions - IP66 / NEMA 4X Models

Frame C



MODEL FRAME C				
VFD13AMS43MNSAA	VFD13AMS43MFSAA	VFD25AMS23MNSAA	VFD17AMS43MNSAA	
VFD17AMS43MFSAA				

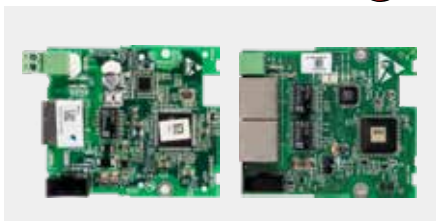
Frame		W	H	D	W1	H1	D1	S1
C	mm	195.0	300.0	193.0	172.4	285.0	10	6.4
	inch	7.68	11.81	7.606	6.79	11.22	0.39	0.25

Accessories

The matched connection cables (CBM-CLxxA 、CBM-CCxxA) are required for usage.
Please refer to the user manual for detailed ordering information.

■ EtherNet/IP Option Card

CMM-EIP02 / CMM-EIP03 **NEW**



Features

- ▶ Supports max. 32 words input and 32 words output of I/O connection
- ▶ User-defined parameter mapping
- ▶ IP Filter, basic firewall function
- ▶ Supports DLR ring nodes
*Applicable to CMM-EIP03

Network Interface

Network protocol	DHCP 、 BOOTP 、 EtherNet/IP 、 Modbus TCP	Interface	RJ-45
Transmission speed	10/100Mbps	Number of port	1 (CMM-EIP02) / 2 (CMM-EIP03)
Transmission method	I/O connection / Explicit message	Transmission cable	Category 5e shielding
Transmission distance	100 m, extension is allowed via switch		

■ DeviceNet Option Card

CMM-DN02



Features

- ▶ Supports Group 2 only connection method and cyclic I/O data exchange
- ▶ Provides EDS file to identify DeviceNet equipment information
- ▶ Supports max. 32 words input and 32 words output of parameter mapping and remote I/O function
- ▶ Node address and Baud rate can be set in the AC motor drive

Network Interface

Network protocol	DeviceNet	Interface	Terminal block
Transmission speed	500k / 250k / 125k / 100k / 50k bps and extendable baud rate mode of 1M	Number of ports	1
Transmission method	Explicit message / Implicit message	Transmission cable	Delta standard
Transmission distance	25 m / 1Mbps		

■ CANopen Option Card

CMM-COP02



Features

- ▶ Complies with CiA 402 standard (default setting)
- ▶ 4 sets of RX/TX PDO
- ▶ Dual communication ports
- ▶ Node address and Baud rate can be set in the AC motor drive
- ▶ Supports Delta protocol, DMCNET
- ▶ Supports remote I/O function

Network Interface

Network protocol	CANopen	Interface	RJ-45
Transmission speed	1Mbps / 500 Kbps / 250 Kbps / 125 Kbps / 100 Kbps / 50 Kbps	Number of ports	2
Transmission method	PDO, SDO	Transmission cable	Delta standard
Transmission distance	25 m / 1Mbps		

Accessories

■ PROFIBUS DP Option Card

CMM-PD02



Features

- ▶ Supports PZD cyclic data exchange
- ▶ Supports PKW read/write to AC motor drive parameters
- ▶ Supports user diagnosis function
- ▶ Auto-detects baud rates; supports Max.12 Mbps.
- ▶ Supports remote I/O function

Network Interface

Network protocol	PROFIBUS DP	Interface	DB9
Transmission speed	9.6k/19.2k/93.75k/187.5k/500k/1.5M/3M/6M/12Mbps	Number of ports	1
Transmission method	Cyclic/non-cyclic data exchange	Transmission cable	Delta standard
Transmission distance	100 m/12Mbps		

■ EtherCAT Option Card NEW

CMM-EC02



Features

- ▶ Supports Ethernet CAT protocol
- ▶ Supports standard CiA402 speed mode
- ▶ Supports SDO (Service Data Objects) function: Drive status reading and parameters editing
- ▶ Auto shutdown function for interruptions during data transmission
- ▶ Supports remote I/O function

Network Interface

Interface	RJ-45	Transmission cable	Category 5e shielding 100 M
Number of ports	2 Ports	Transmission speed	100Mbps
Transmission method	IEEE 802.3, IEEE 802.3u	Network protocol	EtherCAT

■ 24V Power Shift Card

EMM-BPS02



Terminals	Description
PE GND 24 V	When the AC motor drive power is off, the external power supply card provides external power to the network system, PLC function, and other functions to allow continued operations. Input power: 24 V $\pm$ 5% Maximum input current: 0.5 A Note: 1) Do not connect the control terminal +24 V (Digital control signal common: SOURCE) directly to the EMC-BPS01 input terminal 24 V. 2) Do not connect control terminal GND directly to the EMC-BPS01 input terminal GND in order to achieve good isolation.

Note 1: For the Open Collector, set input voltage to 5 ~ 15 mA and install a pull-up resistor

[5 V] Recommend pull-up resistor: 100 ~ 220 Ω , 1/2 W and above

[12 V] Recommend pull-up resistor: 510 ~ 1.35 K Ω , 1/2 W and above

[24 V] Recommend pull-up resistor: 1.8 K ~ 3.3 K Ω , 1/2 W and above

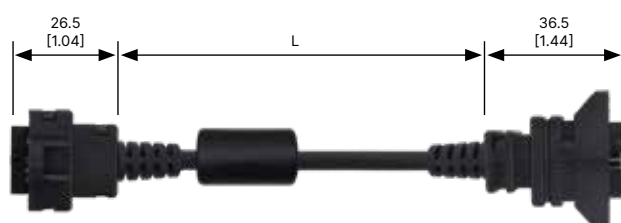
■ Screw Specification of Option Card Terminal

Screw Specification of Option Card Terminals	Wire Gauge	Torque
CMM-COP02	30 ~ 16 AWG (0.0509 ~ 1.31 mm ²)	2 Kg-cm [1.74 lb-in]
CMM-EIP02/CMM-EIP03		
CMM-PD02		
CMM-DN02		
EMM-BPS02	30 ~ 16 AWG (0.0509 ~ 1.31 mm ²)	8 Kg-cm [6.94 lb-in]

Standard Fieldbus Cables

Delta Cables	Part Number	Description	Length
CANopen Cable	UC-CMC003-01A	CANopen cable, RJ45 connector	0.3m
	UC-CMC005-01A	CANopen cable, RJ45 connector	0.5m
	UC-CMC010-01A	CANopen cable, RJ45 connector	1m
	UC-CMC015-01A	CANopen cable, RJ45 connector	1.5m
	UC-CMC020-01A	CANopen cable, RJ45 connector	2m
	UC-CMC030-01A	CANopen cable, RJ45 connector	3m
	UC-CMC050-01A	CANopen cable, RJ45 connector	5m
	UC-CMC100-01A	CANopen cable, RJ45 connector	10m
DeviceNet Cable	UC-CMC200-01A	CANopen cable, RJ45 connector	20m
	UC-DN01Z-01A	DeviceNet cable	305m
EtherNet/EtherCAT Cable	UC-DN01Z-02A	DeviceNet cable	305m
	UC-EMC003-02A	EtherNet/EtherCAT cable, Shielding	0.3m
	UC-EMC005-02A	EtherNet/EtherCAT cable, Shielding	0.5m
	UC-EMC010-02A	EtherNet/EtherCAT cable, Shielding	1m
	UC-EMC020-02A	EtherNet/EtherCAT cable, Shielding	2m
	UC-EMC050-02A	EtherNet/EtherCAT cable, Shielding	5m
	UC-EMC100-02A	EtherNet/EtherCAT cable, Shielding	10m
	UC-EMC200-02A	EtherNet/EtherCAT cable, Shielding	20m
CANopen/DeviceNet TAP	TAP-CN01	1 in 2 out, built-in 121 Ω terminal resistor	1 in 2 out
	TAP-CN02	1 in 4 out, built-in 121 Ω terminal resistor	1 in 4 out
	TAP-CN03	1 in 4 out, RJ45 connector, built-in 121 Ω terminal resistor	1 in 4 out
PROFIBUS Cable	UC-PF01Z-01A	PROFIBUS DP cable	305m

Extension Cable for Digital Keypad



Part No.	L	
	mm	[inch]
EG0610C	600	23.6
EG1010C	1000	39.4
EG2010C	2000	78.7
EG3010C	3000	118.1
EG5010C	5000	196.8

Model Name Explanation

VFD	1A5	MS	43	A	N	S	A	A
Variable Frequency Drive	Rated Output Current Under Heavy Duty Mode (150% 60 seconds)	Series Name MS: Standard MS300	Input Voltage 11: 115V single-phase 21: 230V single-phase 23: 230V 3-phase 43: 460V 3-phase 53: 575V 3-phase*	IP Level A: IP20 E: IP40 (Anti-dust) M: IP66/NEMA 4X				Version
								Model Type A: Standard Model H: High Speed Model (IP66 models not supported)
								Safe Torque Off (STO) S: Integrated STO
								EMC Filter N: None F: Built-in EMC Filter

*Only for models with ANSAA at the end of model names

Ordering Information

IP20/IP40 Standard Models (0 ~ 599 Hz)

Power Range			Frame Size	Model Name	Built-in EMC Filter	IP40 Models
Max. Applicable Motor Capacity		Drive Rated Output Current				
[HP]	[kW]	[A]				
115 V / single-phase						
0.25	0.2	1.6	A	VFD1A6MS11ANSAA	-	-
				VFD1A6MS11ENSAA	-	V
0.5	0.4	2.5	A	VFD2A5MS11ANSAA	-	-
				VFD2A5MS11ENSAA	-	V
1	0.75	4.8	C	VFD4A8MS11ANSAA	-	-
				VFD4A8MS11ENSAA	-	V
230 V / single-phase						
1/4	0.2	1.6	A	VFD1A6MS21ANSAA	-	-
			A	VFD1A6MS21ENSAA	-	V
			B	VFD1A6MS21AFSAA	V	-
0.5	0.4	2.8	A	VFD2A8MS21ANSAA	-	-
			A	VFD2A8MS21ENSAA	-	V
			B	VFD2A8MS21AFSAA	V	-
1	0.75	4.8	B	VFD4A8MS21ANSAA	-	-
				VFD4A8MS21AFSAA	V	-
				VFD4A8MS21ENSAA	-	V
2	1.5	7.5	C	VFD7A5MS21ANSAA	-	-
				VFD7A5MS21AFSAA	V	-
				VFD7A5MS21ENSAA	-	V
3	2.2	11.0	C	VFD11AMS21ANSAA	-	-
				VFD11AMS21AFSAA	V	-
				VFD11AMS21ENSAA	-	V
230 V / 3-phase						
0.25	0.2	1.6	A	VFD1A6MS23ANSAA	-	-
				VFD1A6MS23ENSAA	-	V
0.5	0.4	2.8	A	VFD2A8MS23ANSAA	-	-
				VFD2A8MS23ENSAA	-	V
1	0.75	4.8	A	VFD4A8MS23ANSAA	-	-
				VFD4A8MS23ENSAA	-	V
2	1.5	7.5	B	VFD7A5MS23ANSAA	-	-
				VFD7A5MS23ENSAA	-	V
3	2.2	11.0	C	VFD11AMS23ANSAA	-	-
				VFD11AMS23ENSAA	-	V
5	3.7 / 4	17.0	C	VFD17AMS23ANSAA	-	-
				VFD17AMS23ENSAA	-	V
7.5	5.5	25.0	D	VFD25AMS23ANSAA	-	-
				VFD25AMS23ENSAA	-	V
10	7.5	33.0	E	VFD33AMS23ANSAA	-	-
				VFD33AMS23ENSAA	-	V
15	11	49.0	E	VFD49AMS23ANSAA	-	-
				VFD49AMS23ENSAA	-	V
20	15	65.0	F	VFD65AMS23ANSAA	-	-
				VFD65AMS23ENSAA	-	V

Power Range			Frame Size	Model Name	Built-in EMC Filter	IP40 Models
Max. Applicable Motor Capacity		Drive Rated Output Current				
[HP]	[kW]	[A]				
460 V / 3-phase						
0.5	0.4	1.5	A	VFD1A5MS43ANSAA	-	-
			A	VFD1A5MS43ENSAA	-	V
			B	VFD1A5MS43AFSAA	V	-
1	0.75	2.7	A	VFD2A7MS43ANSAA	-	-
			A	VFD2A7MS43ENSAA	-	V
			B	VFD2A7MS43AFSAA	V	-
2	1.5	4.2	B	VFD4A2MS43ANSAA	-	-
				VFD4A2MS43ENSAA	-	V
				VFD4A2MS43AFSAA	V	-
3	2.2	5.5	C	VFD5A5MS43ANSAA	-	-
				VFD5A5MS43ENSAA	-	V
				VFD5A5MS43AFSAA	V	-
5	3.7 / 4	9.0	C	VFD9A0MS43ANSAA	-	-
				VFD9A0MS43ENSAA	-	V
				VFD9A0MS43AFSAA	V	-
7.5	5.5	13.0	D	VFD13AMS43ANSAA	-	-
				VFD13AMS43ENSAA	-	V
				VFD13AMS43AFSAA	V	-
10	7.5	17.0	D	VFD17AMS43ANSAA	-	-
				VFD17AMS43ENSAA	-	V
				VFD17AMS43AFSAA	V	-
15	11	25.0	E	VFD25AMS43ANSAA	-	-
				VFD25AMS43ENSAA	-	V
				VFD25AMS43AFSAA	V	-
20	15	32.0	E	VFD32AMS43ANSAA	-	-
				VFD32AMS43ENSAA	-	V
				VFD32AMS43AFSAA	V	-
25	18.5	38.0	F	VFD38AMS43ANSAA	-	-
				VFD38AMS43ENSAA	-	V
				VFD38AMS43AFSAA	V	-
30	22	45.0	F	VFD45AMS43ANSAA	-	-
				VFD45AMS43ENSAA	-	V
				VFD45AMS43AFSAA	V	-
575 V / 3-phase						
1	0.75	1.7	A	VFD1A7MS53ANSAA	-	-
2	1.5	3.0	B	VFD3A0MS53ANSAA	-	-
3	2.2	4.2	C	VFD4A2MS53ANSAA	-	-
5	3.7	6.6		VFD6A6MS53ANSAA	-	-
7.5	5.5	9.9	D	VFD9A9MS53ANSAA	-	-
10	7.5	12.2		VFD12AMS53ANSAA	-	-

Ordering Information

IP66 Standard Models (0 ~ 599 Hz)

Power Range			Frame Size	Model Name	Built-in EMC Filter
Max. Applicable Motor Capacity		Drive Rated Output Current			
[HP]	[kW]	[A]			
230 V /single-phase					
1/2	0.4	2.8	A	VFD2A8MS21MNSAA	-
		2.8		VFD2A8MS21MFSAA	V
1	0.75	4.8	A	VFD4A8MS21MNSAA	-
		4.8		VFD4A8MS21MFSAA	V
2	1.5	7.5	A	VFD7A5MS21MNSAA	-
		7.5	B	VFD7A5MS21MFSAA	V
3	2.2	11	B	VFD11AMS21MNSAA	-
		11		VFD11AMS21MFSAA	V
230V /3-phase					
1/2	0.4	2.8	A	VFD2A8MS23MNSAA	-
1	0.75	4.8	A	VFD4A8MS23MNSAA	-
2	1.5	7.5	A	VFD7A5MS23MNSAA	-
3	2.2	11	B	VFD11AMS23MNSAA	-
5	3.7	17	B	VFD17AMS23MNSAA	-
7.5	5.5	25	C	VFD25AMS23MNSAA	-
460V /3-phase					
1/2	0.4	1.5	A	VFD1A5MS43MNSAA	-
		1.5		VFD1A5MS43MFSAA	V
1	0.75	2.7	A	VFD2A7MS43MNSAA	-
		2.7		VFD2A7MS43MFSAA	V
2	1.5	4.2	A	VFD4A2MS43MNSAA	-
		4.2		VFD4A2MS43MFSAA	V
3	2.2	5.5	A	VFD5A5MS43MNSAA	-
		5.5	B	VFD5A5MS43MFSAA	V
5	3.7	9	B	VFD9A0MS43MNSAA	-
		9		VFD9A0MS43MFSAA	V
7.5	5.5	13	C	VFD13AMS43MNSAA	-
		13		VFD13AMS43MFSAA	V
10	7.5	17	C	VFD17AMS43MNSAA	-
		17		VFD17AMS43MFSAA	V

IP20 / IP40 High Speed Models (0 ~ 1500 Hz)

Power Range			Frame Size	Model Name	Built-in EMC Filter	IP40 Models
Max. Applicable Motor Capacity		Drive Rated Output Current				
[HP]	[kW]	[A]				
230V / single-phase						
2	1.5	7.5	C	VFD7A5MS21ANSHA	-	-
				VFD7A5MS21ENSHA	-	V
				VFD7A5MS21AFSHA	V	-
3	2.2	11.0	C	VFD11AMS21ANSHA	-	-
				VFD11AMS21ENSHA	-	V
				VFD11AMS21AFSHA	V	-
230V / 3-phase						
2	1.5	7.5	B	VFD7A5MS23ANSHA	-	-
				VFD7A5MS23ENSHA	-	V
3	2.2	11.0	C	VFD11AMS23ANSHA	-	-
				VFD11AMS23ENSHA	-	V
5	3.7 / 4	17.0	C	VFD17AMS23ANSHA	-	-
				VFD17AMS23ENSHA	-	V
7.5	5.5	25.0	D	VFD25AMS23ANSHA	-	-
				VFD25AMS23ENSHA	-	V
10	7.5	33.0	E	VFD33AMS23ANSHA	-	-
				VFD33AMS23ENSHA	-	V
15	11	49.0	E	VFD49AMS23ANSHA	-	-
				VFD49AMS23ENSHA	-	V
20	15	65.0	F	VFD65AMS23ANSHA	-	-
				VFD65AMS23ENSHA	-	V
460V / 3-phase						
2	1.5	4.2	B	VFD4A2MS43ANSHA	-	-
				VFD4A2MS43ENSHA	-	V
				VFD4A2MS43AFSHA	V	-
3	2.2	5.5	C	VFD5A5MS43ANSHA	-	-
				VFD5A5MS43ENSHA	-	V
				VFD5A5MS43AFSHA	V	-
5	3.7 / 4	9.0	C	VFD9A0MS43ANSHA	-	-
				VFD9A0MS43ENSHA	-	V
				VFD9A0MS43AFSHA	V	-
7.5	5.5	13.0	D	VFD13AMS43ANSHA	-	-
				VFD13AMS43ENSHA	-	V
				VFD13AMS43AFSHA	V	-
10	7.5	17.0	D	VFD17AMS43ANSHA	-	-
				VFD17AMS43ENSHA	-	V
				VFD17AMS43AFSHA	V	-
15	11	25.0	E	VFD25AMS43ANSHA	-	-
				VFD25AMS43ENSHA	-	V
				VFD25AMS43AFSHA	V	-
20	15	32.0	E	VFD32AMS43ANSHA	-	-
				VFD32AMS43ENSHA	-	V
				VFD32AMS43AFSHA	V	-
25	18.5	38.0	F	VFD38AMS43ANSHA	-	-
				VFD38AMS43ENSHA	-	V
				VFD38AMS43AFSHA	V	-
30	22	45.0	F	VFD45AMS43ANSHA	-	-
				VFD45AMS43ENSHA	-	V
				VFD45AMS43AFSHA	V	-



Basic Compact Drive ME300 Series



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Models Overview

Hardware Design
Side-by-side Installation
Standard Models



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Outstanding Drive Performance

Supports IM and PM Motors
High Starting Torque
Deceleration Energy Backup (DEB)
Enhanced Braking Capability



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Strong System Support

Pump Control
Multi-pump Control
Pulse Input
Built-in Modbus Communication
Built-in Braking Chopper
High Overload Capability
Common DC Bus



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Stable, Safe and Reliable

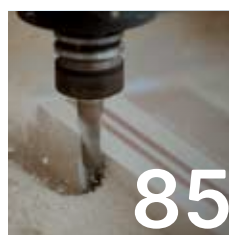
Safe Torque Off
PCB Coating
NEMA1 Kit (Optional)
Built-in EMC Filter



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Easy Set Up

Application Groups (Macro)
Screwless Wiring of Control Terminal



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Wide Range of Applications

Single / Multi-pumps
Conveyors
Fans
Woodworking Machines
Packaging Machines
Textile Machines



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Specifications

Product Specifications
General Specifications and Accessories
Operating Environment
Wiring
Dimensions
Accessories
Model Name
Ordering Information

Models Overview

Hardware Design

Compact design and user-friendly interface



User-friendly Control and Display

4 digit LED display, frequency setting potentiometer, direction function keys



Removable Fan

Easy to replace and maintain for a longer lifetime



Removable RFI Jumper

Applicable for different application needs



Screwless Front Case

Press on both side tabs to remove the case



*Up to 60% size reduction compared with corresponding ratings of Delta's VFD-EL Series

Side-by-Side Installation

Flexible and efficient installation supports side-by-side installation with operating temperature of -20°C ~ 40°C

*standalone installation: 50°C without load dropping.
Max. ambient temperature is 60°C.

Substantial space savings!



Standard Models

115V single-phase

Applicable Motor Output (kW)	0.1	0.2	0.4	0.75
Applicable Motor Output (HP)	0.125	0.25	0.5	1
Frame Size	A		C	

230V single-phase

Applicable Motor Output (kW)	0.1	0.2	0.4	0.75	1.5	2.2
Applicable Motor Output (HP)	0.125	0.25	0.5	1	2	3
Frame Size	A			B	C	

230V single-phase (Built-in EMC filter)

Applicable Motor Output (kW)	0.1	0.2	0.4	0.75	1.5	2.2
Applicable Motor Output (HP)	0.125	0.25	0.5	1	2	3
Frame Size	B				C	

230V 3-phase

Applicable Motor Output (kW)	0.1	0.2	0.4	0.75	1.5	2.2	3.7 / 4	5.5
Applicable Motor Output (HP)	0.125	0.25	0.5	1	2	3	5	7.5
Frame Size	A				B	C		D

460V 3-phase

Applicable Motor Output (kW)	0.4	0.75	1.5	2.2	3	3.7 / 4	5.5	7.5
Applicable Motor Output (HP)	0.5	1	2	3	4	5	7.5	10
Frame Size	A		B	C			D	

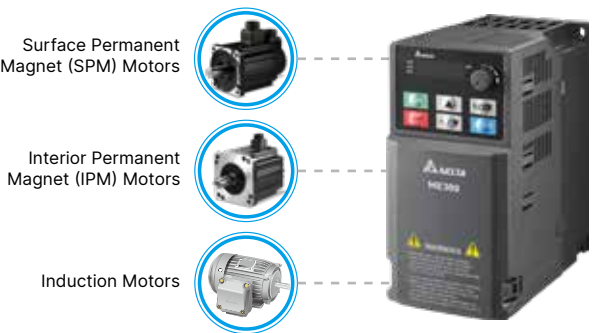
460V 3-phase (Built-in EMC filter)

Applicable Motor Output (kW)	0.4	0.75	1.5	2.2	3	3.7 / 4	5.5	7.5
Applicable Motor Output (HP)	0.5	1	2	3	4	5	7.5	10
Frame Size	B			C			D	

Outstanding Drive Performance

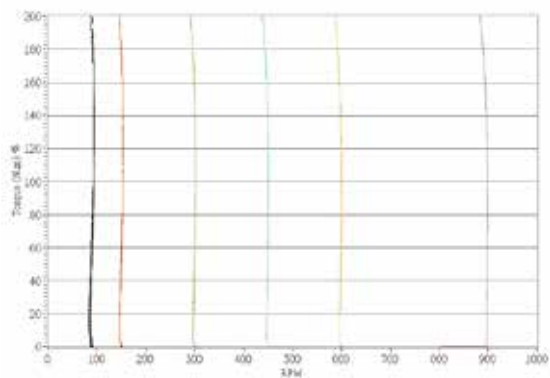
Supports IM and PM Motors

Supports 2 independent induction motor control parameter sets



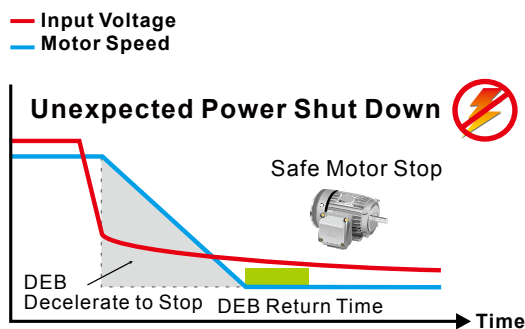
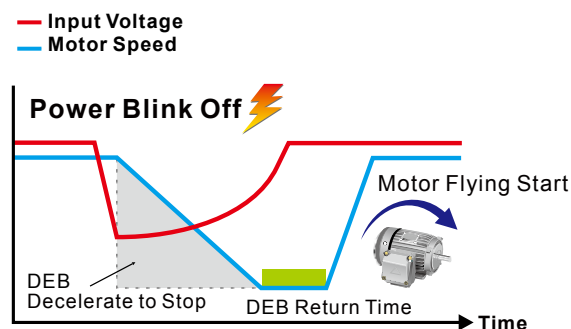
High Starting Torque

Delivers 200% high starting torque with a low speed control of 3Hz. This feature provides outstanding machine stability and is suitable for dynamic loading applications



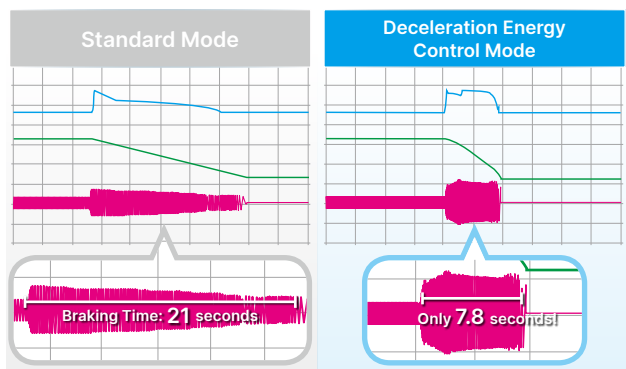
Deceleration Energy Backup (DEB)

Controls the motor deceleration to a stop when an unexpected power shut-down occurs to prevent mechanical damage. When power resumes, the motor will accelerate to its previous speed



Enhanced Braking Capability

The Deceleration Energy Control Mode shortens braking time by adjusting the motor speed and current, and replaces the need for braking resistors



* Actual deceleration performance varies upon different system loads

Strong System Support

Pump Control

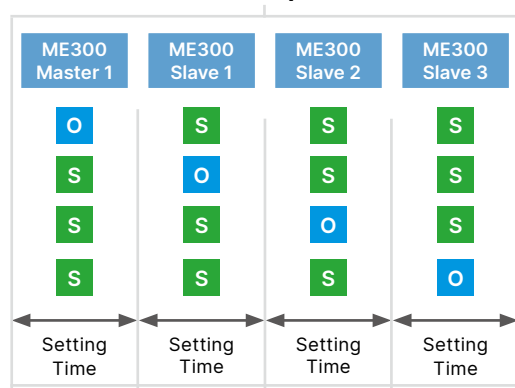
- Sleep Mode & Leakage Detection: When the system is at constant pressure, the ME300 will enter / stay in sleep mode to prevent frequent starting and stopping (Proper parameter settings required)
- Dry-run Detection: When the water supply is off, the ME300 will decelerate to stop to protect pump from dry-runs

Multi-pump Control

- Alternate Operation: Alternates pump operation in cycles. Cycle can be set by hours, days or weeks
- Constant Pressure Mode: Provides consistent energy-efficient water supply by adjusting operating pump quantities based on real-time demands

ME300 Status O Operating S Standby

Alternate Operation

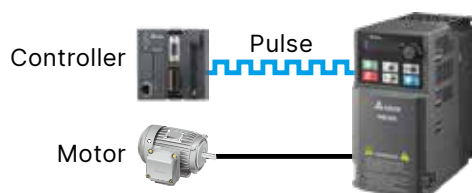


Constant Pressure Mode



Pulse Input

Supports single pulse and PWM input (10 kHz) from controller as frequency command



High Overload Capability

- Normal duty: rated current 120% for 60 seconds; 150% for 3 seconds
- Heavy duty: rated current 150% for 60 seconds; 200% for 3 seconds

Built-in Modbus Communication

Built-in RS-485 (Modbus) communication

Built-in Braking Chopper

Larger braking torque capability with an additional braking resistor

Common DC Bus

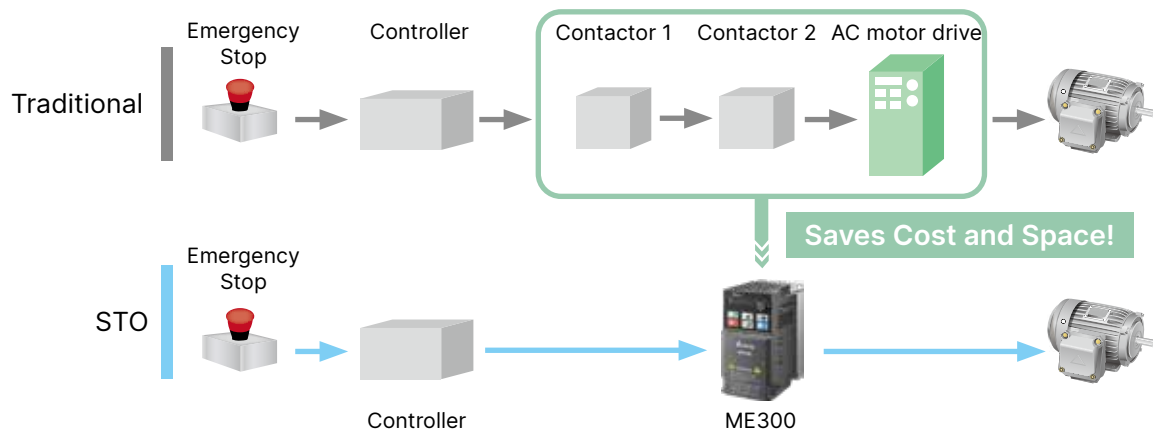
DC $\pm$ terminals for common DC bus wiring; the drives share the regeneration power during deceleration to save energy and the braking resistor

Stable, Safe and Reliable

Safe Torque Off

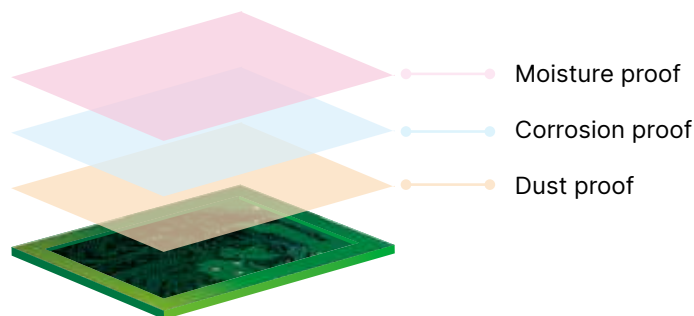
Compliant with:

- ▶ ISO 13849-1:2015 Category 3 PL d
- ▶ EN 61508 SIL2
- ▶ EN 60204-1 Category 0
- ▶ EN 62061 SIL CL 2



PCB Coating

100% PCB coating (IEC 60721-3-3 class 3C2 standard) ensures drive operation stability and safety in critical environments



NEMA 1 Kit (Optional)

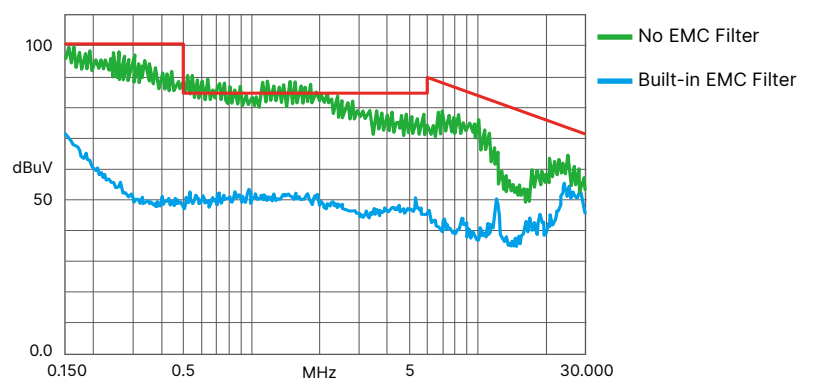
Provides NEMA 1 kit to prevent dust and other particles from entering the drive and avoids risk from electric shock. It is suitable for applications under critical conditions



Built-in EMC Filter

Built-in Class A (C2)* standard EMC filter saves additional procurement cost and wiring time, and provides more cabinet space for other devices to use

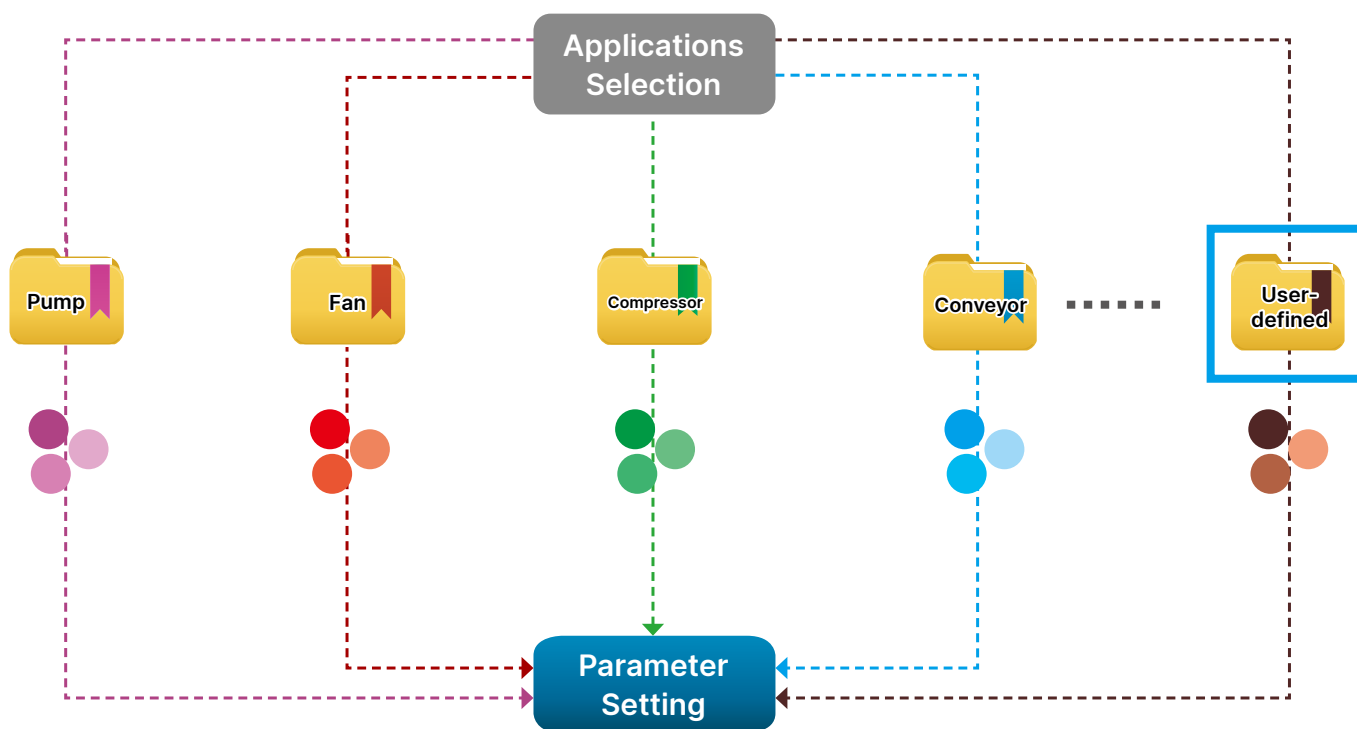
*Class A (C3) for 400V models



Easy Set Up

Application Groups (Macro)

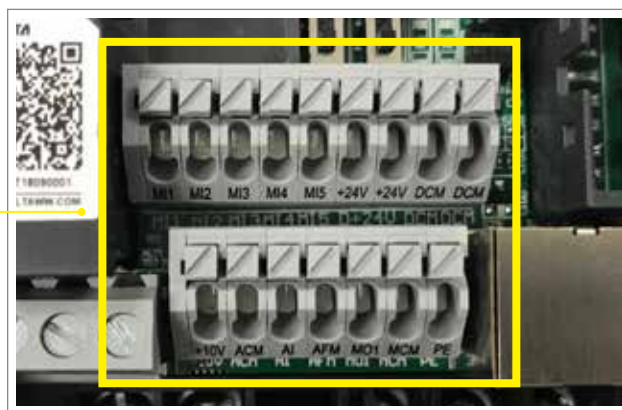
- Simplifies the parameter setting process by grouping the parameters for different applications to use
- Users can establish own parameter group for different customers or equipment
- User-defined parameter values can be retained when resetting to default



Screwless Wiring of Control Terminal

Spring clamp terminal blocks provide fast and easy wiring

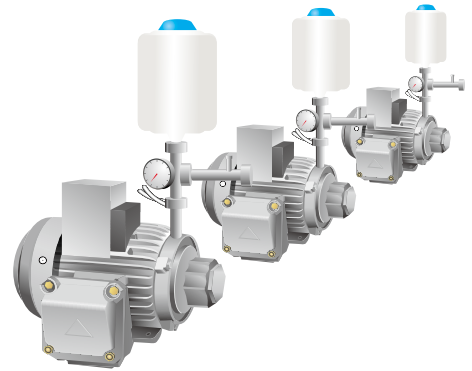
Saves wiring time



Wide Range of Applications

Single / Multi-pumps

- Built-in PID feedback control, no additional PID controller required
- Supports multi-pumps (constant pressure) and alternate operation
- Equipped with liquid leakage detection function and sleep mode
- Displays actual and target value at the same time for easy operation
- Pump or self-defined parameter groups for easy setting
- Wide range voltage input for various types of pumps and areas



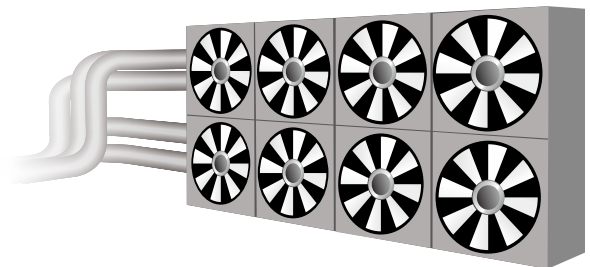
Conveyors

- Built-in potentiometer for easy adjustment
- High starting torque: up to 200% at 0.5 Hz
- Outstanding acceleration / deceleration performance improves production efficiency
- Built-in braking chopper saves space and purchasing costs
- 2 sets of motor parameters for more flexibility
- Compact design for space savings
- STO function enhances system safety



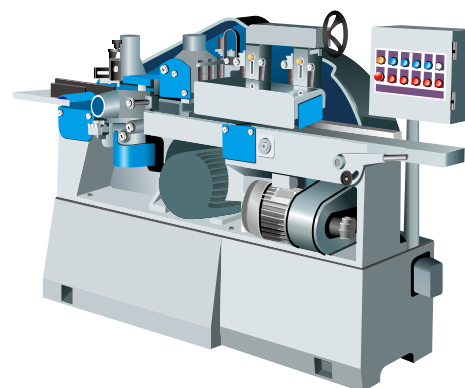
Fans

- Supports both induction motor and permanent motor (IPM/SPM)
- Supports multi-pole motors for low speed operation
- Built-in potentiometer for easy adjustment
- Speed search function allows motor start without stopping
- Optimized hardware layout and anti-pollution design resist dust and fiber
- Compact design for space savings



Woodworking Machines

- Outstanding acceleration / deceleration performance improves production efficiency
- STO function enhances system safety
- Built-in EMC filter effectively reduces electromagnetic interference
- Compact in size and weight, easy to install and maintain



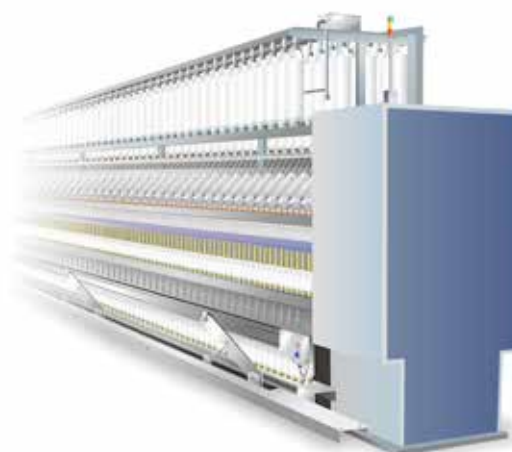
Packaging Machines

- Compact design provides more cabinet space
- STO function enhances system safety
- Built-in braking chopper saves system construction cost
- Built-in RS-485 (Modbus)
- Supports high speed pulse and PWM input as frequency command to improve control precision



Textile Machines

- Optional NEMA1 kit provides excellent protection in environment with dust, fiber and moisture
- Improved heatsink design prevents fiber clogging the air way; modular design of fan is easy to clean and provides longer lifetime
- Improved braking capability shortens the deceleration to stop time, suitable for sudden stop requirements
- Deceleration to stop function protects the equipment from damage when sudden power failure occurs
- STO function enhances system safety
- Supports both induction motors and permanent motors (IPM/SPM)



Specifications

Single-phase
115 V

Models without built-in EMC filter

Frame			A			C
Model VFD□□□ME11			0A8	1A6	2A5	4A8
Applicable Motor Output (kW)			0.1	0.2	0.4	0.75
Applicable Motor Output (HP)			1/8	1/4	1/2	1
Inverter Output	Heavy Duty	Rated Output Current (A)	0.8	1.6	2.5	4.8
	Normal Duty	Rated Output Current (A)	1.0	1.8	2.7	5.5
Input Voltage / Frequency			Single-phase AC, 100V~120V (-15% ~ + 10%), 50 / 60Hz			
Carrier Frequency (kHz)			2 ~ 15 (Default 4)			
Brake Chopper			Built-in			
Cooling Method			Natural air cooling			Fan cooling
Size: W × H (mm)			68 × 128			87 × 157
Size: D (mm)			78	107	136	
Net Weight (kg)			0.4	0.5	1	

Single-phase
230 V

Models with built-in EMC filter

Frame			B				C	
Model VFD☐☐☐ME21			0A8	1A6	2A8	4A8	7A5	11A
Applicable Motor Output (kW)			0.1	0.2	0.4	0.75	1.5	2.2
Applicable Motor Output (HP)			1/8	1/4	1/2	1	2	3
Inverter Output	Heavy Duty	Rated Output Current (A)	0.8	1.6	2.8	4.8	7.5	11
	Normal Duty	Rated Output Current (A)	1.0	1.8	3.2	5	8.5	12.5
Input Voltage / Frequency			Single-phase AC, 200V~240V (-15% ~ + 10%), 50 / 60Hz					
Carrier Frequency (kHz)			2 ~ 15 (Default 4)					
Brake Chopper			Built-in					
Cooling Method			Natural air cooling		Fan cooling			
Size: W x H (mm)			72 x 142				87 x 157	
Size: D (mm)			143				163	
Net Weight (kg)			0.4		0.5	0.8	1	

Models without built-in EMC filter

Frame			A		B	C
Cooling Method			Natural air cooling			Fan cooling
Size: W × H (mm)			68 × 128		72 × 142	87 × 157
Size: D (mm)			78	107	127	136
Net Weight (kg)			0.9			1.5

Three-phase
230 V

Models without built-in EMC filter									
Frame			A				B	C	
Model VFD $\square\square\square$ 23			0A8	1A6	2A8	4A8	7A5	11A	17A
Applicable Motor Output (kW)			0.1	0.2	0.4	0.75	1.5	2.2	3.7 / 4
Applicable Motor Output (HP)			1/8	1/4	1/2	1	2	3	5
Inverter Output	Heavy Duty	Rated Output Current (A)	0.8	1.6	2.8	4.8	7.5	11	17
	Normal Duty	Rated Output Current (A)	1.0	1.8	3.2	5.0	8.0	12.5	19.5
Input Voltage / Frequency			Three-phase AC, 200V~240V (-15% ~ + 10%), 50 / 60Hz						
Carrier Frequency (kHz)			2 ~ 15 (Default 4)						
Brake Chopper			Built-in						
Cooling Method			Natural air cooling				Fan cooling		
Size: W × H (mm)			68 × 128				72 × 142	87 × 157	
Size: D (mm)			78	92	125	127	136	138	
Net Weight (kg)			0.4	0.5	0.6	0.8	1	2	

Three-phase
460 V

60V

Models with built-in EMC filter										
Frame			B			C			D	
Model VFD☐☐☐ME43			1A5	2A7	4A2	5A5	7A3	9A0	13A	17A
Applicable Motor Output (kW)			0.4	0.75	1.5	2.2	3	3.7 / 4	5.5	7.5
Applicable Motor Output (HP)			1/2	1	2	3	4	5	7.5	10
Inverter Output	Heavy Duty	Rated Output Current (A)	1.5	2.7	4.2	5.5	7.3	9	13	17
	Normal Duty	Rated Output Current (A)	1.8	3	4.6	6.5	8	10.5	15.7	20.5
Input Voltage / Frequency			Three-phase AC, 380V~480V (-15% ~ + 10%), 50 / 60Hz							
Carrier Frequency (kHz)			2 ~ 15 (Default 4)							
Brake Chopper			Built-in							
Cooling Method			Fan cooling							
Size: W × H (mm)			72 × 142			87 × 157			109 × 207	
Size: D (mm)			143			163			171	
Net Weight (kg)			0.6	0.7	0.8	1			2	
Models without built-in EMC filter										
Frame			A		B	C			D	
Cooling Method			Natural air cooling			Fan cooling				
Size: W × H (mm)			68 × 128		72 × 142	87 × 157			109 × 207	
Size: D (mm)			113	127	127	136			138	
Net Weight (kg)			0.9			1.5			2.7	

Specifications

General Specifications and Accessories

Control Functions	Control Methods	V/F, SVC
	Applicant Motors	Induction motor (IM), interior permanent magnet (IPM) motor, surface permanent magnet (SPM) motor
	Max. Output Frequency	0.00 ~ 599.00 Hz (± 0.1%)
	Starting Torque*	150% / 3 Hz (V/f, SVC control for IM, heavy duty) 100% / (1/20 of motor rated frequency) (SVC control for PM, heavy duty)
	Speed Control Range*	1 : 50 (V/f, SVC control for IM, heavy duty) 1 : 20 (SVC control for PM, heavy duty)
	Overload Tolerance	Normal Duty (ND): 120% of rated output current for 60 seconds; 150% of rated output current for 3 seconds Heavy Duty (HD): 150% of rated output current for 60 seconds; 200% of rated output current for 3 seconds
	Frequency Setting Signal	0 ~ 10V / 4(0) 20mA, 1pulse input (10kHz)
	Main Control Functions	Multiple motor switches (2 independent motor parameter settings), fast run, deceleration energy back (DEB) function, fast deceleration function, selectable master and auxiliary frequency source, momentary power loss ride through, speed search, over-torque detection, 16-step speed (max.), accel. / decel. time switch, S-curve accel/decel, 3-wire sequence, JOG frequency, upper/lower limits for frequency reference, DC injection braking at start and stop, PID control, simple positioning function, Modbus integrated as standard
Protection Functions	Motor Protection	Overcurrent protection, overvoltage protection, overload protection, over-temperature protection, phase failure protection
	Stall Prevention	During acceleration, deceleration and running independently
Certifications		UL, CE, RoHS, RCM, TUV, REACH, KC

*Control accuracy may vary depending on the environment, application conditions, or motor types. For details, please contact our company or your local distributor

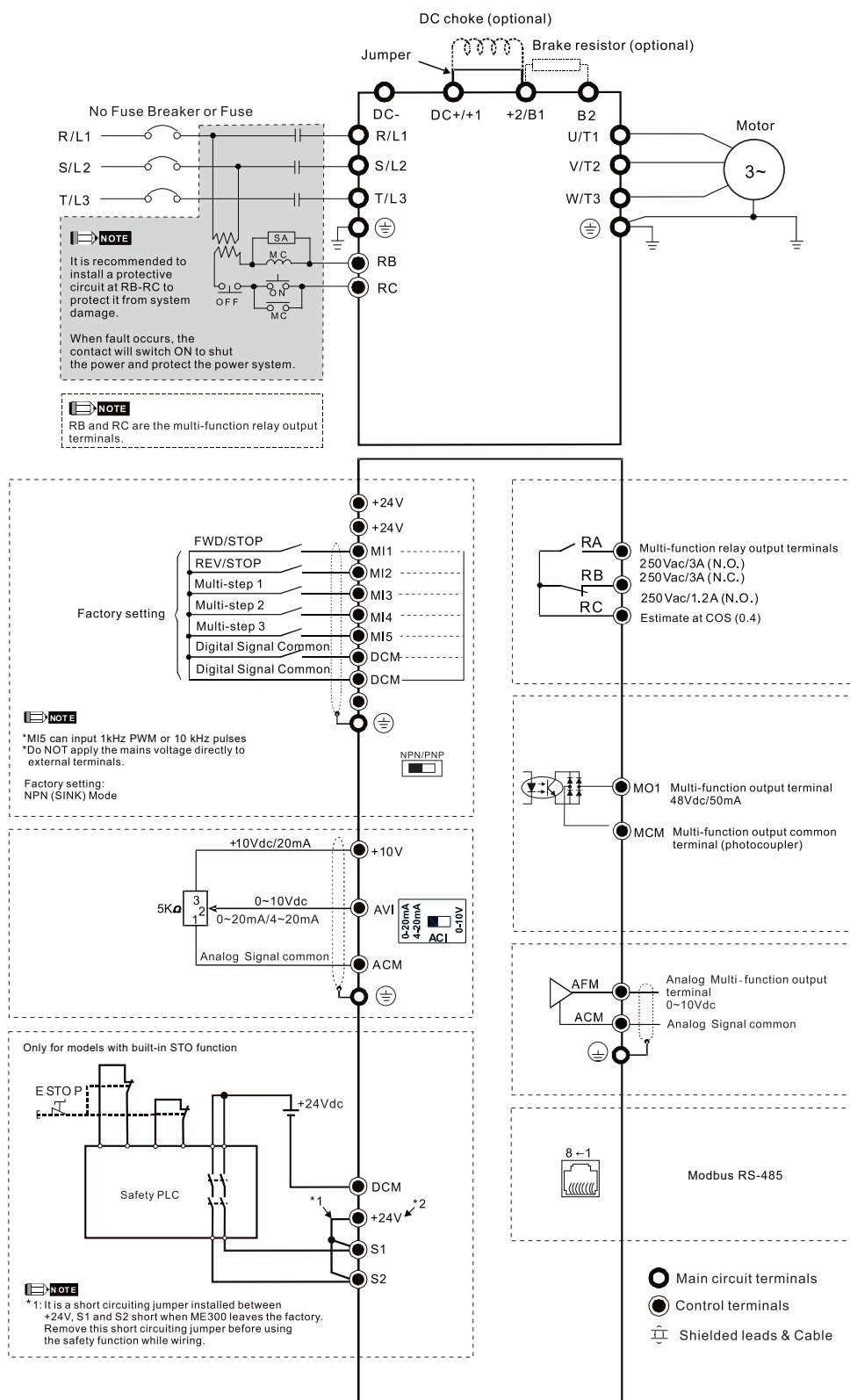
Operating Environment

Operating Environment	Installation Location		IEC60364-1/IEC60664-1 Pollution degree 2, Indoor use only	
	Ambient Temperature	Operation	IP20/UL Open Type	-20 ~ 50°C -20 ~ 60°C (derating required)
			NEMA 1/UL Type 1	-20 ~ 40°C
			Zero stacking installation	-20 ~ 50°C (derating required)
		Storage		-40 ~ 85°C
		Transportation		-20 ~ 70°C
	Rated Humidity	Operation		Max. 90%
		Storage / Transportation		Max. 95%
	Air Pressure	Operation		86 ~ 106 kPa
		Storage / Transportation		70 ~ 106 kPa
	Pollution Level	Compliant to IEC60721-3-3, 3C2		
	Altitude	An altitude of 0 ~ 1000m for normal operation (derating is required for installation at an altitude above 1000 m)		
Vibration		Compliant to IEC 60068-2-6		
Shock		Compliant to IEC/EN 60068-2-27		

* Please refer to ME300 user manual for more details

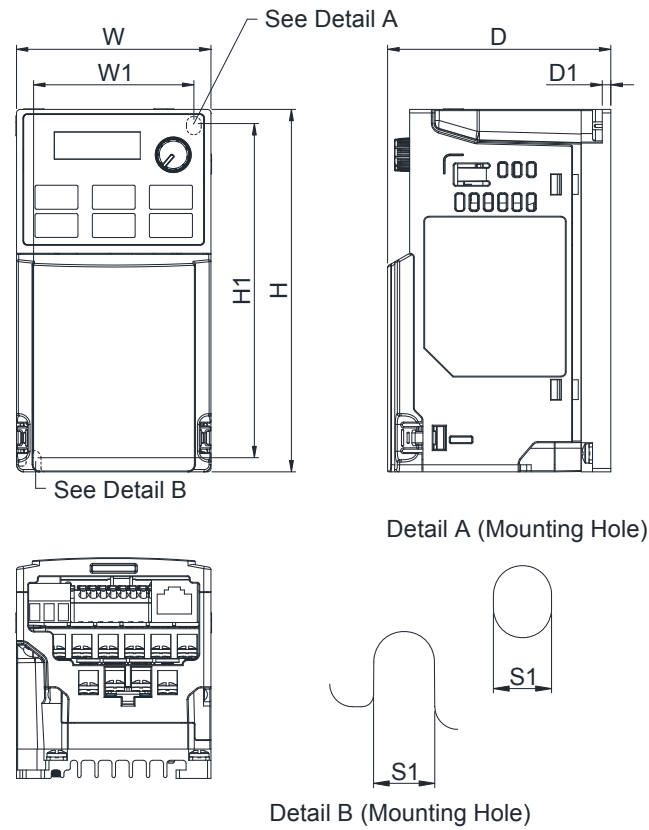
Wiring

Input: Single-phase / 3-phase power



Dimensions

Frame A

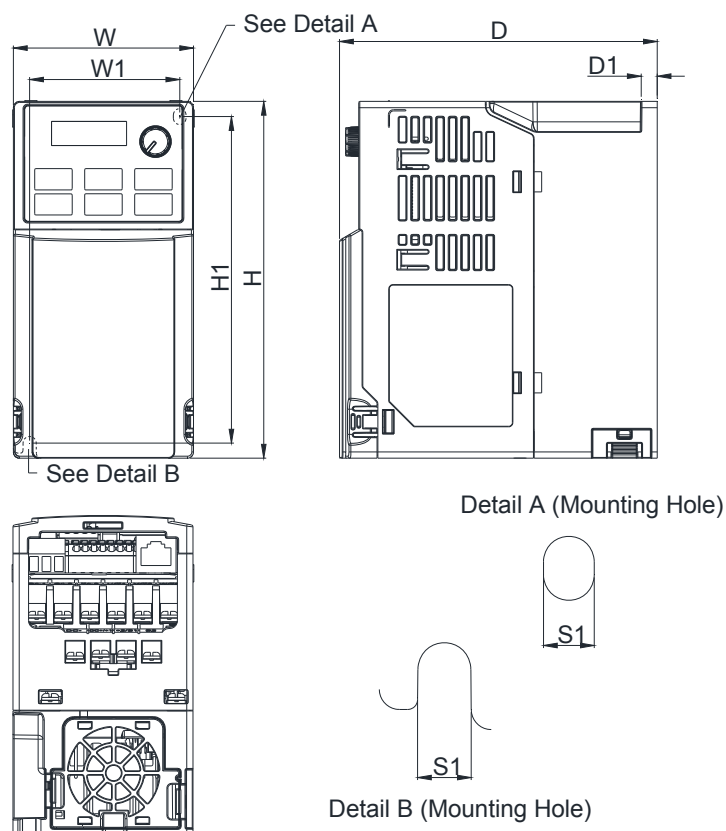


Model	Frame A1	Frame A2	Frame A3	Frame A4	Frame A5	Frame A6
	VFD0A8ME11ANNAA	VFD2A8ME23ANNAA	VFD2A5ME11ANNAA	VFD1A5ME43ANNAA	VFD4A8ME23ANNAA	VFD2A7ME43ANNAA
	VFD0A8ME11ANSAA	VFD2A8ME23ANSAA	VFD2A5ME11ANSAA	VFD1A5ME43ANSAA	VFD4A8ME23ANSAA	VFD2A7ME43ANSAA
	VFD0A8ME21ANNAA		VFD2A8ME21ANNAA			
	VFD0A8ME21ANSAA		VFD2A8ME21ANSAA			
	VFD0A8ME23ANNAA					
	VFD0A8ME23ANSAA					
	VFD1A6ME11ANNAA					
	VFD1A6ME11ANSAA					
	VFD1A6ME21ANNAA					
	VFD1A6ME21ANSAA					
	VFD1A6ME23ANNAA					
	VFD1A6ME23ANSAA					

Frame		W	H	D	W1	H1	D1	S1
A1	mm	68.0	128.0	78.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	3.07	2.20	4.65	0.12	0.20
Frame		W	H	D	W1	H1	D1	S1
A2	mm	68.0	128.0	92.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	3.62	2.20	4.65	0.12	0.20
Frame		W	H	D	W1	H1	D1	S1
A3	mm	68.0	128.0	107.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	4.21	2.20	4.65	0.12	0.20

Frame		W	H	D	W1	H1	D1	S1
A4	mm	68.0	128.0	113.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	4.45	2.20	4.65	0.12	0.20
Frame		W	H	D	W1	H1	D1	S1
A5	mm	68.0	128.0	125.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	4.92	2.20	4.65	0.12	0.20
Frame		W	H	D	W1	H1	D1	S1
A6	mm	68.0	128.0	127.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	5.00	2.20	4.65	0.12	0.20

Frame B

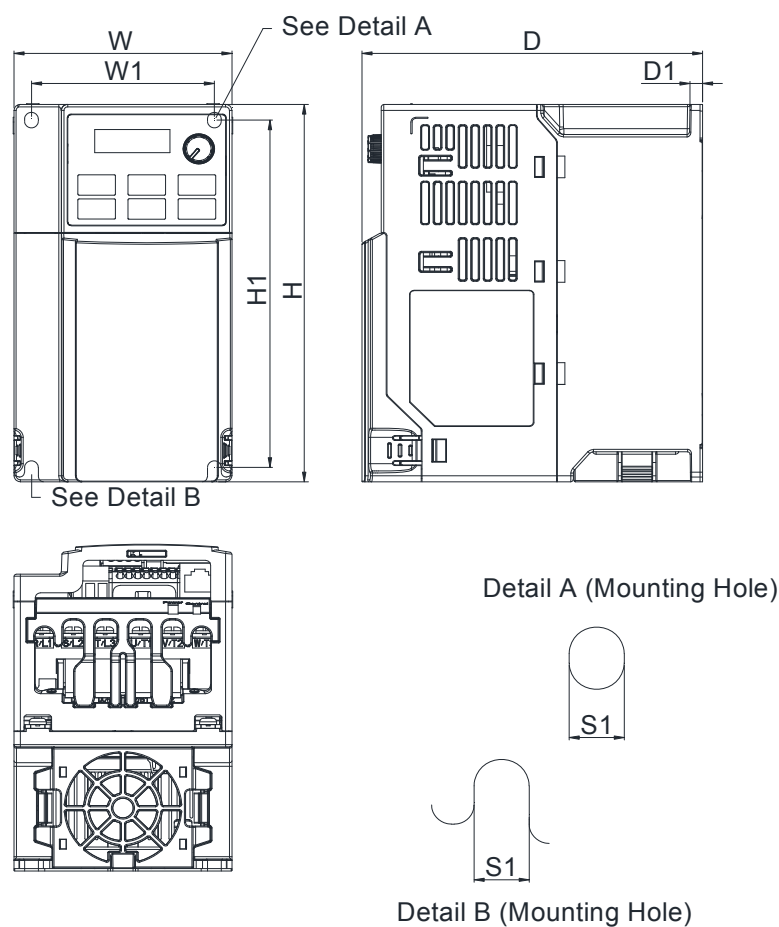


Model	Frame B1	Frame B2	Frame B3	
VFD7A5ME23ANNAA	VFD4A8ME21ANNAA	VFD0A8ME21AFNAA	VFD4A2ME43AFNAA	
VFD7A5ME23ANSAA	VFD4A8ME21ANSAA	VFD0A8ME21AFSAA	VFD4A2ME43AFSAA	
VFD4A2ME43ANNAA		VFD1A6ME21AFNAA		
VFD4A2ME43ANSAA		VFD1A6ME21AFSAA		
		VFD2A8ME21AFNAA		
		VFD2A8ME21AFSAA		
		VFD4A8ME21AFNAA		
		VFD4A8ME21AFSAA		
		VFD1A5ME43AFNAA		
		VFD1A5ME43AFSAA		
		VFD2A7ME43AFNAA		
		VFD2A7ME43AFSAA		

Frame		W	H	D	W1	H1	D1	S1
B1	mm	72.0	142.0	127.0	60.0	130.0	6.4	5.2
	inch	2.83	5.59	5.00	2.36	5.12	0.25	0.20
Frame		W	H	D	W1	H1	D1	S1
B2	mm	72.0	142.0	127.0	60.0	130.0	3.0	5.2
	inch	2.83	5.59	5.00	2.36	5.12	0.12	0.20
Frame		W	H	D	W1	H1	D1	S1
B3	mm	72.0	142.0	143.0	60.0	130.0	4.3	5.2
	inch	2.83	5.59	5.63	2.36	5.12	0.17	0.20

Dimensions

Frame C



Model

Frame C1

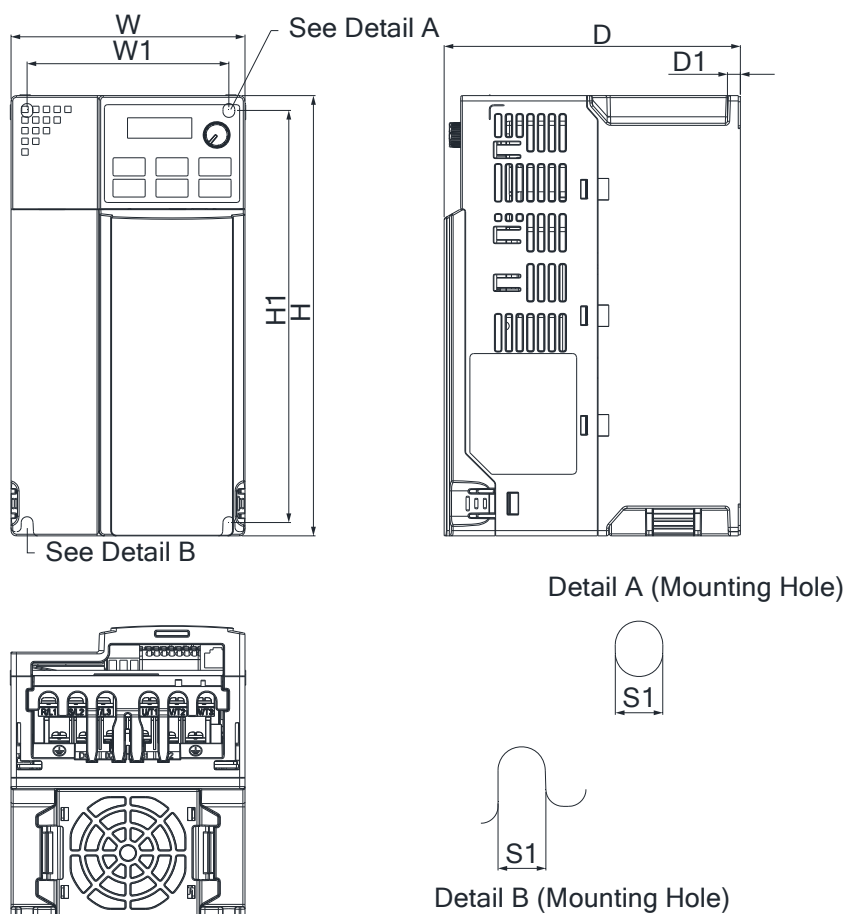
VFD4A8ME11ANNAA
VFD4A8ME11ANSAA
VFD7A5ME21ANNAA
VFD7A5ME21ANSAA
VFD11AME21ANNAA
VFD11AME21ANSAA
VFD11AME23ANNAA
VFD11AME23ANSAA
VFD17AME23ANNAA
VFD17AME23ANSAA
VFD5A5ME43ANNAA
VFD5A5ME43ANSAA
VFD7A3ME43ANNAA
VFD7A3ME43ANSAA

Frame C2

VFD7A5ME21AFNAA
VFD7A5ME21AFSAA
VFD11AME21AFNAA
VFD11AME21AFSAA
VFD5A5ME43AFNAA
VFD5A5ME43AFSAA
VFD7A3ME43AFNAA
VFD7A3ME43AFSAA
VFD9A0ME43AFNAA
VFD9A0ME43AFSAA

Frame		W	H	D	W1	H1	D1	S1
C1	mm	87.0	157.0	136.0	73.0	144.5	5.0	5.5
	inch	3.43	6.18	5.35	2.87	5.69	0.20	0.22
Frame		W	H	D	W1	H1	D1	S1
C2	mm	87.0	157.0	163.0	73.0	144.5	5.0	5.5
	inch	3.43	6.18	6.42	2.87	5.69	0.20	0.22

Frame D



Model

Frame D1

VFD25AME23ANNAA
VFD25AME23ANSAA
VFD13AME43ANNAA
VFD13AME43ANSAA
VFD17AME43ANNAA
VFD17AME43ANSAA

Frame D2

VFD13AME43AFNAA
VFD13AME43AFSAA
VFD17AME43AFNAA
VFD17AME43AFSAA

Frame		W	H	D	W1	H1	D1	S1
D1	mm	109.0	207.0	138.0	94.0	193.8	6.0	5.5
	inch	4.29	8.15	5.43	3.70	7.63	0.24	0.22
Frame		W	H	D	W1	H1	D1	S1
D2	mm	109.0	207.0	171.0	94.0	193.8	6.0	5.5
	inch	4.29	8.15	6.73	3.70	7.63	0.24	0.22

Accessories

RJ45 Extension Cable for Digital Keypad

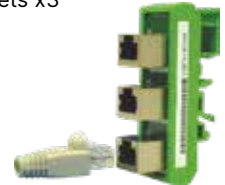


Title	Part No.	L	
		mm	inch
1	UC-CMC003-01A	300	11.8
2	UC-CMC005-01A	500	19.6
3	UC-CMC010-01A	1000	39
4	UC-CMC015-01A	1500	59
5	UC-CMC020-01A	2000	78.7
6	UC-CMC030-01A	3000	118.1
7	UC-CMC050-01A	5000	196.8
8	UC-CMC100-01A	10000	393.7
9	UC-CMC200-01A	20000	787.4

Accessory for Multi-pump Applications

MKCB-HUB01

- RJ45 sockets x3



Digital Keypads



KPC-CC01

- Highly illuminated LCD display
- Displays multiple information simultaneously



KPC-CE01

- RJ45 Port
- 5-digit LED display
- Large key press for easy on-site setup



PU-08

- RJ45 Port
- 4-digit LED display
- Compact design for easy installation

Model Name

VFD 1A5 ME 43 A N N A A

Variable Frequency Drive

Rated Output Current

Under Heavy Duty Mode (150% 60 seconds)

Series Name

ME : Basic Compact Drive ME300

Input Voltage

11 : 115 V single-phase 23 : 230 V three-phase
21 : 230 V single-phase 43 : 460 V three-phase

IP Level

A : IP20

Version

Model Type

A : Standard model

Safe Torque Off (STO)

N : None
S : STO Model

EMC Filter

N : None
F : Built-in EMC Filter

Ordering Information

Power Range			Frame Size	Model Name	Standard Models (0 ~ 599Hz)	
Max. Applicable Motor Capacity		Drive Rated Output Current			Built-in EMC Filter	Built-in STO
[HP]	[kW]	[A]				
115 V / single-phase						
1/8	0.1	0.8	A	VFD0A8ME11ANNAA		
1/8	0.1	0.8	A	VFD0A8ME11ANSAA		V
1/4	0.2	1.6	A	VFD1A6ME11ANNAA		
1/4	0.2	1.6	A	VFD1A6ME11ANSAA		V
1/2	0.4	2.5	A	VFD2A5ME11ANNAA		
1/2	0.4	2.5	A	VFD2A5ME11ANSAA		V
1	0.75	4.8	C	VFD4A8ME11ANNAA		
1	0.75	4.8	C	VFD4A8ME11ANSAA		V
230 V / single-phase						
1/8	0.1	0.8	A	VFD0A8ME21ANNAA		
1/8	0.1	0.8	A	VFD0A8ME21ANSAA		V
1/8	0.1	0.8	B	VFD0A8ME21AFNAA	V	
1/8	0.1	0.8	B	VFD0A8ME21AFSAA	V	V
1/4	0.2	1.6	A	VFD1A6ME21ANNAA		
1/4	0.2	1.6	A	VFD1A6ME21ANSAA		V
1/4	0.2	1.6	B	VFD1A6ME21AFNAA	V	
1/4	0.2	1.6	B	VFD1A6ME21AFSAA	V	V
1/2	0.4	2.8	A	VFD2A8ME21ANNAA		
1/2	0.4	2.8	A	VFD2A8ME21ANSAA		V
1/2	0.4	2.8	B	VFD2A8ME21AFNAA	V	
1/2	0.4	2.8	B	VFD2A8ME21AFSAA	V	V
1	0.75	4.8	B	VFD4A8ME21ANNAA		
1	0.75	4.8	B	VFD4A8ME21ANSAA		V
1	0.75	4.8	B	VFD4A8ME21AFNAA	V	
1	0.75	4.8	B	VFD4A8ME21AFSAA	V	V
2	1.5	7.5	C	VFD7A5ME21ANNAA		
2	1.5	7.5	C	VFD7A5ME21ANSAA		V
2	1.5	7.5	C	VFD7A5ME21AFNAA	V	
2	1.5	7.5	C	VFD7A5ME21AFSAA	V	V
3	2.2	11.0	C	VFD11AME21ANNAA		
3	2.2	11.0	C	VFD11AME21ANSAA		V
3	2.2	11.0	C	VFD11AME21AFNAA	V	
3	2.2	11.0	C	VFD11AME21AFSAA	V	V
230 V / three-phase						
1/8	0.1	0.8	A	VFD0A8ME23ANNAA		
1/8	0.1	0.8	A	VFD0A8ME23ANSAA		V
1/4	0.2	1.6	A	VFD1A6ME23ANNAA		
1/4	0.2	1.6	A	VFD1A6ME23ANSAA		V
1/2	0.4	2.8	A	VFD2A8ME23ANNAA		
1/2	0.4	2.8	A	VFD2A8ME23ANSAA		V
1	0.75	4.8	A	VFD4A8ME23ANNAA		

Ordering Information

Power Range			Frame Size	Model Name	Standard Models (0 ~ 599Hz)	
Max. Applicable Motor Capacity		Drive Rated Output Current			Built-in EMC Filter	Built-in STO
[HP]	[kW]	[A]				
230 V /three-phase						
1	0.75	4.8	A	VFD4A8ME23ANSAA		V
2	1.5	7.5	B	VFD7A5ME23ANNAA		
2	1.5	7.5	B	VFD7A5ME23ANSAA		V
3	2.2	11.0	C	VFD11AME23ANNAA		
3	2.2	11.0	C	VFD11AME23ANSAA		V
5	3.7 / 4	17.0	C	VFD17AME23ANNAA		
5	3.7 / 4	17.0	C	VFD17AME23ANSAA		V
7.5	5.5	25.0	D	VFD25AME23ANNAA		
7.5	5.5	25.0	D	VFD25AME23ANSAA		V
460 V /three-phase						
1/2	0.4	1.5	A	VFD1A5ME43ANNAA		
1/2	0.4	1.5	A	VFD1A5ME43ANSAA		V
1/2	0.4	1.5	B	VFD1A5ME43AFNAA	V	
1/2	0.4	1.5	B	VFD1A5ME43AFSAA	V	V
1	0.75	2.7	A	VFD2A7ME43ANNAA		
1	0.75	2.7	A	VFD2A7ME43ANSAA		V
1	0.75	2.7	B	VFD2A7ME43AFNAA	V	
1	0.75	2.7	B	VFD2A7ME43AFSAA	V	V
2	1.5	4.2	B	VFD4A2ME43ANNAA		
2	1.5	4.2	B	VFD4A2ME43ANSAA		V
2	1.5	4.2	B	VFD4A2ME43AFNAA	V	
2	1.5	4.2	B	VFD4A2ME43AFSAA	V	V
3	2.2	5.5	C	VFD5A5ME43ANNAA		
3	2.2	5.5	C	VFD5A5ME43ANSAA		V
3	2.2	5.5	C	VFD5A5ME43AFNAA	V	
3	2.2	5.5	C	VFD5A5ME43AFSAA	V	V
4	3	7.3	C	VFD7A3ME43ANNAA		
4	3	7.3	C	VFD7A3ME43ANSAA		V
4	3	7.3	C	VFD7A3ME43AFNAA	V	
4	3	7.3	C	VFD7A3ME43AFSAA	V	V
5	3.7 / 4	9.0	C	VFD9A0ME43ANNAA		
5	3.7 / 4	9.0	C	VFD9A0ME43ANSAA		V
5	3.7 / 4	9.0	C	VFD9A0ME43AFNAA	V	
5	3.7 / 4	9.0	C	VFD9A0ME43AFSAA	V	V
7.5	5.5	13.0	D	VFD13AME43ANNAA		
7.5	5.5	13.0	D	VFD13AME43ANSAA		V
7.5	5.5	13.0	D	VFD13AME43AFNAA	V	
7.5	5.5	13.0	D	VFD13AME43AFSAA	V	V
10	7.5	17.0	D	VFD17AME43ANNAA		
10	7.5	17.0	D	VFD17AME43ANSAA		V
10	7.5	17.0	D	VFD17AME43AFNAA	V	
10	7.5	17.0	D	VFD17AME43AFSAA	V	V