


Digitized Automation for a Changing World

Delta Compact Drive
M300 Series

www.deltaww.com

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.

Table of Contents

High Performance Compact Drive MH300 Series

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

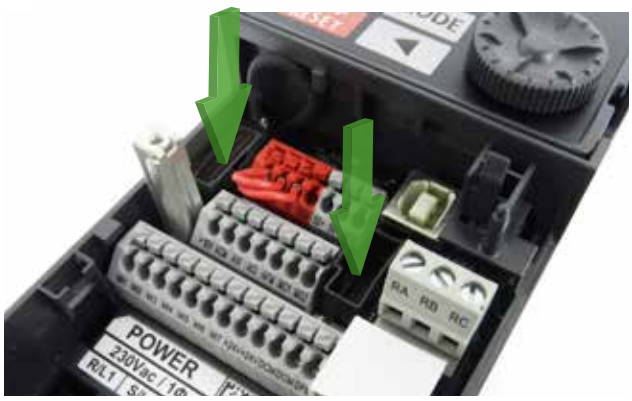
DeviceNet
CMM-DN02

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

Note: VFD32AMH43ANSAA versus VFD150B43A

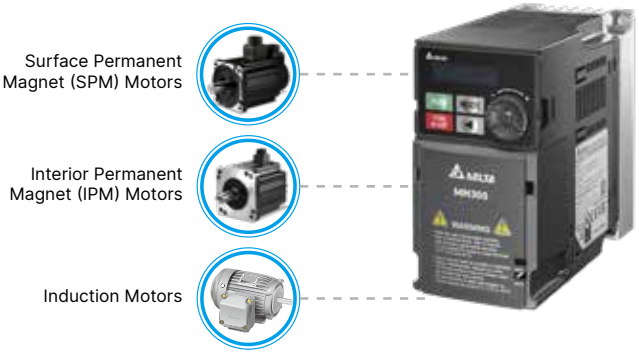
Side-by-Side Installation

Supports side-by-side installation with operating temperatures of -20˚C ~ 40˚C; enables highly flexible and highly efficient installation

Outstanding Drive Performance

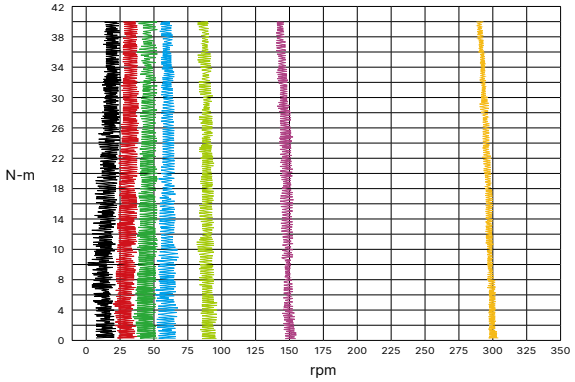
Supports IM and PM Motors

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



High Starting Torque

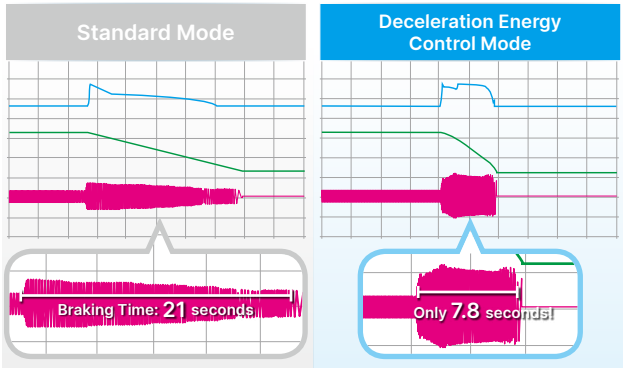
Delivers 200% high starting torque with a low speed control of 0.5 Hz (sensor-less vector control)* and provides outstanding machine stability; suitable for dynamic loading applications



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

Enhanced Braking Capability

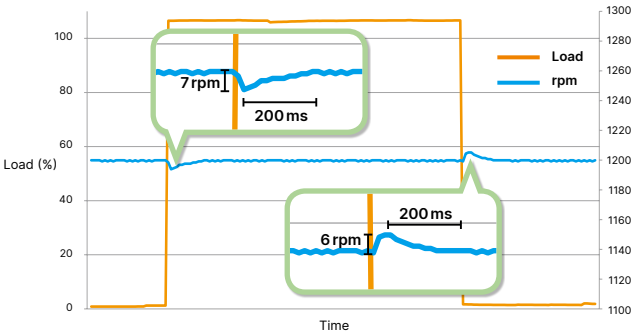
Provides Deceleration Energy Control Mode to shorten braking time by adjusting the motor speed and current, replacing break resistors



* Actual deceleration performance would depends on different system loads

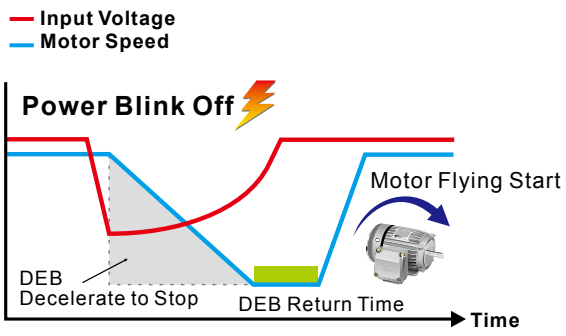
Fast Response to Load Impact

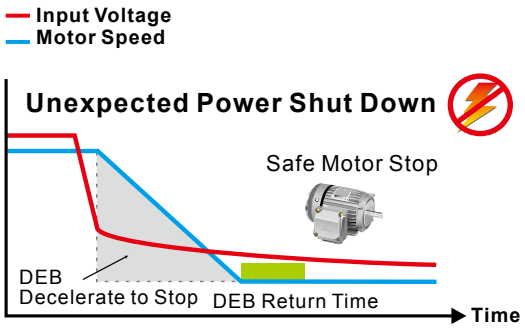
Fast response to sudden load impact at speeds to ensure stable operation and high quality output



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

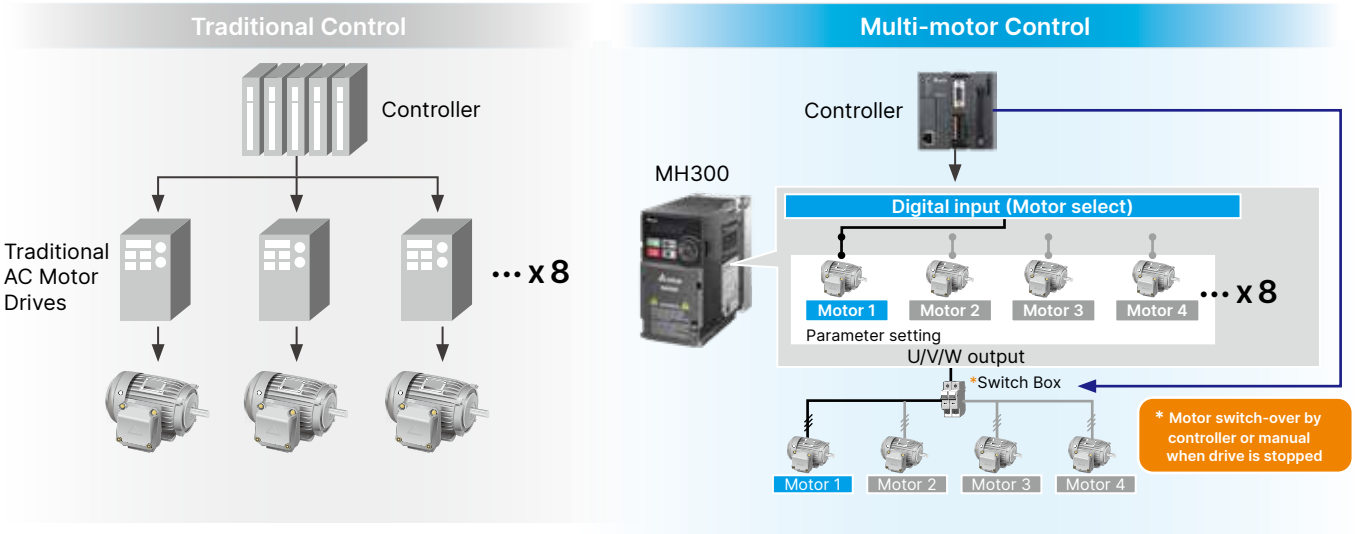




Strong System Support

Multi-motor Control

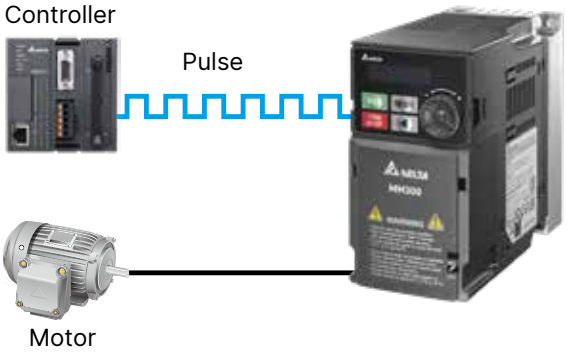
Switching control of 8 induction motors



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

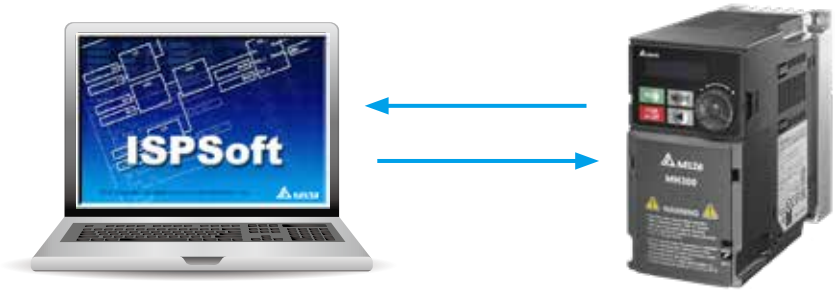
Pulse Input

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



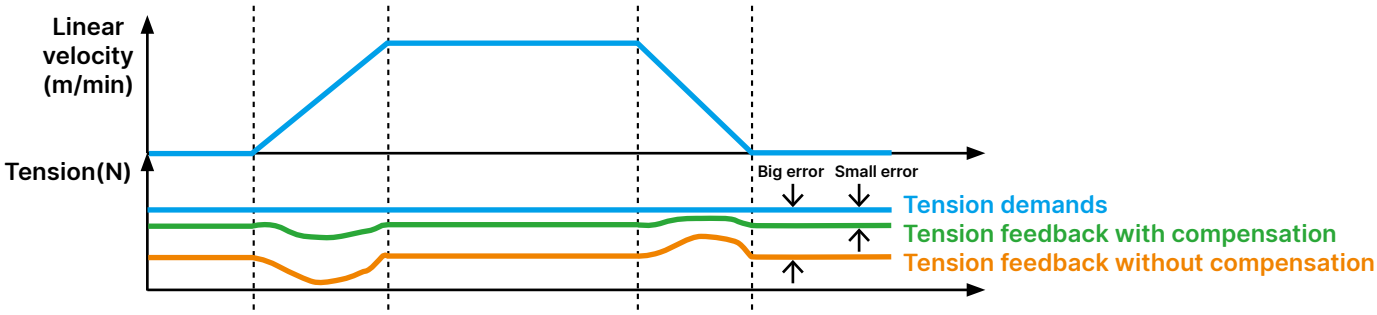
Built-in PLC

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



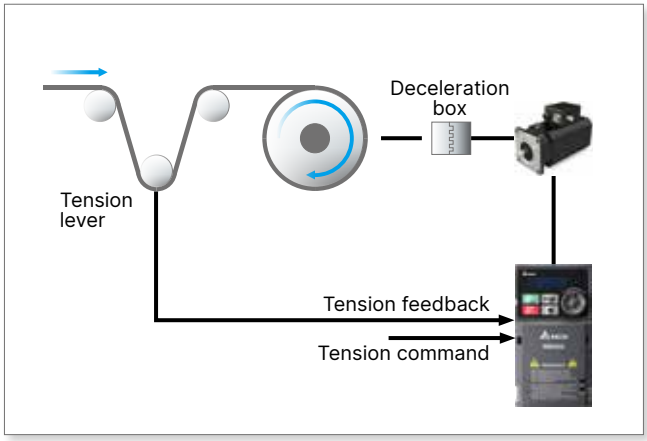
Tension Control

- 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

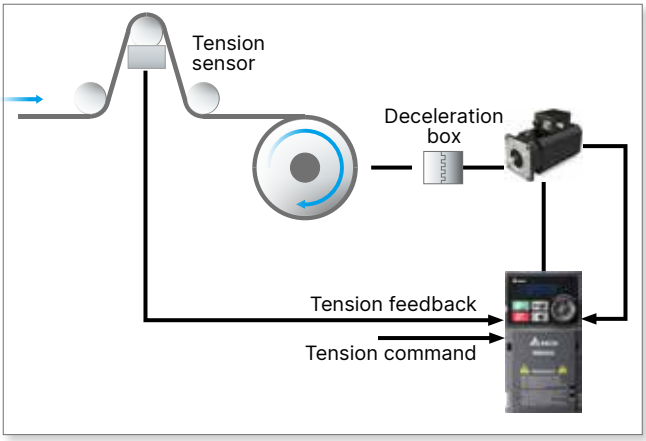


- Supports open / closed-loop, torque and speed tension controls

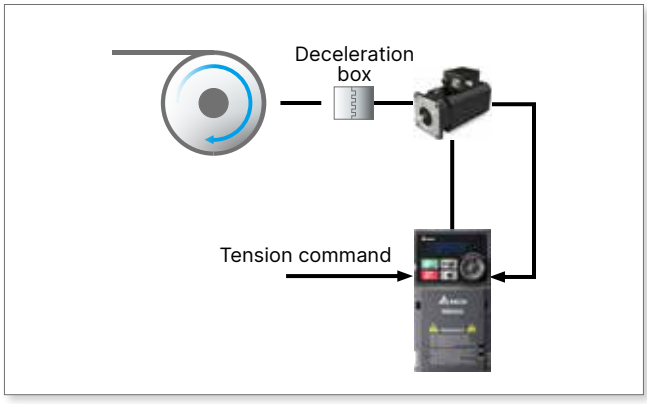
• Closed-loop tension, speed control



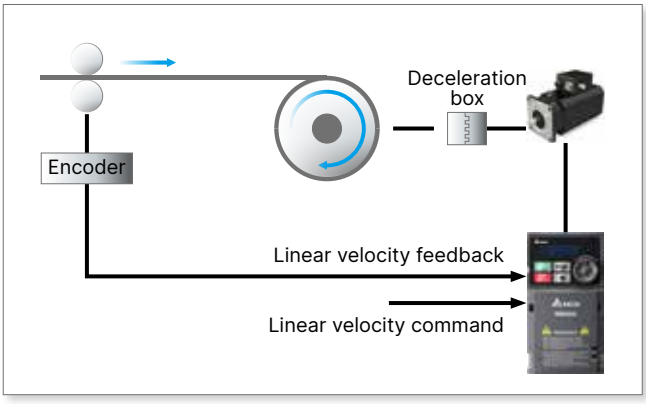
• Closed-loop tension, torque control



• Open-loop tension, torque control

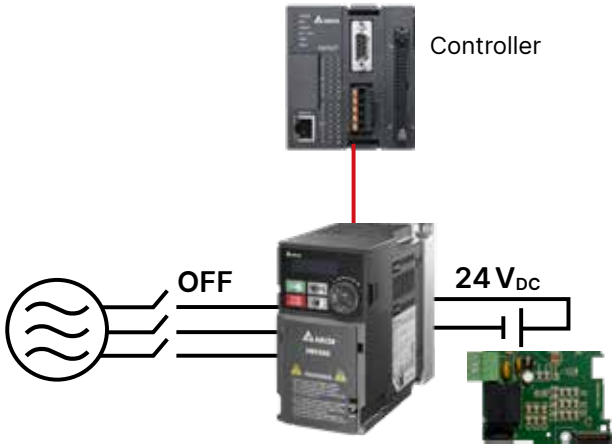


• Steady linear velocity control



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

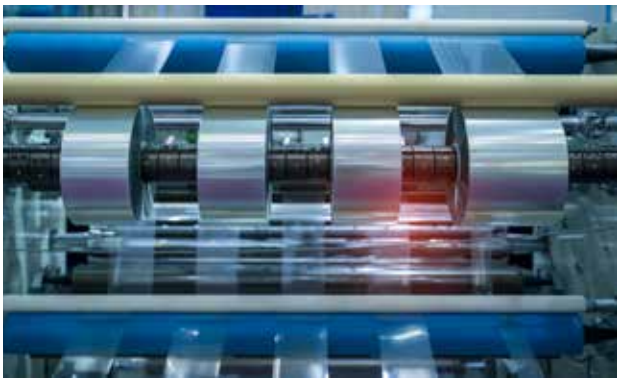
Features and Benefits

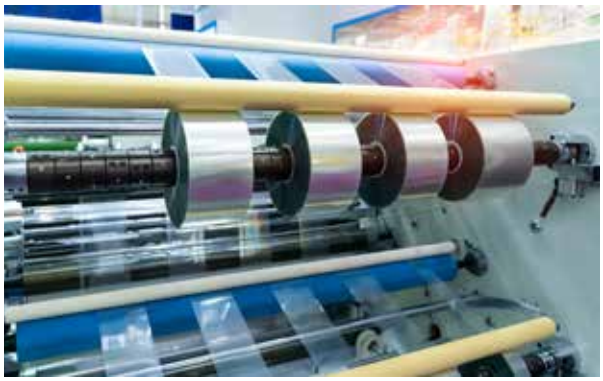
- Built-in tension control features for timely response compared to the external controller (ex. PLC); stable tension with coil diameter calculation
- Built-in 2 PID parameter settings for stable tension through the whole production
- Built-in tensile taper calculation to automatically adjust tension 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

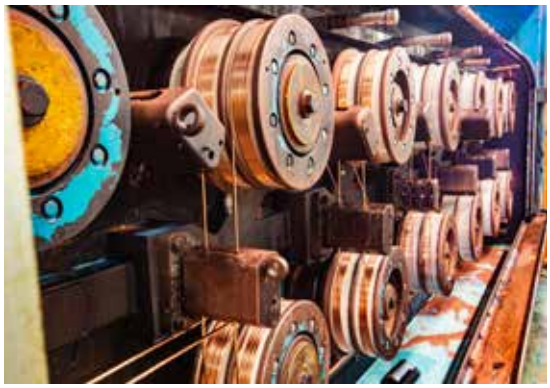
Features and Benefits

- 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

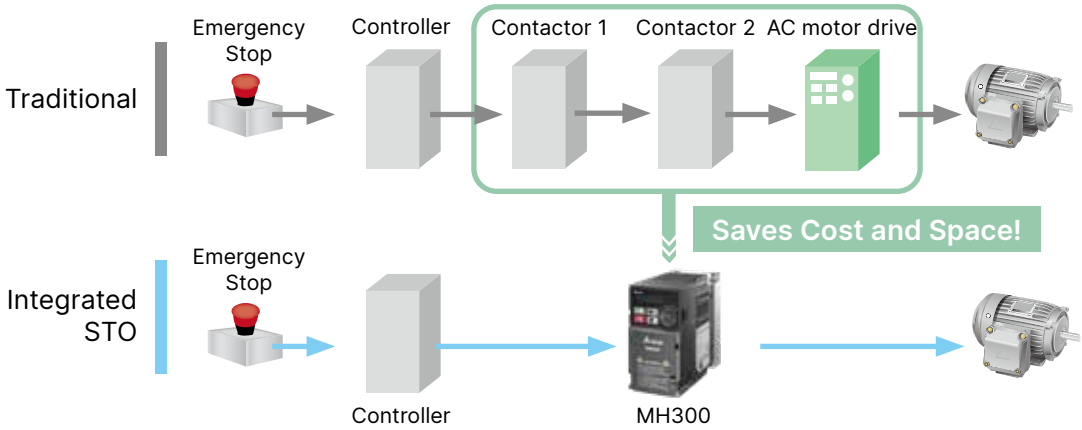
- IP40 models provide excellent protection from a high dust, fiber or moisture environment
- Improved heatsink design prevents fiber clogging the air way; modular design of fan is easy to clean and provides longer lifetime
- Improved braking capability shortens the deceleration-to-stop time and is suitable 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

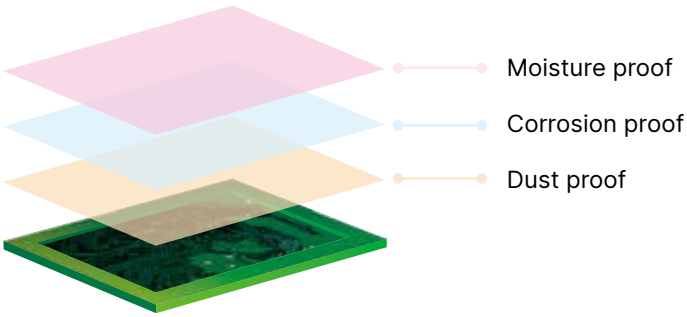
Integrated Sate Torque Off (STO), compliance with:

- 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

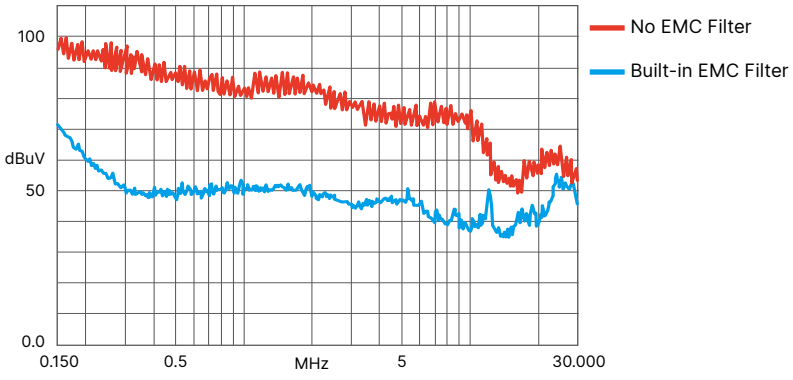


IP 40 Models

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

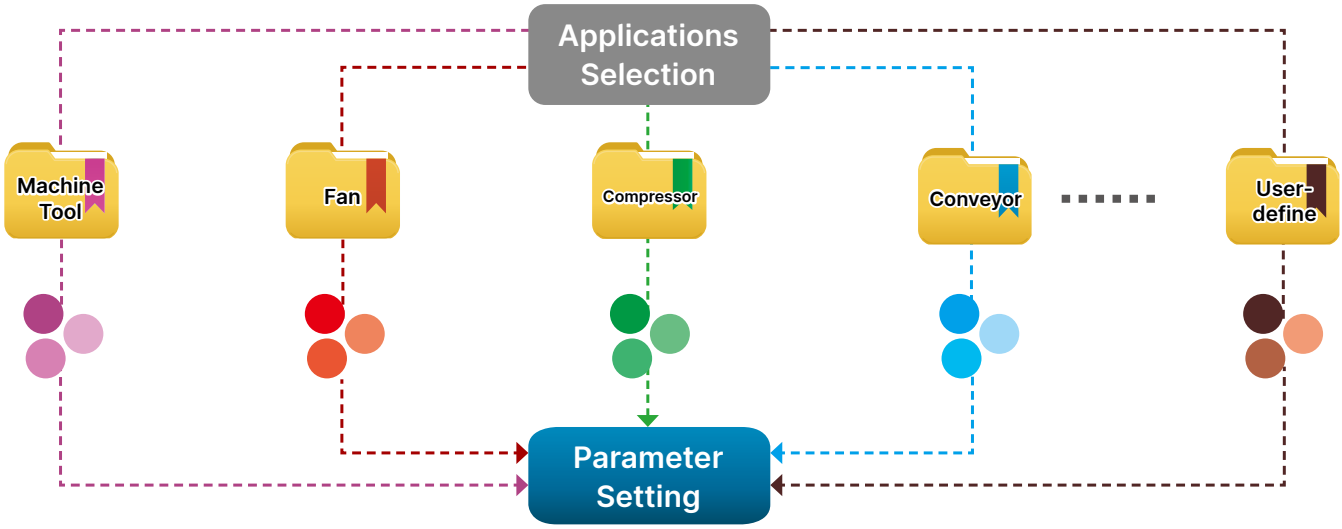
Built-in Class A (C2) standard EMC filter; saves on additional procurement cost and wiring time, and provides more cabinet space for other devices to use



Easy to Install

Application Groups (Macro)

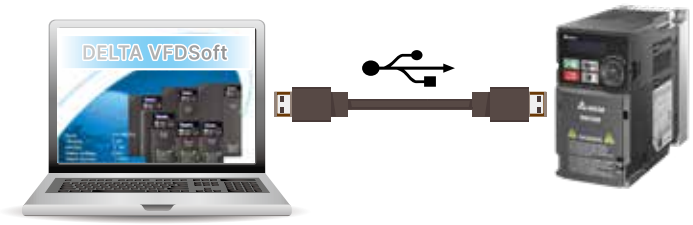
Simplifies the parameter setting process by grouping the parameters for different applications to use



Built-in USB Port

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

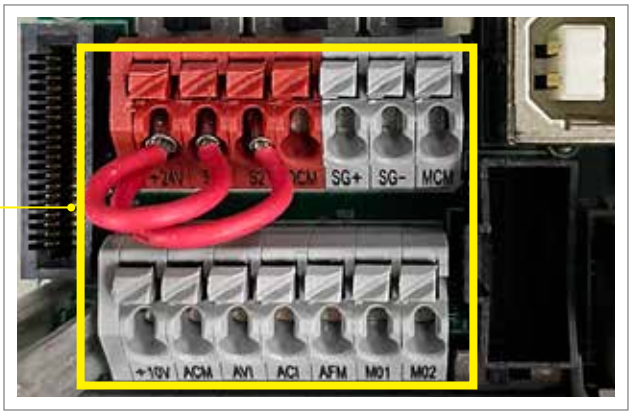
- No need of USB or RS-485 connectors
- Supports offline (drive power off) parameter setting/copying and system update



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					
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 ~ 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 × 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	87 × 157
Size: D (mm)			130	144	162	167

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

3-phase 460 V

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 ~ 48 0 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 x 142				87 x 157		109 x 207		130 x 250		175 x 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)			68 x 128			72 x 142	87 x 157		109 x 207		130 x 250		175 x 300
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 0 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		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					
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 (5 K 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.

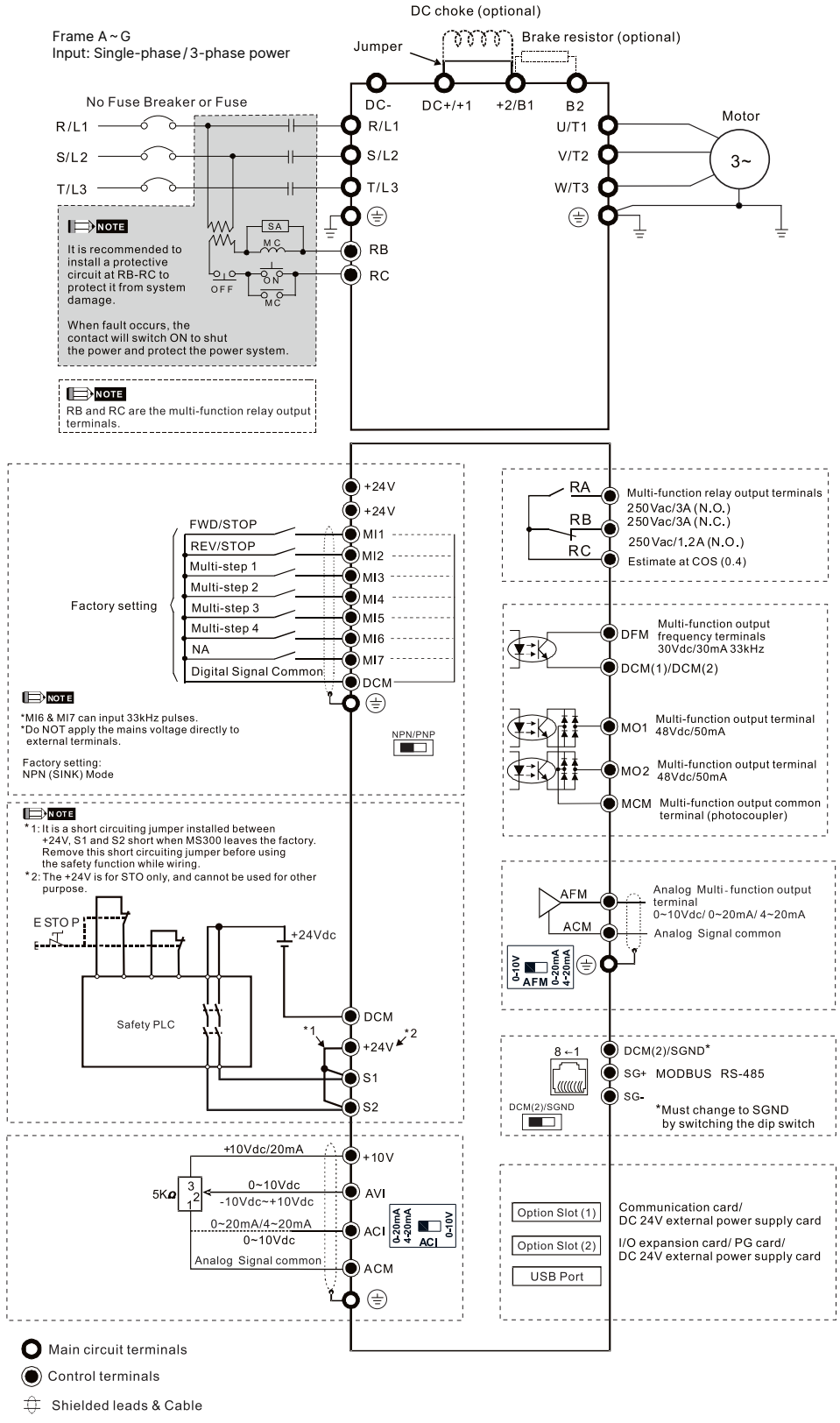
Operating Environment

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 -20 to 50˚C (needs derating)
			Zero stacking Installation	
		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.

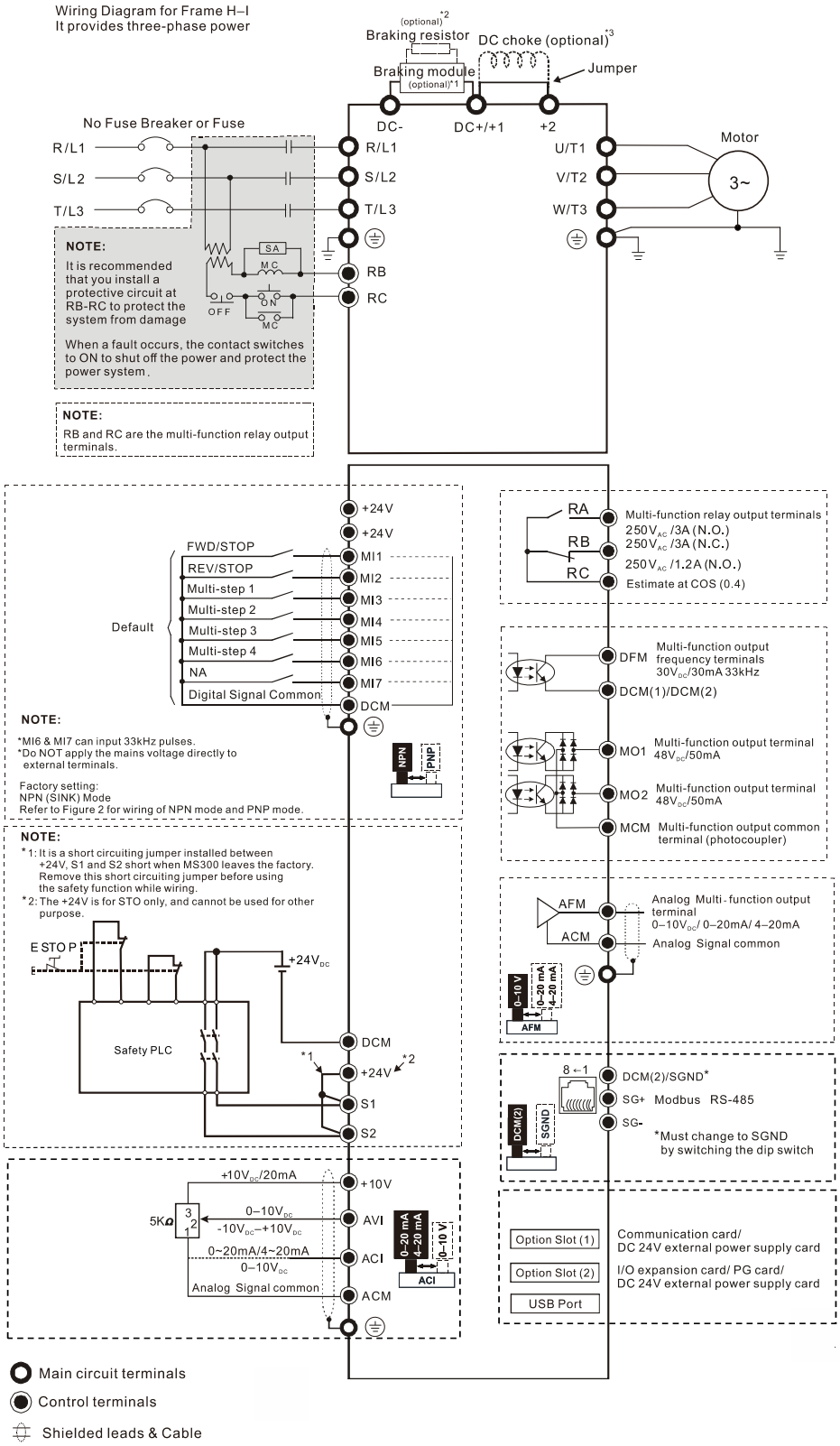
Wiring

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



Main circuit terminals

Control terminals

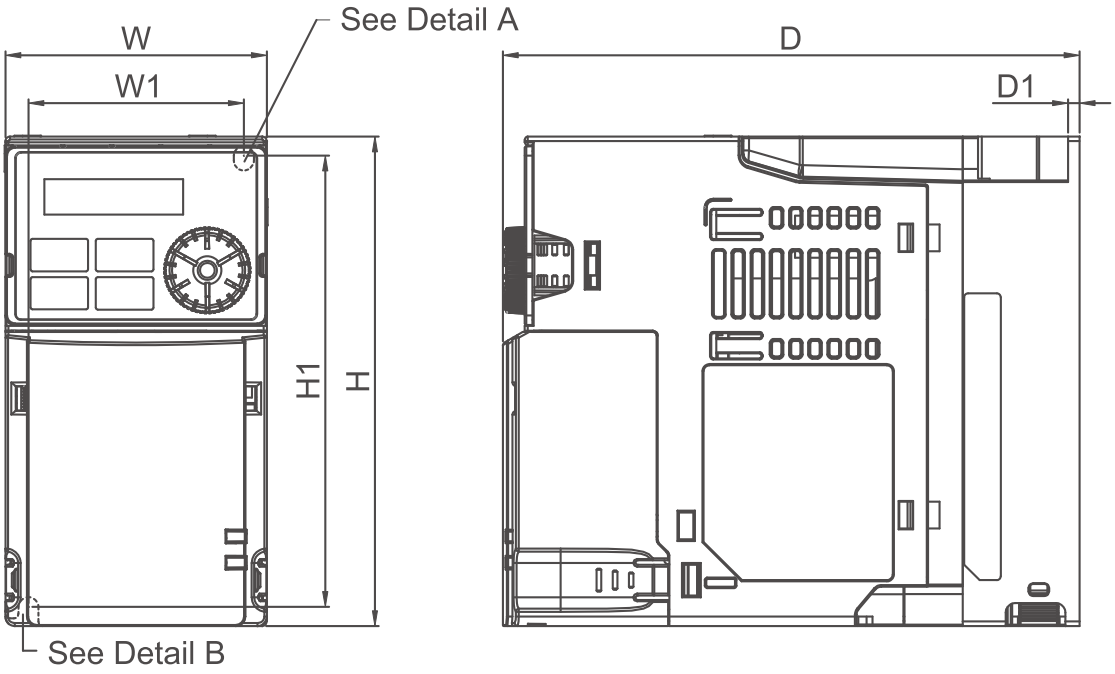
Shielded leads & Cable

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

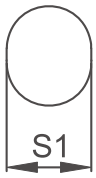
*3 Refer to Section 7-4 in the user manual for DC reactor selection.

Dimensions

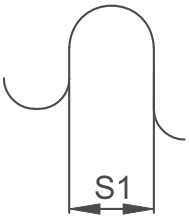
Frame A



Detail A (Mounting Hole)



Detail B (Mounting Hole)

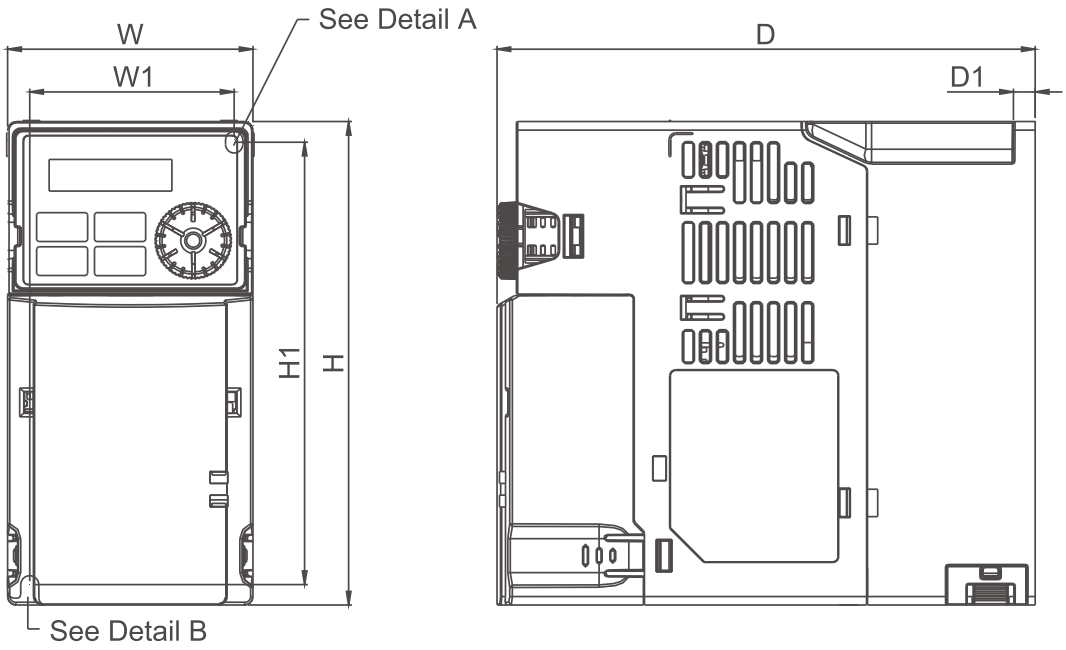


MODEL FRAME A1	FRAME A2		FRAME A3	FRAME A4
VFD1A6MH11ANSAA	VFD2A5MH11ANSAA	VFD2A5MH11ENSAA	VFD5A0MH23ANSAA	VFD5A0MH23ANSNA
VFD1A6MH11ENSAA	VFD2A8MH21ANSAA	VFD2A8MH21ENSAA	VFD5A0MH23ENSAA	VFD5A0MH23ENSNA
VFD1A6MH21ANSAA	VFD1A6MH23ANSAA	VFD1A6MH23ENSAA	VFD3A0MH43ANSAA	VFD3A0MH43ANSNA
VFD1A6MH21ENSAA	VFD2A8MH23ANSAA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

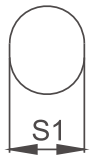
Frame		W	H	D	W1	H1	D1	S1
A1	mm	68.0	128.0	130.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	5.12	2.20	4.65	0.12	0.20
Frame		**W**	**H**	**D**	**W1**	**H1**	**D1**	**S1**
A2	mm	68.0	128.0	144.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	5.67	2.20	4.65	0.12	0.20

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

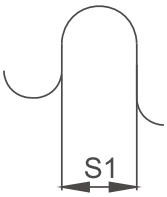
Frame B



Detail A (Mounting Hole)



Detail B (Mounting Hole)

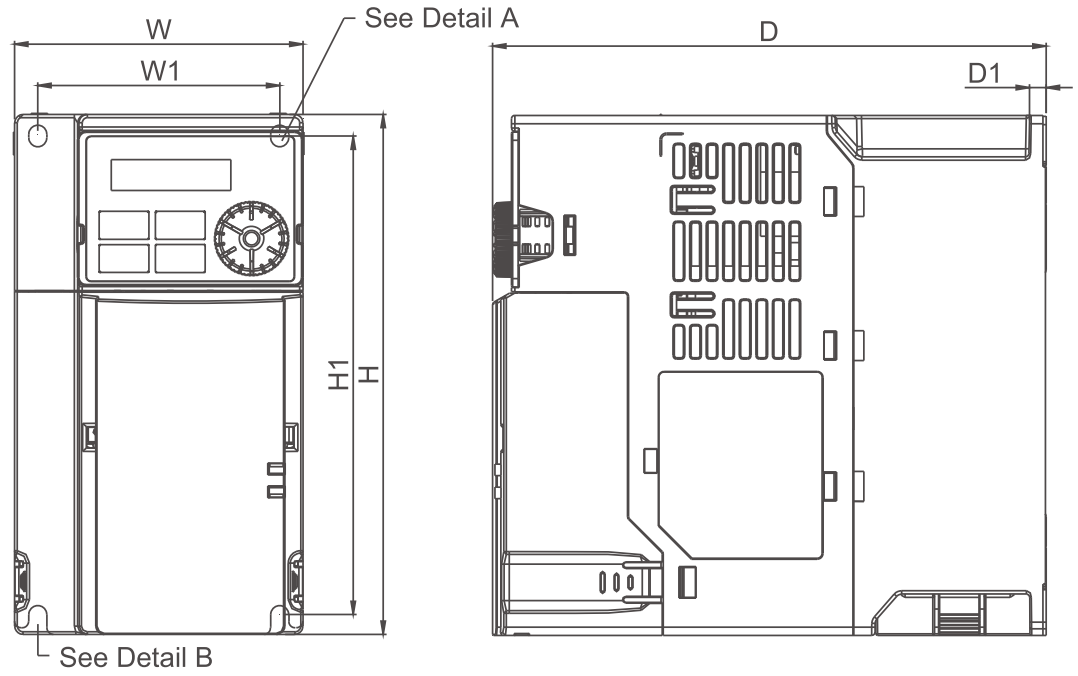


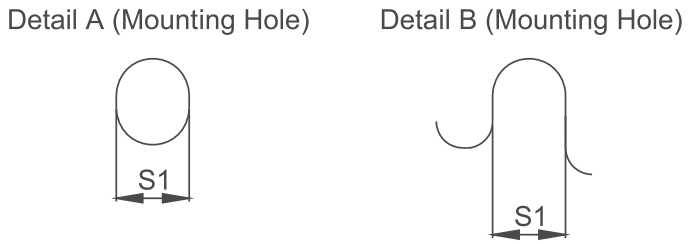
MODEL FRAME B1	FRAME B2	FRAME B3
VFD7A5MH23ANSAA VFD7A5MH23ENSAA VFD4A2MH43ANSAA VFD4A2MH43ENSAA	Standard Models: VFD5A0MH21ANSAA VFD5A0MH21ENSAA	VFD1A6MH21AFSAA VFD2A8MH21AFSAA VFD5A0MH21AFSAA VFD3A0MH43AFSAA VFD4A2MH43AFSAA

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

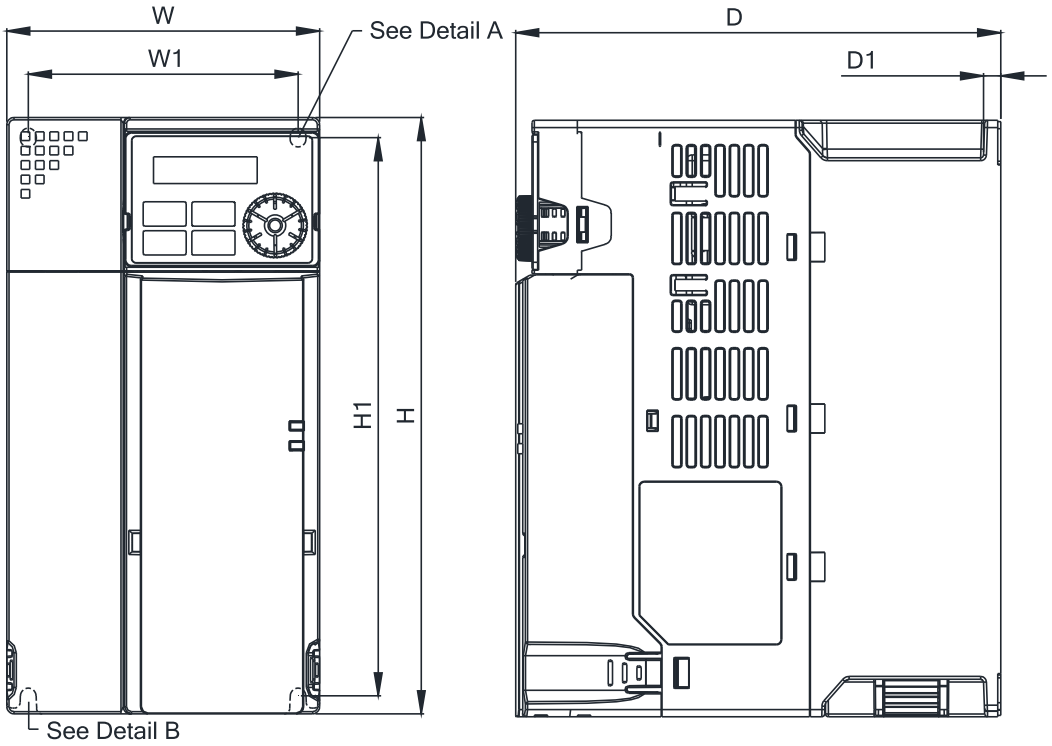




MODEL FRAME C1			FRAME C2
VFD5A0MH11ANSAA	VFD5A0MH11ENSAA		VFD7A5MH21AFSAA
VFD7A5MH21ANSAA	VFD7A5MH21ENSAA		VFD11AMH21AFSAA
VFD11AMH21ANSAA	VFD11AMH21ENSAA		VFD5A7MH43AFSAA
VFD11AMH23ANSAA	VFD11AMH23ENSAA		VFD9A0MH43AFSAA
VFD17AMH23ANSAA	VFD17AMH23ENSAA		
VFD5A7MH43ANSAA	VFD5A7MH43ENSAA		
VFD9A0MH43ANSAA	VFD9A0MH43ENSAA		

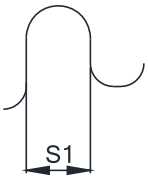
Frame		W	H	D	W1	H1	D1	S1
C1	mm	87.0	157.0	167.0	73.0	144.5	5.0	5.5
	inch	3.43	6.18	6.57	2.87	5.69	0.20	0.22
Frame		W	H	D	W1	H1	D1	S1
C2	mm	87.0	157.0	194.0	73.0	144.5	5.0	5.5
	inch	3.43	6.18	7.64	2.87	5.69	0.20	0.22

Frame D



Detail A (Mounting Hole)

Detail B (Mounting Hole)

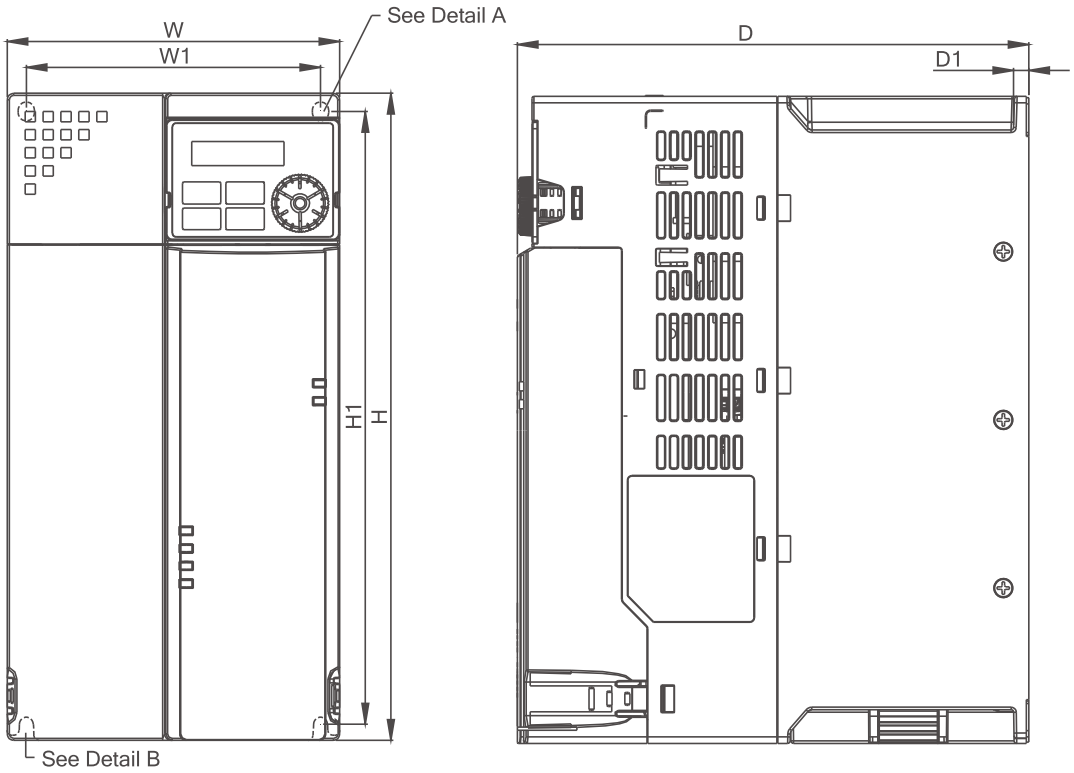


MODEL FRAME D1	FRAME D2
VFD25AMH23ANSAA VFD25AMH23ENSAA VFD13AMH43ANSAA VFD13AMH43ENSAA VFD17AMH43ANSAA VFD17AMH43ENSAA	VFD13AMH43AFSAA VFD17AMH43AFSAA

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

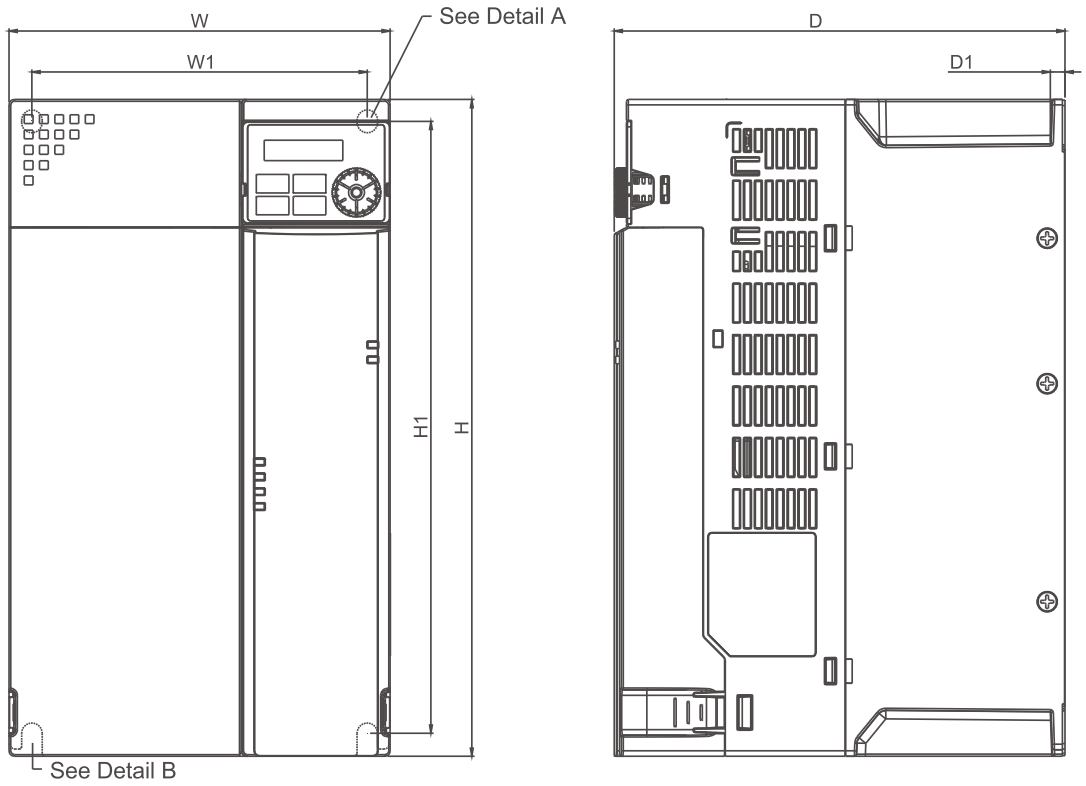
Frame E



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:	High Speed Models:
VFD65AMH23ANSAA	VFD65AMH23ANSHA
VFD65AMH23ENSAA	VFD65AMH23ENSHA
VFD38AMH43ANSAA	VFD38AMH43ANSHA
VFD38AMH43ENSAA	VFD38AMH43ENSHA
VFD45AMH43ANSAA	VFD45AMH43ANSHA
VFD45AMH43ENSAA	VFD45AMH43ENSHA

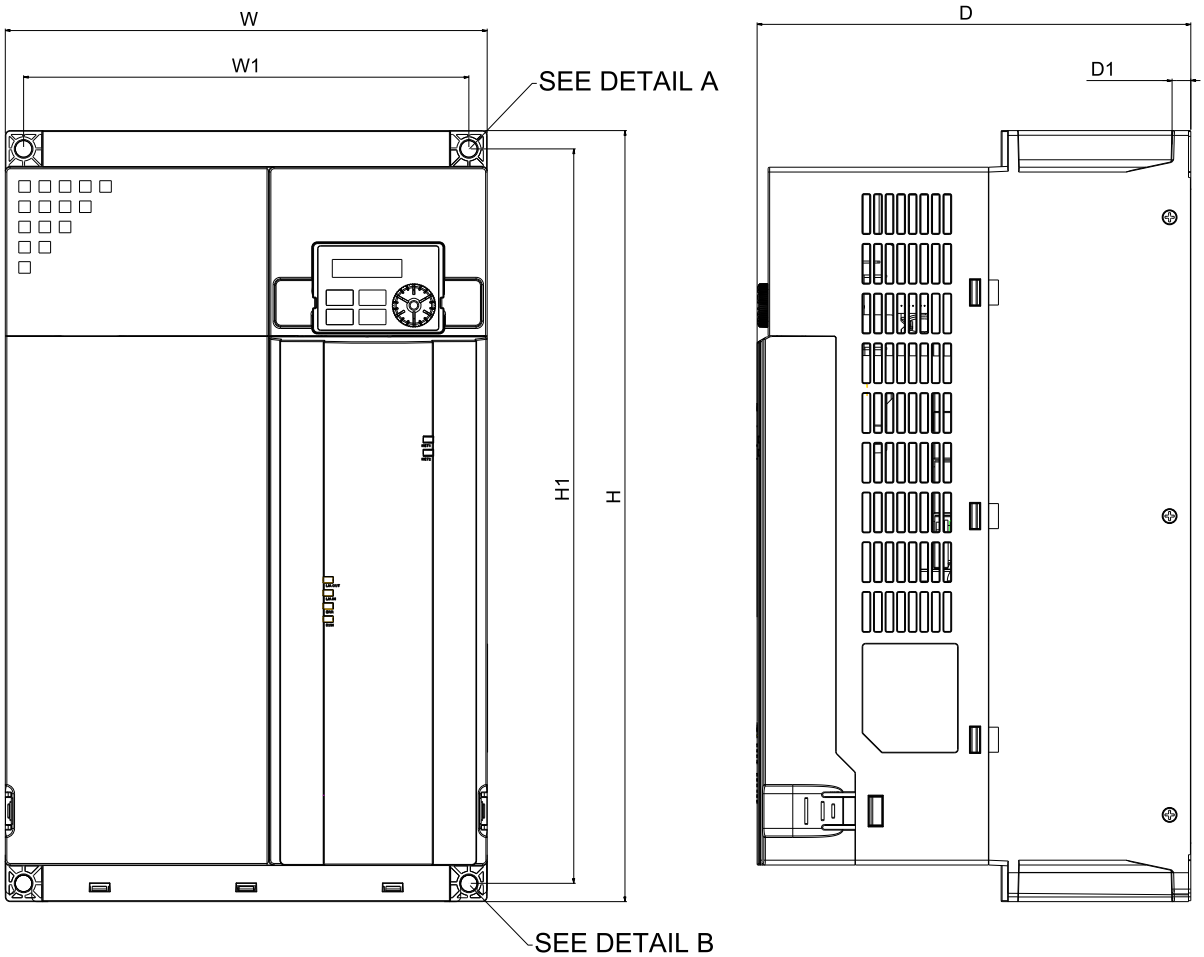
FRAME F2

Standard Models:	High Speed Models:
VFD38AMH43AFSAA	VFD38AMH43AFSHA
VFD45AMH43AFSAA	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

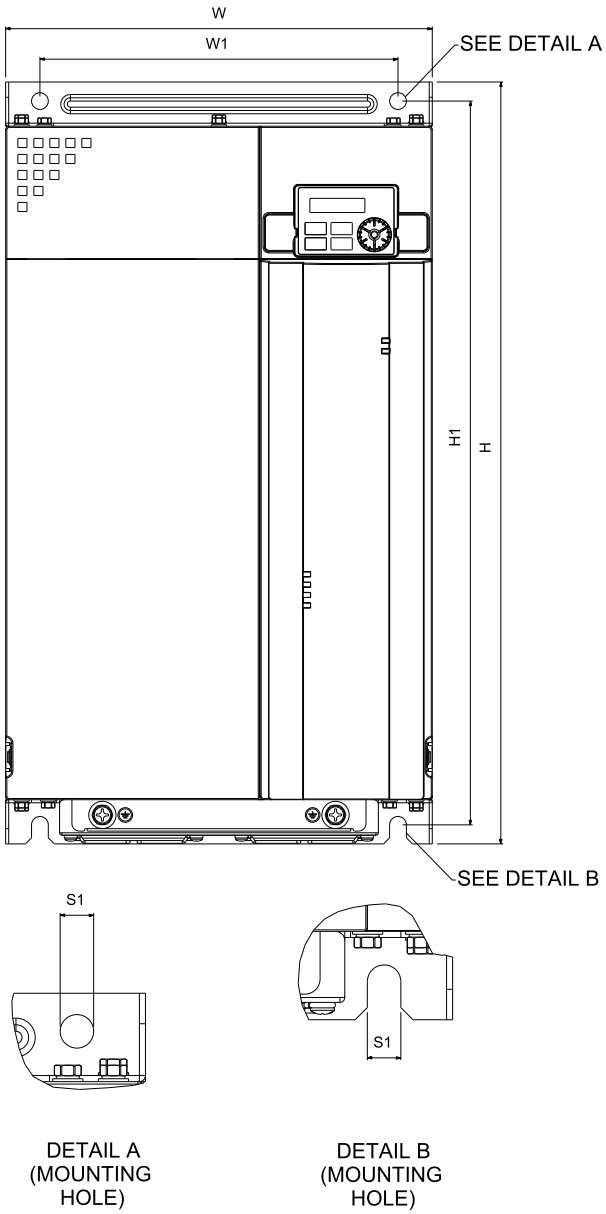
Frame G

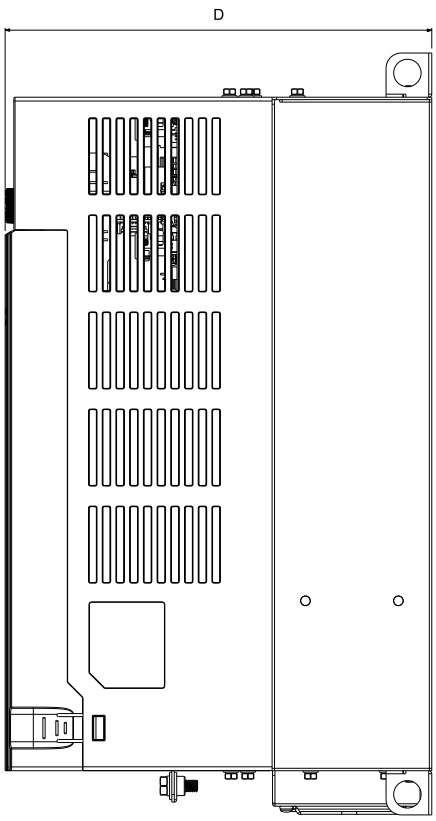


MODEL FRAME G
VFD60AMH43AFSAA
VFD60AMH43ANSAA
VFD75AMH23ANSAA
VFD90AMH23ANSAA

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





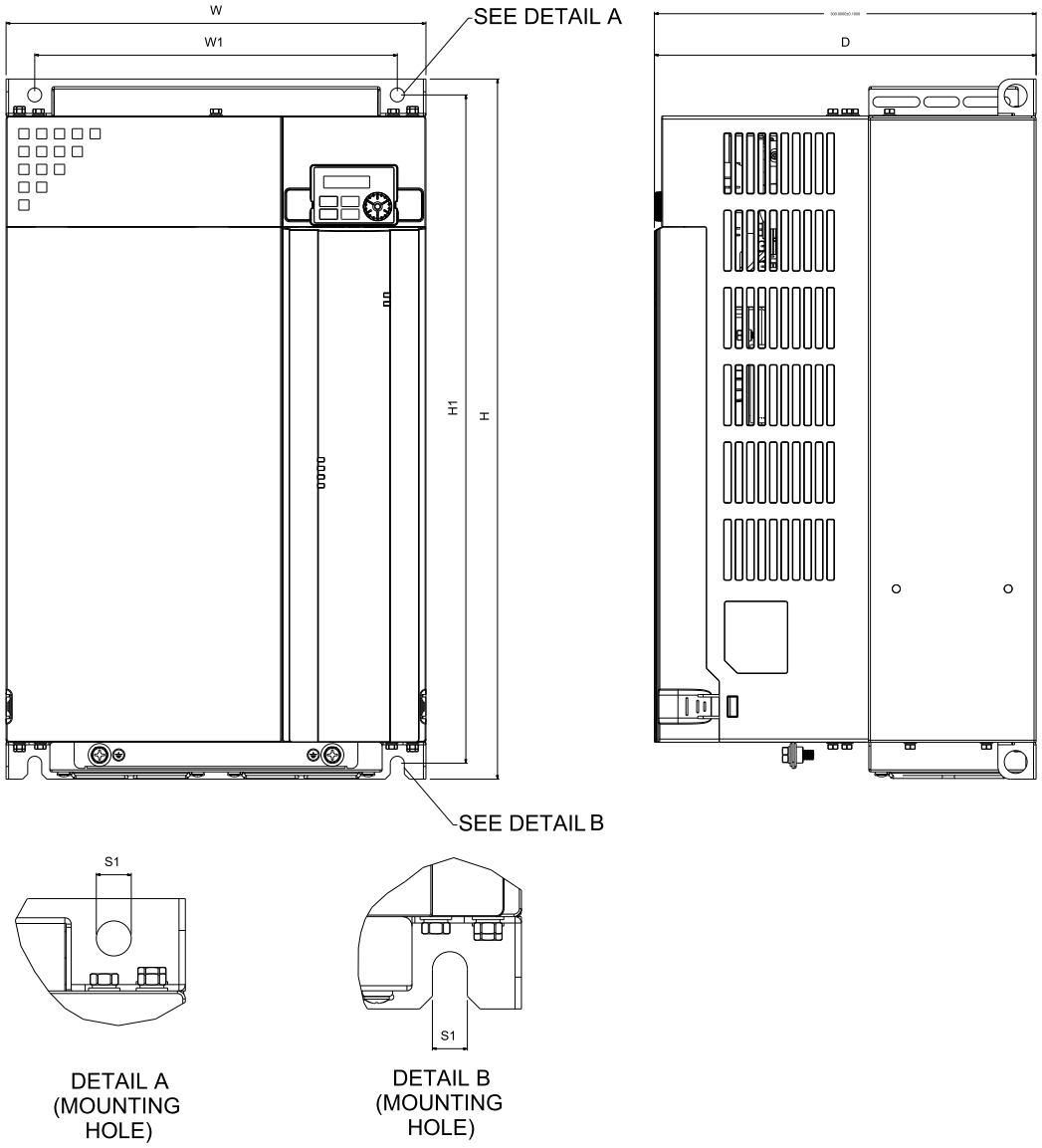
MODEL
FRAME H

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

Set by
Pr.10-00 ~ 10-02

Terminals		Description
PG1	VP	Output voltage for power: +5 V / +12 V ± 5% (use FSW3 to switch +5 V / +12 V, default +5V) Max. output current: 200 mA
	DCM	Common for power and signal
	A1, / A1 B1, / B1 Z1, / Z1	Encoder input signal (Line Driver or Open Collector) Open collector input: + 5 V ~ 24 V (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: +5 V / +12 V (Note1) 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: 5 V_{DC} Max. output current: 15 mA / 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	Earthing terminal to reduce noise; this terminal should also be grounded

PG Cards: EMM-PG01O

Set by
Pr.10-00 ~ 10-02

Terminals		Description
PG1	VP	Output voltage for power: +5 V / +12 V ± 5% (use SSW320 to switch +5 V / +12 V, the default is + 5 V) Max. output current: 200 mA
	DCM	Common for power and signal
	A1, / A1 B1, / B1 Z1, / Z1	Encoder input signal (line driver or open collector) Open collector input: +5 V ~ +12 V (Note1) 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: +5 V ~ +12 V (Note1) 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: +7 V ~ +24 V
	V-	Negative power supply input
	/AO /BO /ZO SG	PG card output signals / Division frequency function: 1 ~ 255 times Add a pull-up resistor (1.8 K Ω / 1W) to the open collector output signals to avoid signal interferences Max. Output current: 20 mA / 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	Earthing terminal to reduce noise; this terminal should also be grounded

PG Cards: EMM-PG01R

Resolver
Set by
Pr.10-00 ~ 10-02

Terminals		Description
PG1	R1- R2	Resolver output power 7 Vrms, 10 kHz
	S1, S2, S3, S4	Resolver input signal 3.5 ± 0.175 Vrms, 10 kHz
PG2	A2, / A2 B2,/B2	Pulse input signal (line driver or open collector) Open collector input : +5 V ~ +12 V (Note1) 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: 5 V_{DC} Max. output current: 50 mA / 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	Earthing terminal to reduce noise; this terminal should also be grounded

External Power Supply Card (DC 24V): 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 ± 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-BPS02 input terminal 24 V 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 ~ 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: 1.8K ~ 3.3 K Ω , 1/2 W and above

Accessories

▪ Digital I/O Card: EMM-D33A

Terminals	Description
24V, DCM	Output power: +24 V_{DC} ± 5% 200 mA, 5 W
MI10 ~ MI12	Refer to Pr. 02-26 ~ Pr. 02-28 to program the multi-function Choose SINK (NPN) / SOURCE (PNP) from SWW1 Internal power is supplied by terminal 24V: +24 V_{DC} ± 5% 200 mA, 5 W 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 μ A
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

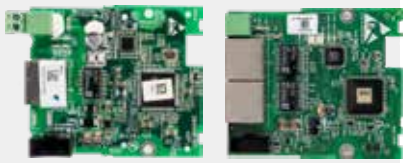
▪ Screw Specification of Option Card Terminals

Screw Specification of Option Card Terminals	Wire Gauge	Torque
EMM-PG01L	30 ~ 16 AWG (0.0509 ~ 1.31 mm^2)	2 Kg-cm [1.74 lb-in]
EMM-PG01O		
EMM-PG01R		
EMM-A22A		
EMM-D33A		
CMM-EIP02		
CMM-EIP03		
CMM-EC02		
CMM-PD02		
CMM-DN02		

Screw Specification of Option Card Terminals	Wire Gauge	Torque
EMM-BPS02	30 ~ 16 AWG (0.0509 ~ 1.31 mm^2)	8 Kg-cm [6.94 lb-in]
EMM-R2CA	24 ~ 12 AWG (0.205 ~ 3.31 mm^2)	5 Kg-cm [4.34 lb-in]
EMM-R3AA		

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	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		

▪ 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	100 m / 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

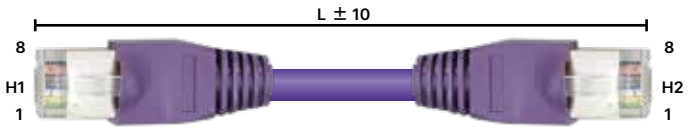
Interface	RJ-45	Transmission Cable	Category 5e shielding 100 M
Number of Ports	2	Transmission Speed	100 Mbps
Transmission Method	IEEE 802.3, IEEE 802.3u	Network Protocol	EtherCAT

▪ Standard Fieldbus Cables

Delta Cables	Part Number	Description	Length
CANopen Cable	UC-CmC003-01A	CANopen cable, RJ45 connector	0.3 m
	UC-CmC005-01A		0.5 m
	UC-CmC010-01A		1 m
	UC-CmC015-01A		1.5 m
	UC-CmC020-01A		2 m
	UC-CmC030-01A		3 m
	UC-CmC050-01A		5 m
	UC-CmC100-01A		10 m
	UC-CmC200-01A		20 m
DeviceNet Cable	UC-DN01Z-01A	DeviceNet cable	305 m
	UC-DN01Z-02A		305 m
EtherNet/EtherCAT Cable	UC-EmC003-02A	EtherNet/EtherCAT cable, Shielding	0.3 m
	UC-EmC005-02A		0.5 m
	UC-EmC010-02A		1 m
	UC-EmC020-02A		2 m
	UC-EmC050-02A		5 m
	UC-EmC100-02A		10 m
	UC-EmC200-02A		20 m
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

VFD 1A5 MH 43 A N S A A

Variable Frequency Drive

Rated Output Current
Under Heavy Duty Mode (150% 60 seconds)

Series Name
MH: High Performance MH300

Input Voltage
11 : 115 V single-phase
21 : 230 V single-phase
23 : 230 V 3-phase
43 : 460 V 3-phase

IP Level
A : IP20
E : IP40 (Anti-dust)

EMC Filter
N : No Function
F : Built-in EMC Filter

Safe Torque Off (STO)
S: Integrated STO

Model Type
A: Standard Model
N: No Cooling Fan
*Only for MH300 1HP(0.75kW) model (230V 3-phase / 460V 3-phase)

Version

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 ~ 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]					
460 V / 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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11

Standard Compact Drive MS300 Series

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

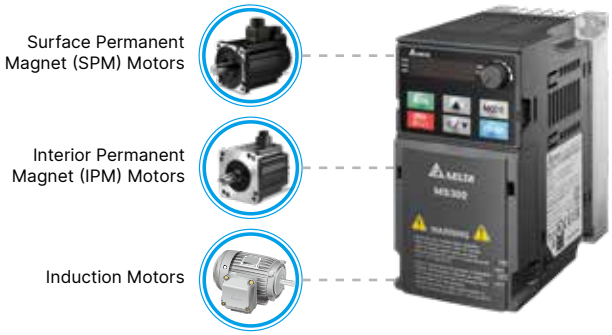
Supports side-by-side installation with operating temperatures of -20˚C ~ 40˚C; enables highly flexible and highly efficient installation

Substantial savings in space!

Outstanding Drive Performance

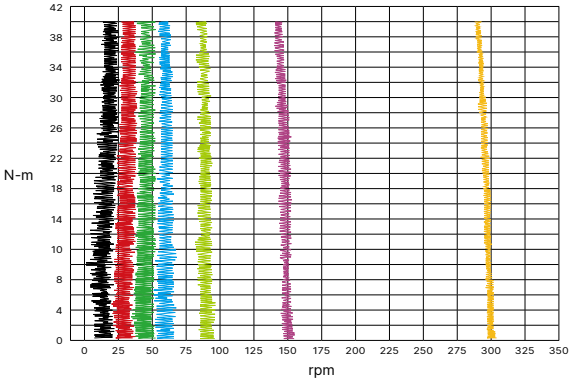
Supports IM and PM Motors

Supports 4 independent induction motor control parameter sets



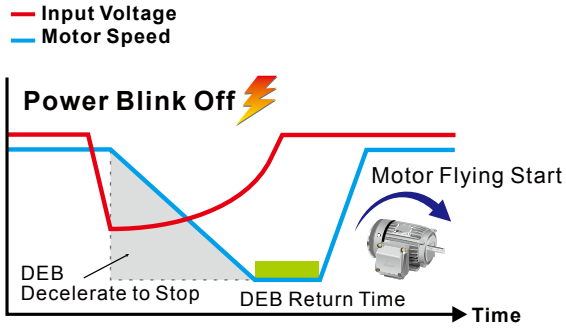
High Starting Torque

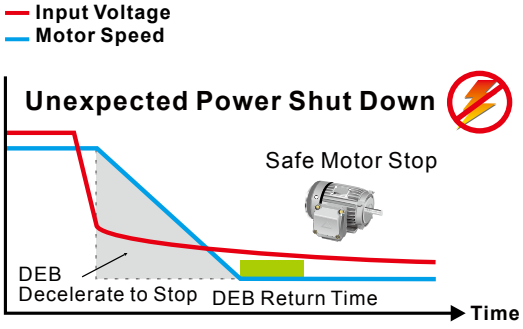
Delivers 200% high starting torque with a low speed control of 0.5 Hz and provides outstanding machine stability; suitable for dynamic loading applications



Deceleration Energy Backup (DEB)

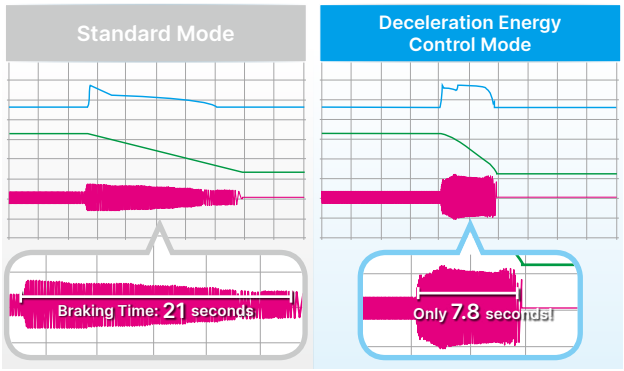
Controls the motor deceleration to a stop when an unexpected power shut-down occurs to prevent mechanical damage. When power resumes, the motor will accelerate to its previous speed





Enhanced Braking Capability

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

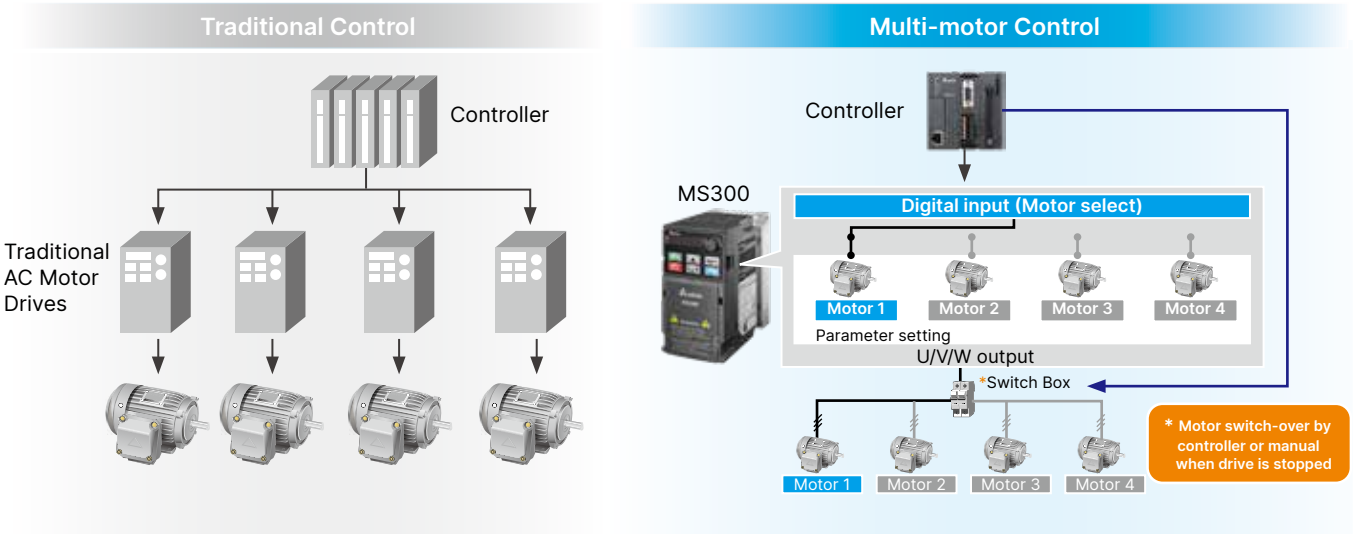


* Actual deceleration performance varies upon different system loads

Strong System Support

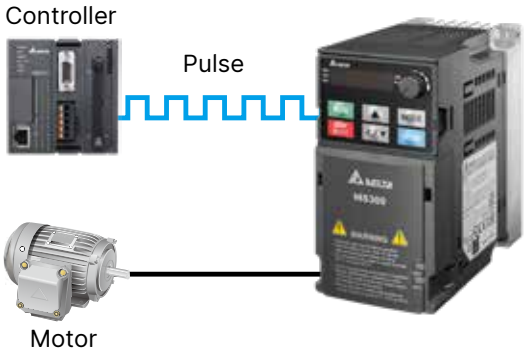
Multi-motor Control

Supports 4 induction motors switching control



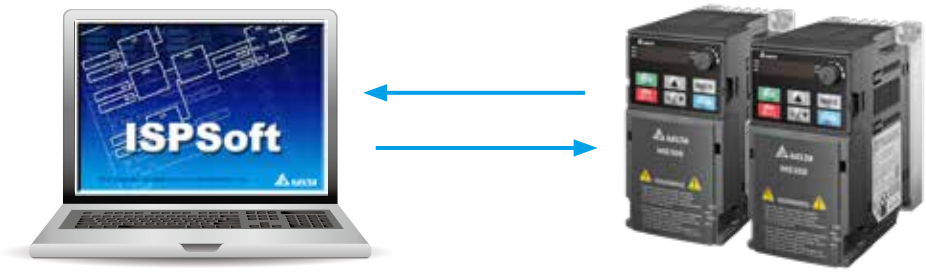
Pulse Input

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



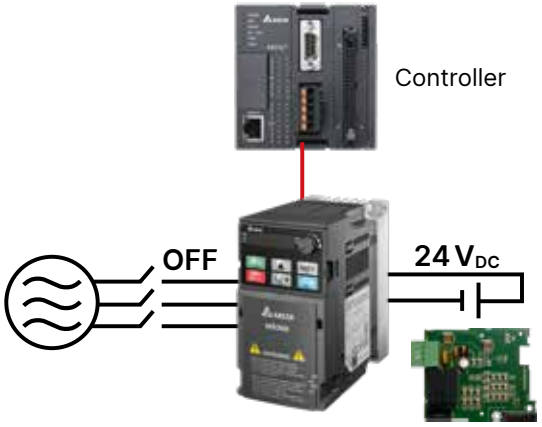
High-Speed Applications

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

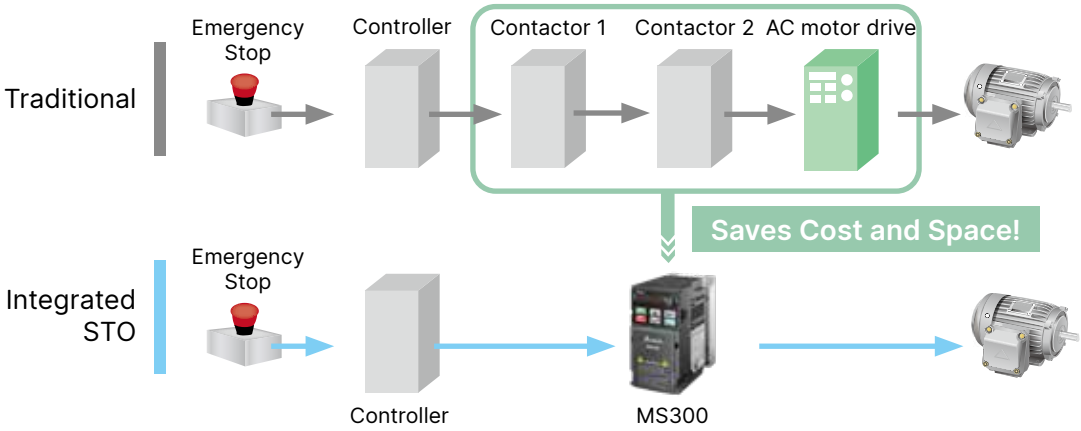
Communication	MS300
Modbus	Built-in
PROFIBUS DP	Optional
DeviceNet	Optional
Modbus TCP	Optional
EtherNet/IP	Optional
CANopen	Optional
EtherCAT	Optional

Stable, Safe and Reliable

Safety Standard

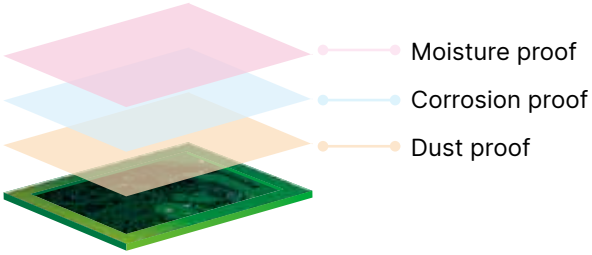
Integrated Safe Torque Off (STO), compliance with:

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



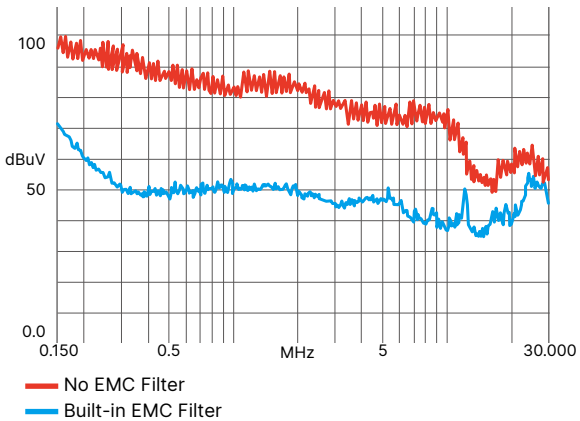
PCB Coating

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



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

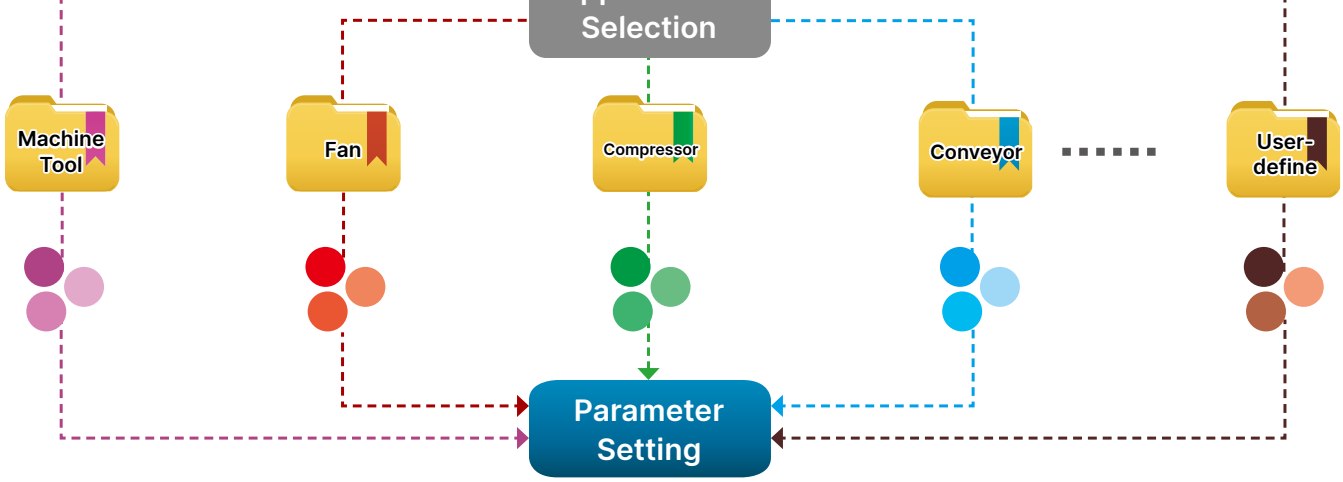
IP66 Models

IIP66/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)

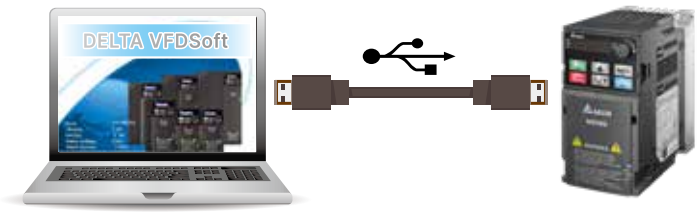
Simplifies the parameter setting process by grouping the parameters for different applications to use



Built-in USB Port

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

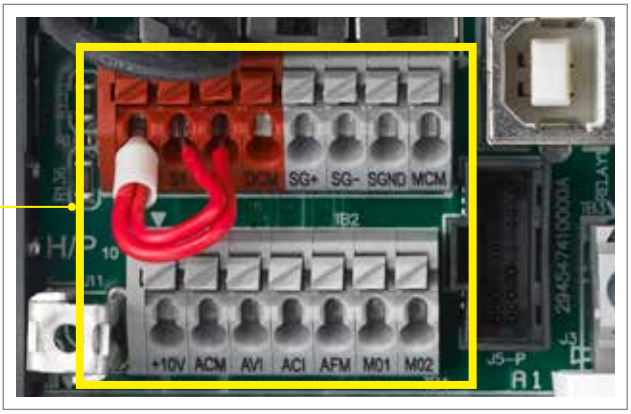
- No need of USB or RS-485 connectors
- Supports offline (drive power off) parameter setting/copying and system update



Screwless Wiring of Control Terminal

Spring clamp terminal blocks provide fast and easy wiring

No special tools needed, time-saving

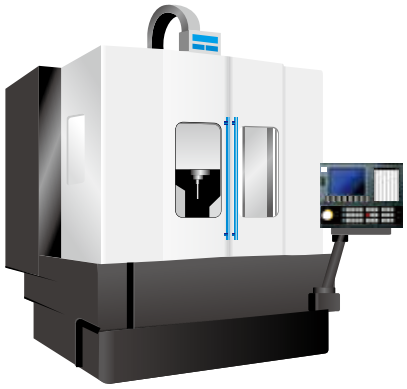


Wide Range of Applications

Machine Tools

Features and Benefits

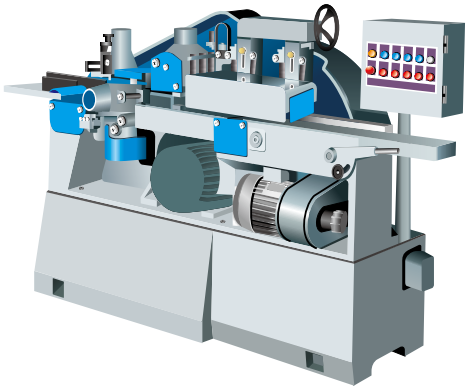
- High-speed models support main spindle 1500Hz frequency output; suitable for complex and high precision processing applications
- Timely acceleration/deceleration control to improve machinery operation efficiency
- Built-in brake chopper to save on purchasing cost
- Built-in PLC capacity for flexible 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

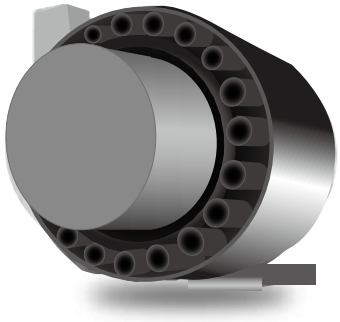
- Timely acceleration/deceleration control improves machinery operation efficiency
- Built-in STO function ensures operator safety and effectively reduces accident risk
- Built-in PLC capacity saves on purchasing cost
- Built-in EMC filter effectively reduces electromagnetic interference
- Compact in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



Automatic Tool Changers (ATC)

Features and Benefits

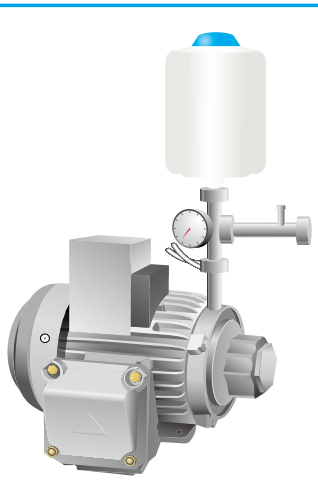
- Compact design of drive provides more cabinet space for other devices to use
- Quick start and timely acceleration/deceleration control function effectively shortens tool changing time and improves system efficiency and productivity
- Simple structure is easy to install and maintain
- Built-in STO 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 resister



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 ~ 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)			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_ _	
			M N	M F	M N	M F			M N	M F
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 / 60 Hz							
	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_ _	
			M N	M F	M N	M F
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 380 V ~ 480 V, 50 / 60 Hz			
	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.**

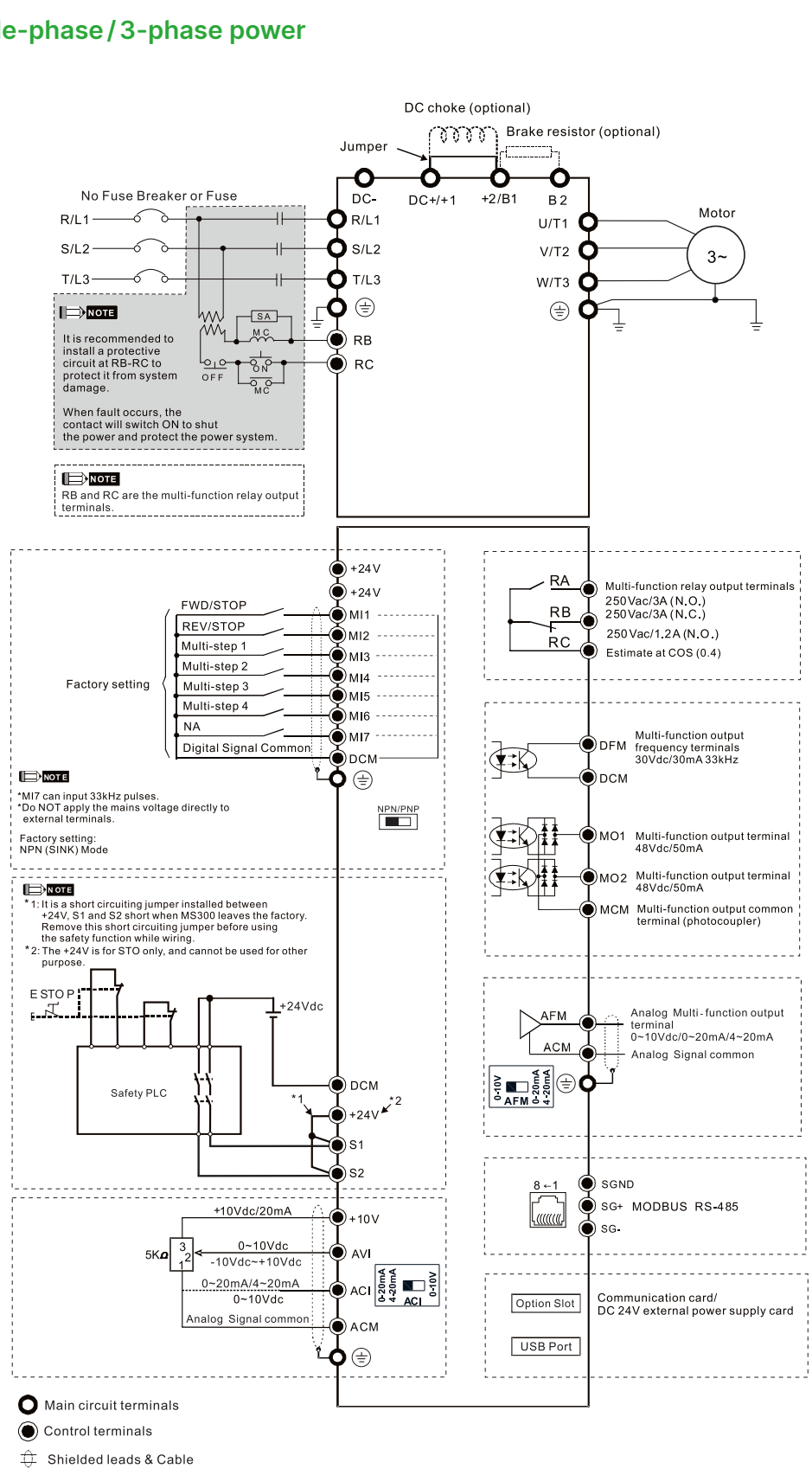
MS300 Operating Environment

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.

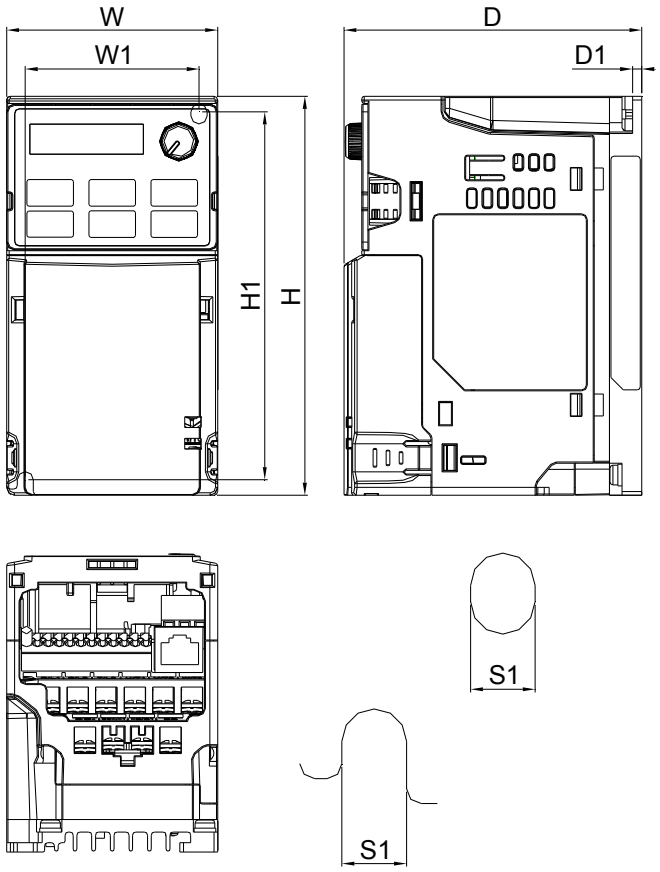
Wiring

Input: Single-phase / 3-phase power



Dimensions - IP20 / IP40 Models

Frame A



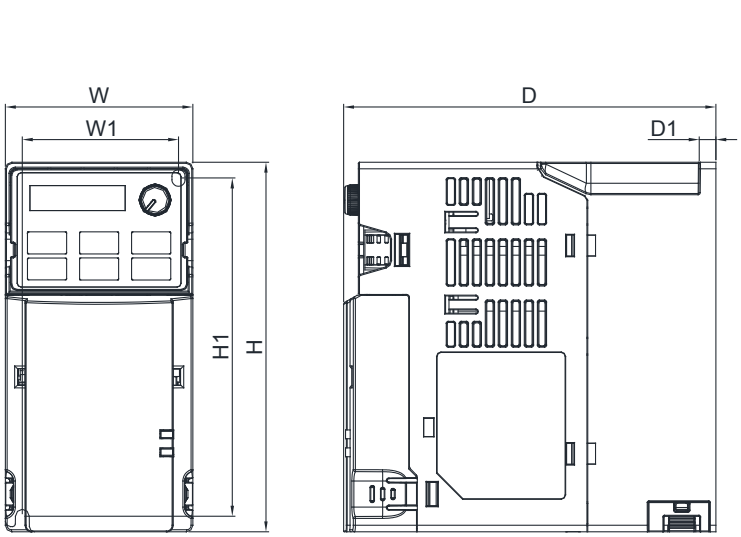
Mounting hole

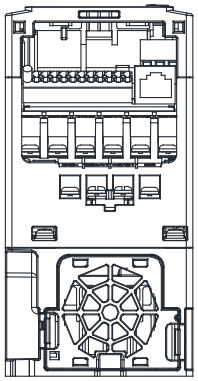
MODEL FRAME A1	FRAME A2	FRAME A3	FRAME A4	FRAME A5
VFD1A6MS11ANSAA VFD1A6MS11ENSAA VFD1A6MS21ANSAA VFD1A6MS21ENSAA VFD1A6MS23ANSAA VFD1A6MS23ENSAA	VFD2A8MS23ANSAA VFD2A8MS23ENSAA	VFD2A5MS11ANSAA VFD2A5MS11ENSAA VFD2A8MS21ANSAA VFD2A8MS21ENSAA	VFD1A5MS43ANSAA VFD1A5MS43ENSAA	VFD4A8MS23ANSAA VFD4A8MS23ENSAA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

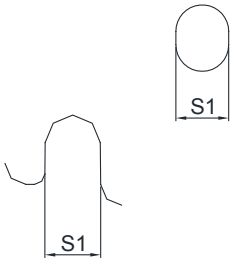
Frame		W	H	D	W1	H1	D1	S1
A1	mm	68.0	128.0	96.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	3.78	2.20	4.65	0.12	0.20
Frame		**W**	**H**	**D**	**W1**	**H1**	**D1**	**S1**
A2	mm	68.0	128.0	110.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	4.33	2.20	4.65	0.12	0.20
Frame		**W**	**H**	**D**	**W1**	**H1**	**D1**	**S1**
A3	mm	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
A4	mm	68.0	128.0	129.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	5.08	2.20	4.65	0.12	0.20
Frame		**W**	**H**	**D**	**W1**	**H1**	**D1**	**S1**
A5	mm	68.0	128.0	143.0	56.0	118.0	3.0	5.2
	inch	2.68	5.04	5.63	2.20	4.65	0.12	0.20

Frame B







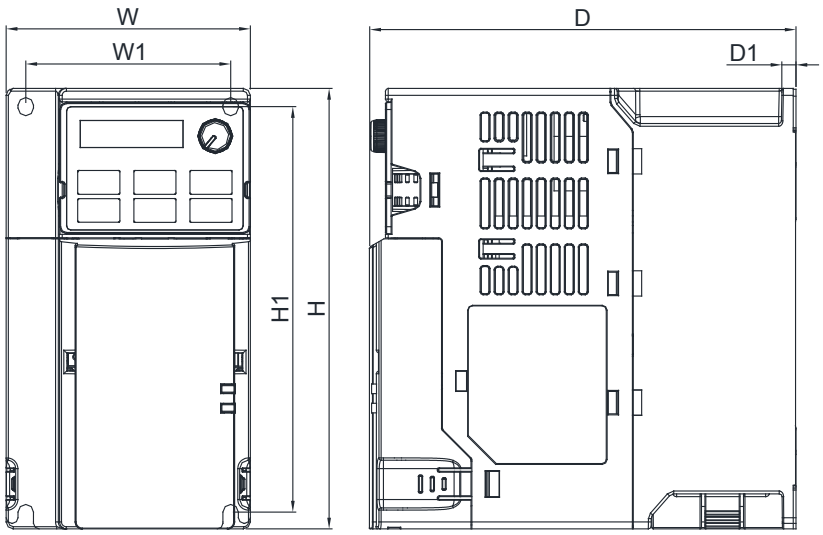
Mounting hole

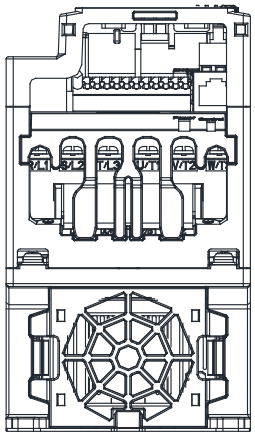
MODEL FRAME B1		FRAME B2	FRAME B3	
Standard Models: VFD7A5MS23ANSAA VFD7A5MS23ENSAA VFD4A2MS43ANSAA VFD4A2MS43ENSAA VFD3A0MS53ANSAA	High Speed Models: VFD7A5MS23ANSHA VFD7A5MS23ENSHA VFD4A2MS43ANSHA VFD4A2MS43ENSHA	Standard Models: VFD4A8MS21ANSAA VFD4A8MS21ENSAA	Standard Models: VFD1A6MS21AFSAA VFD2A8MS21AFSAA VFD4A8MS21AFSAA VFD1A5MS43AFSAA VFD2A7MS43AFSAA VFD4A2MS43AFSAA	High Speed Models: VFD4A2MS43AFSHA

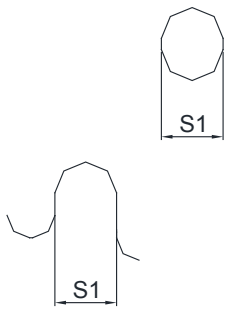
Frame		W	H	D	W1	H1	D1	S1
B1	mm	72.0	142.0	143.0	60.0	130.0	6.4	5.2
	inch	2.83	5.59	5.63	2.36	5.12	0.25	0.20
Frame		W	H	D	W1	H1	D1	S1
B2	mm	72.0	142.0	143.0	60.0	130.0	3.0	5.2
	inch	2.83	5.59	5.63	2.36	5.12	0.12	0.20
Frame		W	H	D	W1	H1	D1	S1
B3	mm	72.0	142.0	159.0	60.0	130.0	4.3	5.2
	inch	2.83	5.59	6.26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

Dimensions - IP20 / IP40 Models

Frame C





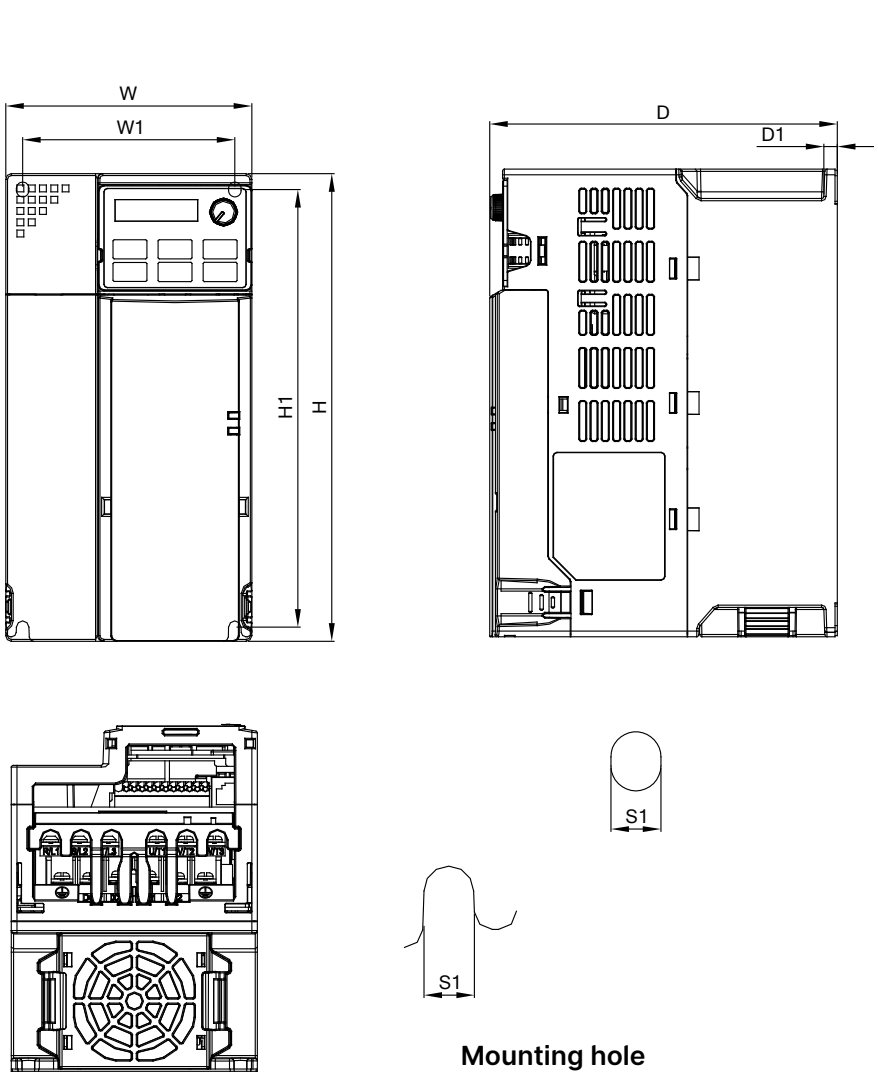


Mounting hole

MODEL FRAME C1				FRAME C2	
Standard Models:		High Speed Models:		Standard Models:	High Speed Models:
VFD4A8MS11ANSAA	VFD4A8MS11ENSAA	VFD7A5MS21ANSHA	VFD7A5MS21ENSHA	VFD7A5MS21AFSAA	VFD7A5MS21AFSHA
VFD7A5MS21ANSAA	VFD7A5MS21ENSAA	VFD11AMS21ANSHA	VFD11AMS21ENSHA	VFD11AMS21AFSAA	VFD11AMS21AFSHA
VFD11AMS21ANSAA	VFD11AMS21ENSAA	VFD11AMS23ANSHA	VFD11AMS23ENSHA	VFD5A5MS43AFSAA	VFD5A5MS43AFSHA
VFD11AMS23ANSAA	VFD11AMS23ENSAA	VFD17AMS23ANSHA	VFD17AMS23ENSHA	VFD9A0MS43AFSAA	VFD9A0MS43AFSHA
VFD17AMS23ANSAA	VFD17AMS23ENSAA	VFD5A5MS43ANSHA	VFD5A5MS43ENSHA		
VFD5A5MS43ANSAA	VFD5A5MS43ENSAA	VFD9A0MS43ANSHA	VFD9A0MS43ENSHA		
VFD9A0MS43ANSAA	VFD9A0MS43ENSAA				
VFD4A2MS53ANSAA	VFD6A6MS53ANSAA				

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



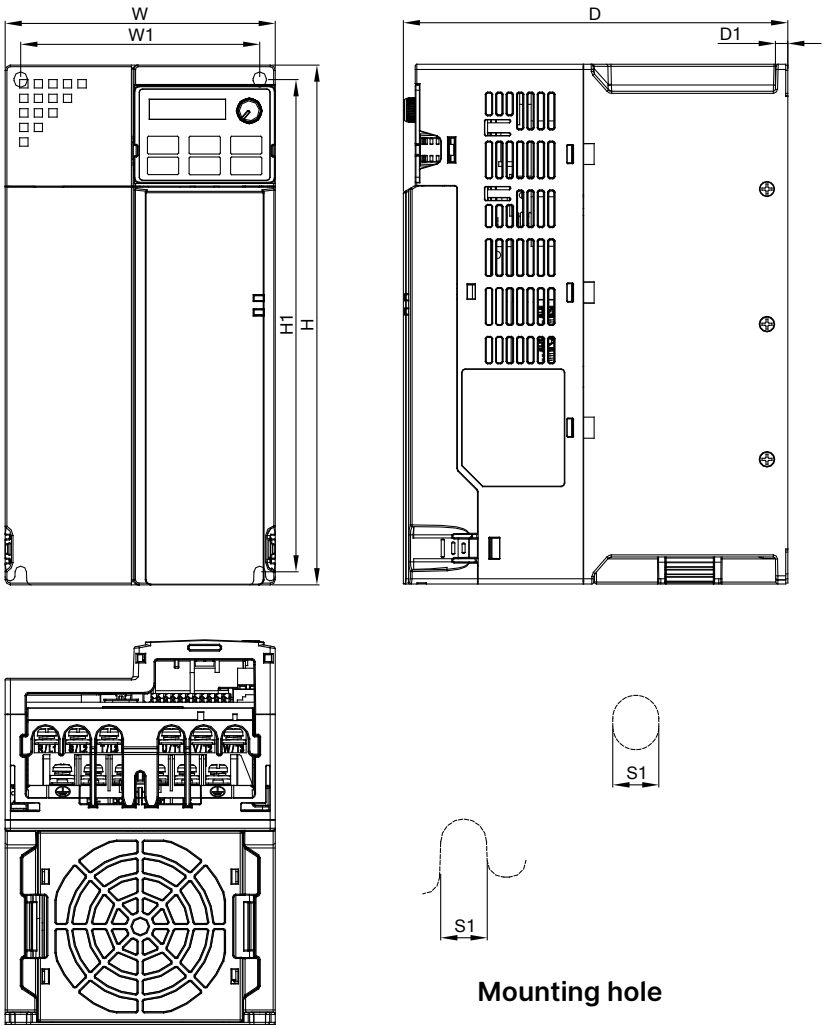
Mounting hole

MODEL FRAME D1		FRAME D2	
Standard Models:	High Speed Models:	Standard Models:	High Speed Models:
VFD25AMS23ANSAA	VFD25AMS23ANSHA	VFD13AMS43AFSAA	VFD13AMS43AFSHA
VFD25AMS23ENSAA	VFD25AMS23ENSHA	VFD17AMS43AFSAA	VFD17AMS43AFSHA
VFD13AMS43ANSAA	VFD13AMS43ANSHA		
VFD13AMS43ENSAA	VFD13AMS43ENSHA		
VFD17AMS43ANSAA	VFD17AMS43ANSHA		
VFD17AMS43ENSAA	VFD17AMS43ENSHA		
VFD9A9MS53ANSAA	VFD12AMS53ANSAA		

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

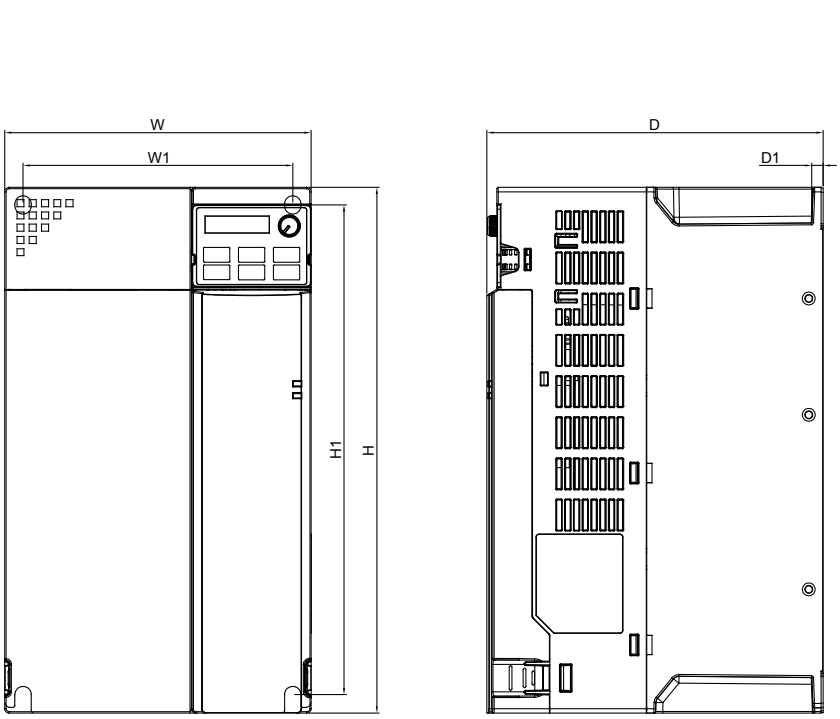


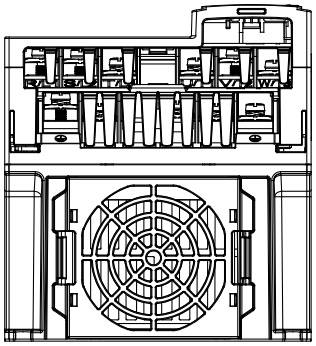
Mounting hole

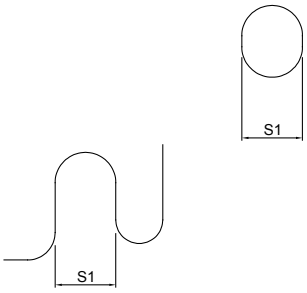
MODEL FRAME E1		FRAME E2	
Standard Models:	High Speed Models:	Standard Models:	High Speed Models:
VFD33AMS23ANSAA	VFD33AMS23ANSHA	VFD25AMS43AFSAA	VFD25AMS43AFSHA
VFD33AMS23ENSAA	VFD33AMS23ENSHA	VFD32AMS43AFSAA	VFD32AMS43AFSHA
VFD49AMS23ANSAA	VFD49AMS23ANSHA		
VFD49AMS23ENSAA	VFD49AMS23ENSHA		
VFD25AMS43ANSAA	VFD25AMS43ANSHA		
VFD25AMS43ENSAA	VFD25AMS43ENSHA		
VFD32AMS43ANSAA	VFD32AMS43ANSHA		
VFD32AMS43ENSAA	VFD32AMS43ENSHA		

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







Mounting hole

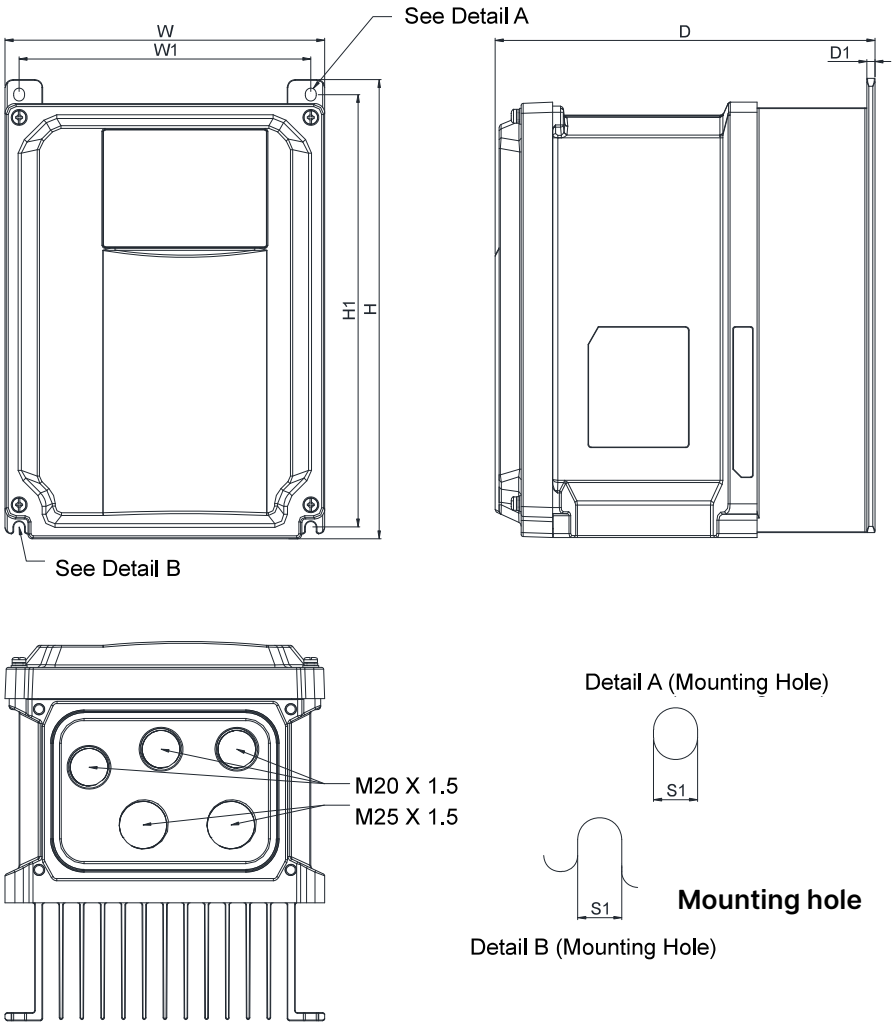
MODEL

FRAME F1		FRAME F2	
Standard Models:	High Speed Models:	Standard Models:	High Speed Models:
VFD65AMS23ANSAA	VFD65AMS23ANSHA	VFD38AMS43AFSAA	VFD38AMS43AFSHA
VFD65AMS23ENSAA	VFD65AMS23ENSHA	VFD45AMS43AFSAA	VFD45AMS43AFSHA
VFD38AMS43ANSAA	VFD38AMS43ANSHA		
VFD38AMS43ENSAA	VFD38AMS43ENSHA		
VFD45AMS43ANSAA	VFD45AMS43ANSHA		
VFD45AMS43ENSAA	VFD45AMS43ENSHA		

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

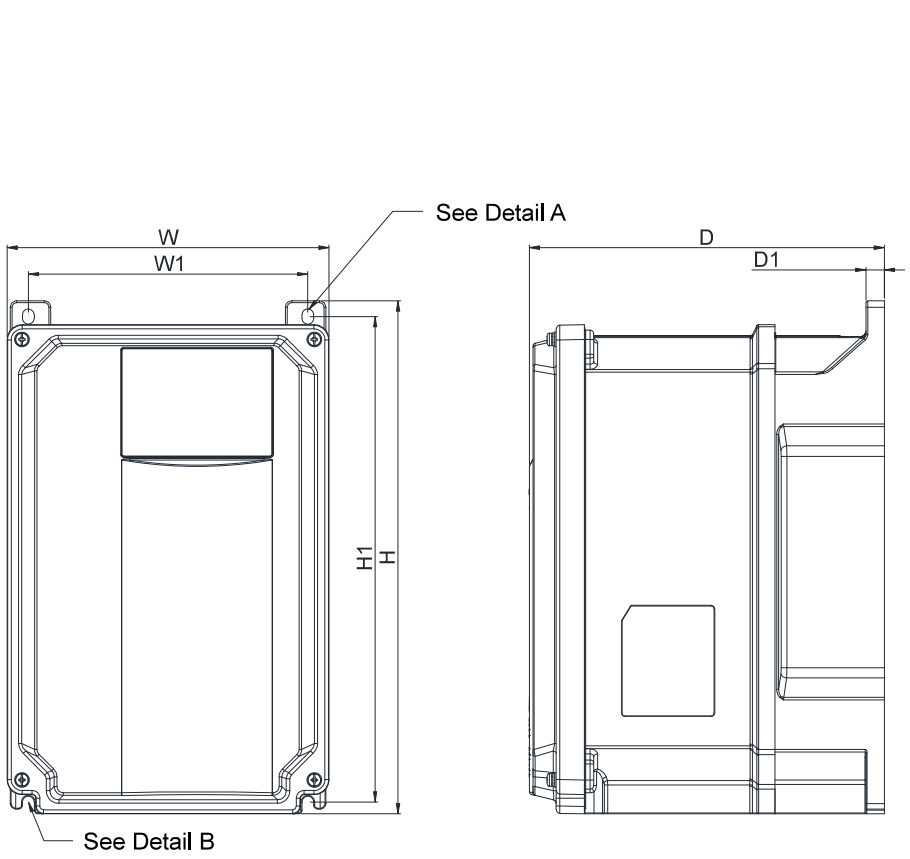
Frame A



MODEL FRAME A1		FRAME A2	FRAME A3
VFD2A8MS21MNSAA	VFD2A8MS23MNSAA	VFD7A5MS21MNSAA	VFD5A5MS43MNSAA
VFD1A5MS43MFSAA	VFD4A8MS21MFSAA	VFD7A5MS23MNSAA	
VFD2A7MS43MNSAA	VFD1A5MS43MNSAA	VFD4A2MS43MNSAA	
VFD2A8MS21MFSAA	VFD4A8MS23MNSAA	VFD4A2MS43MFSAA	
VFD4A8MS21MNSAA			
VFD2A7MS43MFSAA			

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



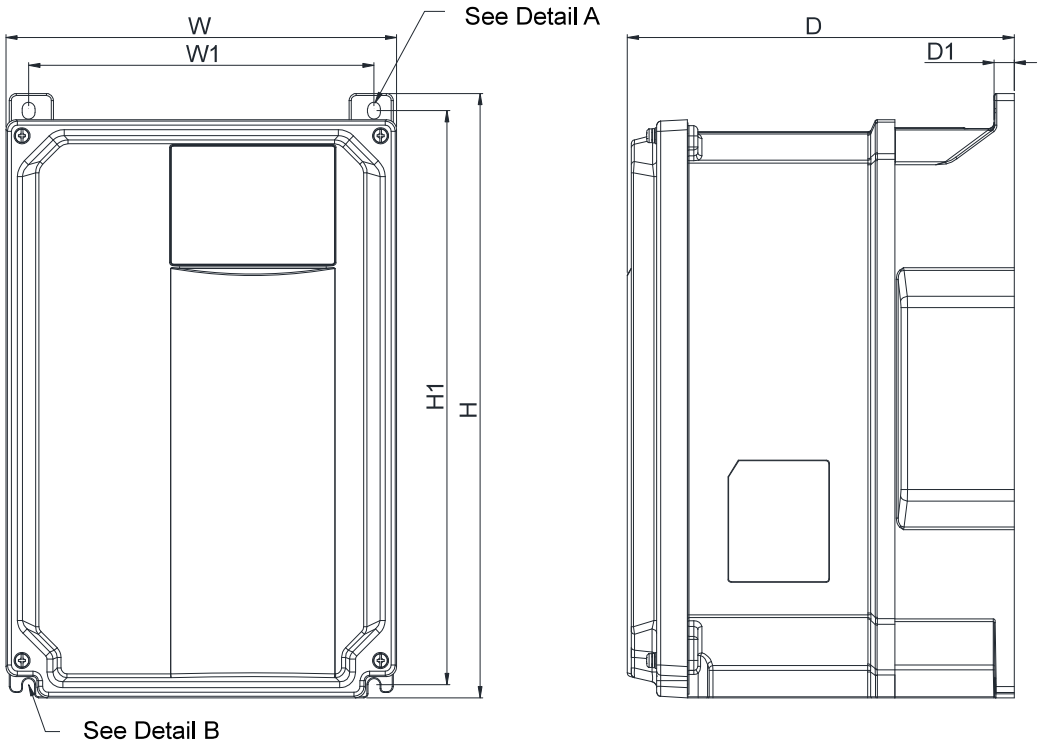
MODEL
FRAME B

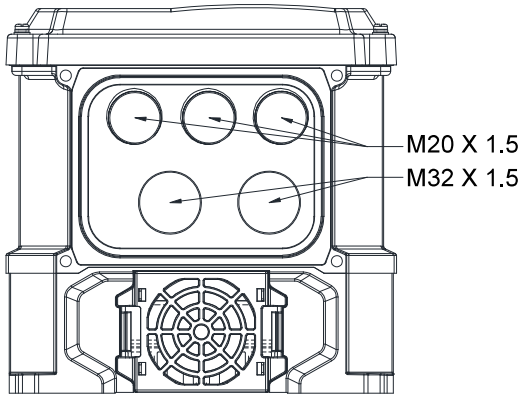
VFD7A5MS21MFSAA	VFD11AMS21MNSAA	VFD11AMS21MFSAA	VFD11AMS23MNSAA
VFD5A5MS43MFSAA	VFD17AMS23MNSAA	VFD9A0MS43MNSAA	VFD9A0MS43MFSAA

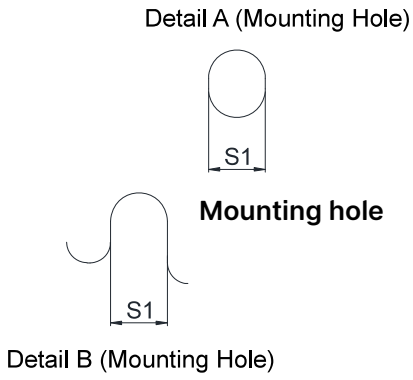
Frame		W	H	D	W1	H1	D1	S1
B	mm	175.0	280.0	193.0	152.0	266.0	10	6.4
	inch	6.89	11.02	7.60	5.98	10.43	0.39	0.25

Dimensions - IP66 / NEMA 4X Models

Frame C







MODEL
FRAME C

VFD13AMS43MNSAA VFD13AMS43MFSAA VFD25AMS23MNSAA VFD17AMS43MNSAA
VFD17AMS43MFSAA

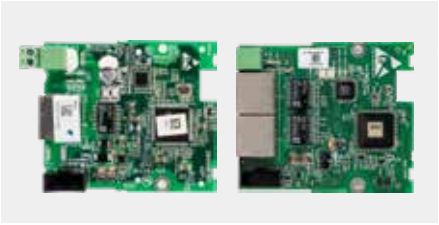
Frame		W	H	D	W1	H1	D1	S1
C	mm	195.0	300.0	193.0	172.4	285.0	10	6.4
	inch	7.68	11.81	7.606	6.79	11.22	0.39	0.25

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	100 Mbps
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 ± 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 oder 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	0.3 m
	UC-CMC005-01A	CANopen cable, RJ45 connector	0.5 m
	UC-CMC010-01A	CANopen cable, RJ45 connector	1 m
	UC-CMC015-01A	CANopen cable, RJ45 connector	1.5 m
	UC-CMC020-01A	CANopen cable, RJ45 connector	2 m
	UC-CMC030-01A	CANopen cable, RJ45 connector	3 m
	UC-CMC050-01A	CANopen cable, RJ45 connector	5 m
	UC-CMC100-01A	CANopen cable, RJ45 connector	10 m
	UC-CMC200-01A	CANopen cable, RJ45 connector	20 m
DeviceNet Cable	UC-DN01Z-01A	DeviceNet cable	305 m
	UC-DN01Z-02A	DeviceNet cable	305 m
EtherNet/EtherCAT Cable	UC-EMC003-02A	EtherNet/EtherCAT cable, Shielding	0.3 m
	UC-EMC005-02A	EtherNet/EtherCAT cable, Shielding	0.5 m
	UC-EMC010-02A	EtherNet/EtherCAT cable, Shielding	1 m
	UC-EMC020-02A	EtherNet/EtherCAT cable, Shielding	2 m
	UC-EMC050-02A	EtherNet/EtherCAT cable, Shielding	5 m
	UC-EMC100-02A	EtherNet/EtherCAT cable, Shielding	10 m
	UC-EMC200-02A	EtherNet/EtherCAT cable, Shielding	20 m
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	305 m

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: 115 V single-phase
21: 230 V single-phase
23: 230 V 3-phase
43: 460 V 3-phase
53: 575V 3-phase*

IP Level
A: IP20
E: IP40 (Anti-dust)
M : IP66/NEMA 4X

EMC Filter
N: None
F: Built-in EMC Filter

Safe Torque Off (STO)
S: Integrated STO

Model Type
A: Standard Model
H: High Speed Model
(IP66 models not supported)

Version

*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
230 V / 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	-
460 V / 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	-


0572

Basic Compact Drive ME300 Series

Models Overview

Hardware Design
Side-by-side Installation
Standard Models

Outstanding Drive Performance

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

Strong System Support

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

Stable, Safe and Reliable

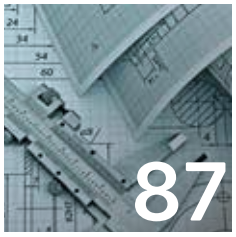
Safe Torque Off
PCB Coating
NEMA1 Kit (Optional)
Built-in EMC Filter

Easy Set Up

Application Groups (Macro)
Screwless Wiring of Control Terminal

Wide Range of Applications

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



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

Size reduction *
60%

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	

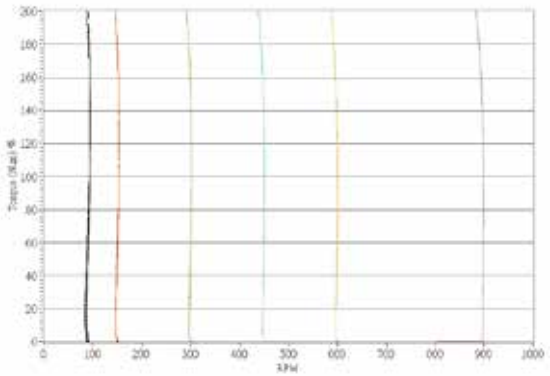
Outstanding Drive Performance

Supports IM and PM Motors

Supports 2 independent induction motor control parameter sets

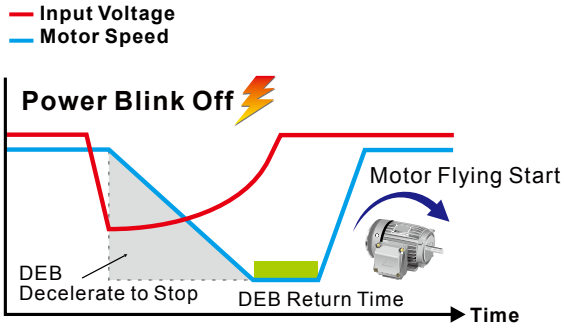
High Starting Torque

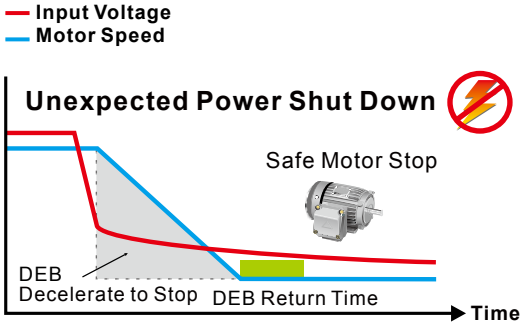
Delivers 200% high starting torque with a low speed control of 3Hz. This feature provides outstanding machine stability and is suitable for dynamic loading applications



Deceleration Energy Backup (DEB)

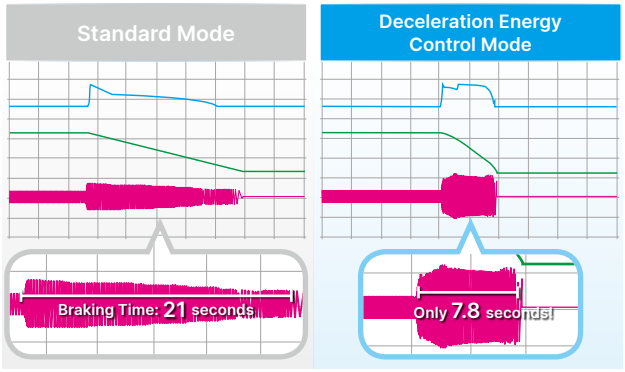
Controls the motor deceleration to a stop when an unexpected power shut-down occurs to prevent mechanical damage. When power resumes, the motor will accelerate to its previous speed





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

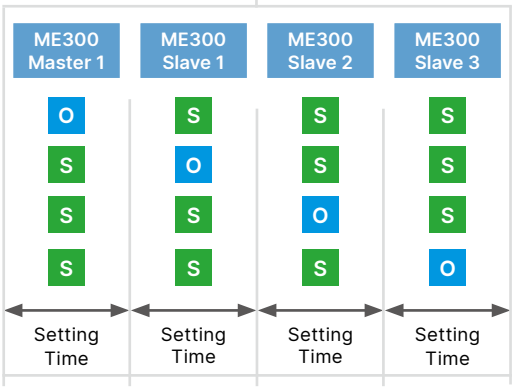
- Sleep Mode & Leakage Detection: When the system is at constant pressure, the ME300 will enter / stay in sleep mode to prevent frequent starting and stopping (Proper parameter settings required)
- Dry-run Detection: When the water supply is off, the ME300 will decelerate to stop to protect pump from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

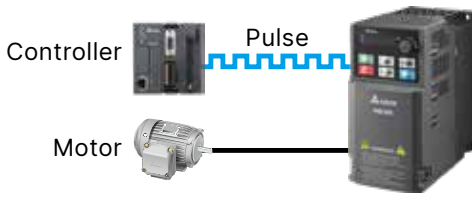
Alternate Operation



Constant Pressure Mode

Pulse Input

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



Built-in Modbus Communication

Built-in RS-485 (Modbus) communication

Built-in Braking Chopper

Larger braking torque capability with an additional braking resistor

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

Common DC Bus

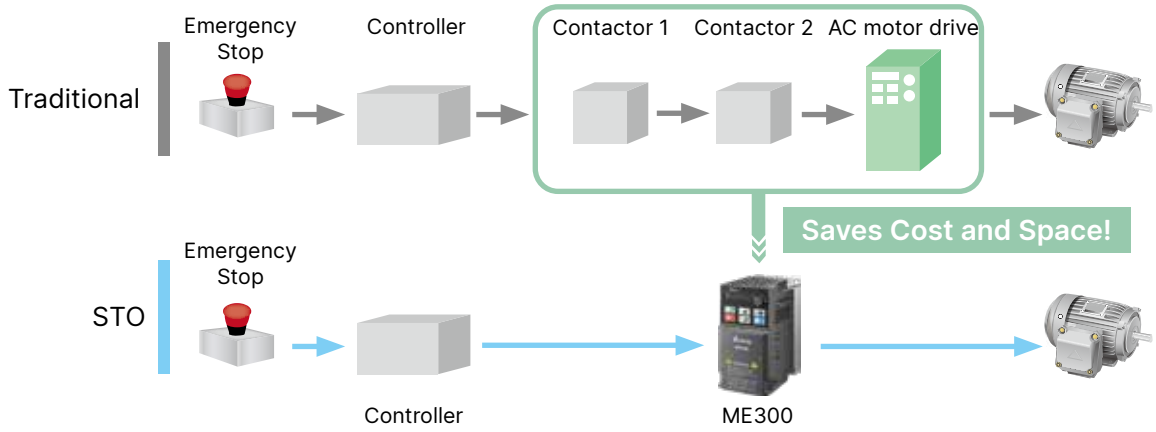
DC ± terminals for common DC bus wiring; the drives share the regeneration power during deceleration to save energy and the braking resistor

Stable, Safe and Reliable

Safe Torque Off

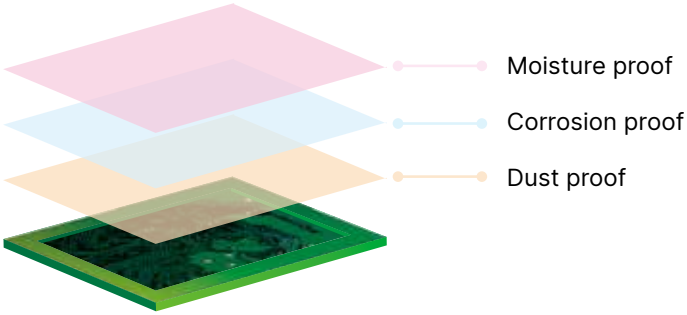
Compliant with:

- 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



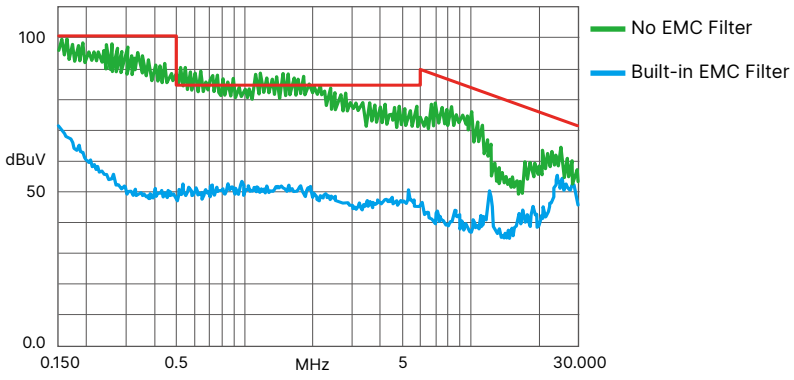
NEMA 1 Kit (Optional)

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

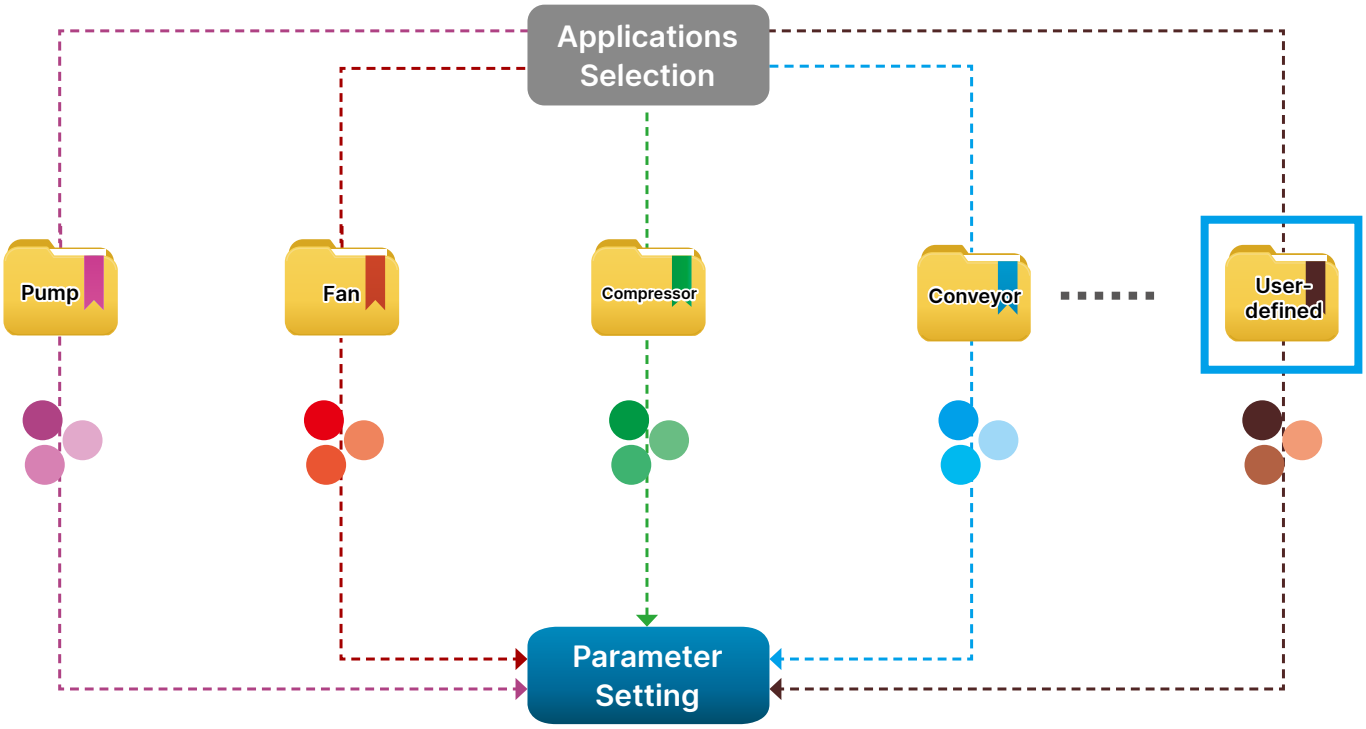
*Class A (C3) for 400V models



Easy Set Up

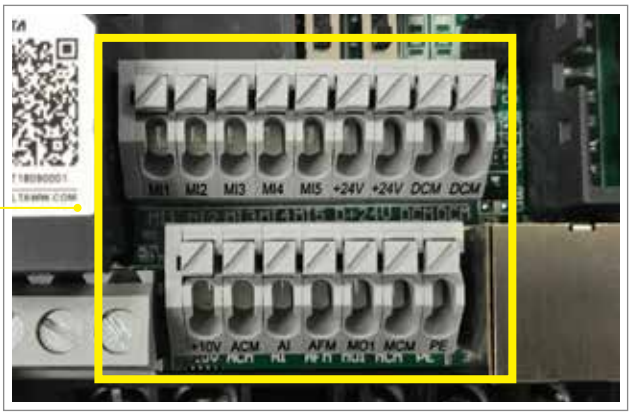
Application Groups (Macro)

- 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

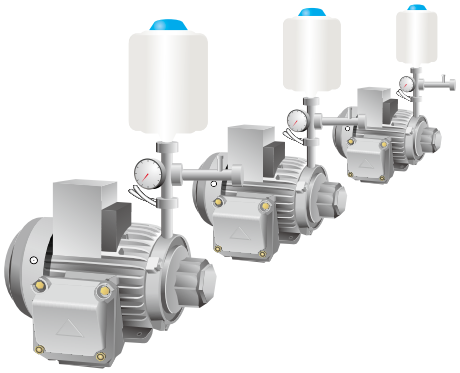
Spring clamp terminal blocks provide fast and easy wiring



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

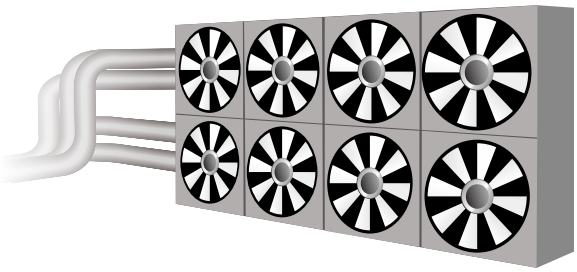


Conveyors

- 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

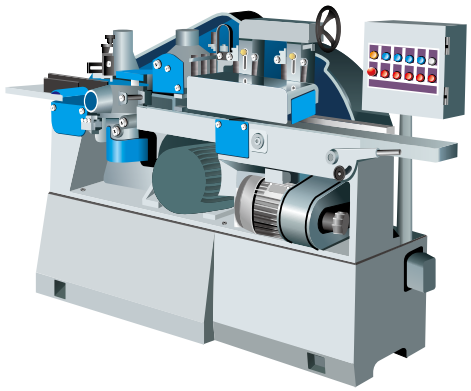
Fans

- 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		D
Model VFD☒☒☒23			0A8	1A6	2A8	4A8	7A5	11A	17A	25A
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)			1/8	1/4	1/2	1	2	3	5	7.5
Inverter Output	Heavy Duty	Rated Output Current (A)	0.8	1.6	2.8	4.8	7.5	11	17	25
	Normal Duty	Rated Output Current (A)	1.0	1.8	3.2	5.0	8.0	12.5	19.5	27
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

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

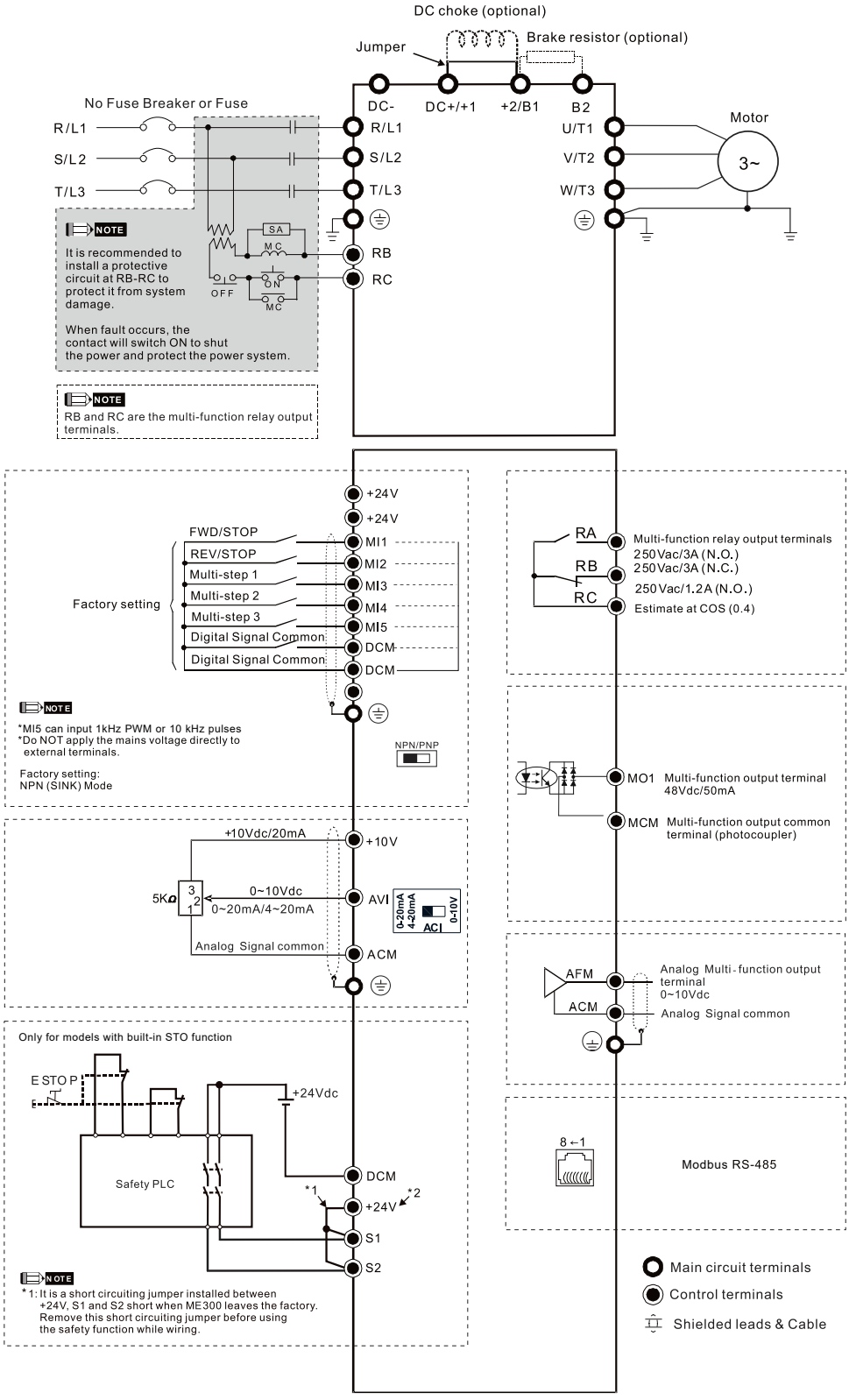
Operating Environment

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 -20 ~ 50˚C (derating required)
			Zero stacking installation	
		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 ~ 1000 m 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

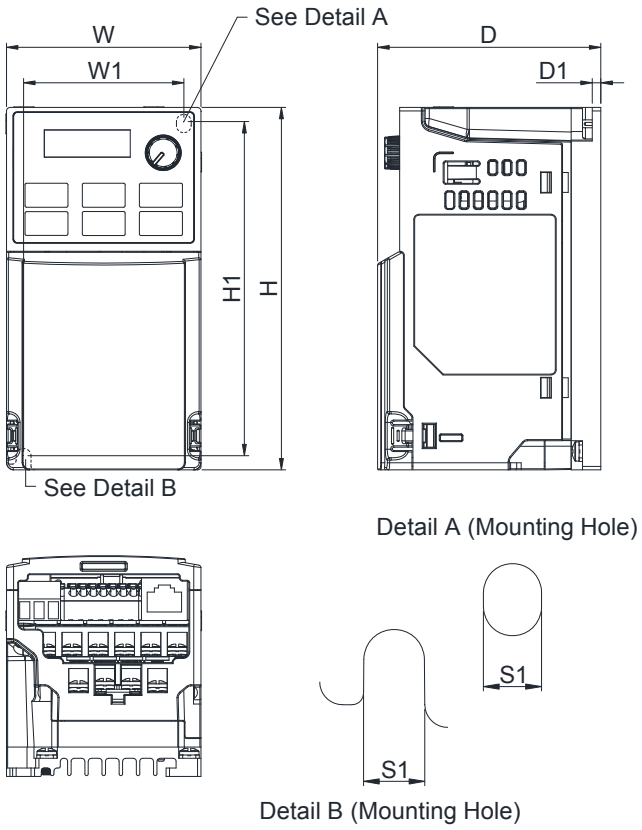
Wiring

Input: Single-phase / 3-phase power



Dimensions

Frame A

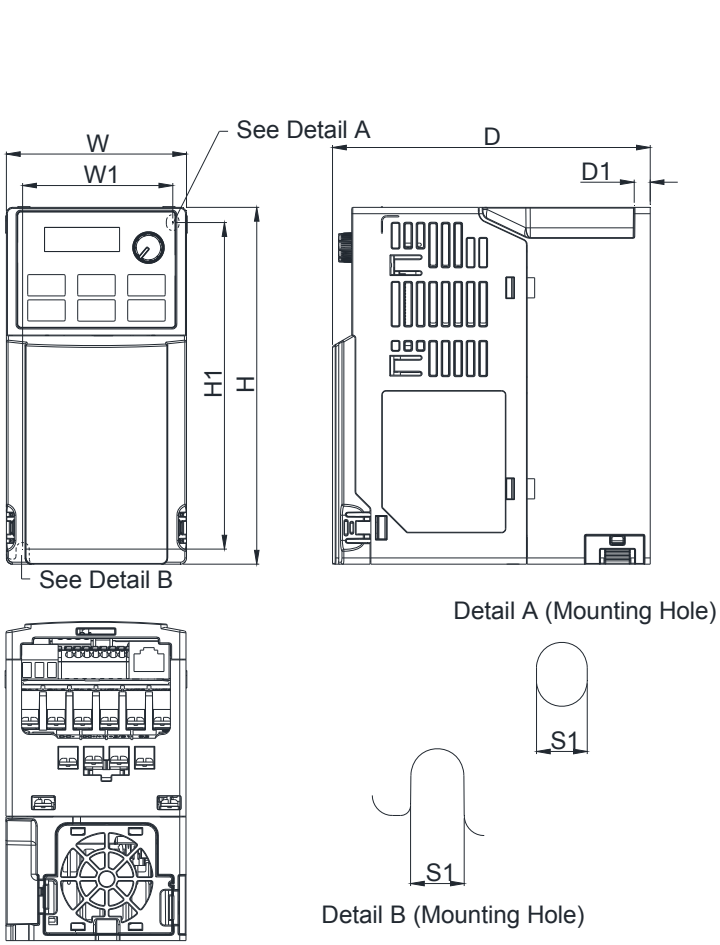


Model Frame A1	Frame A2	Frame A3	Frame A4	Frame A5	Frame A6
VFD0A8ME11ANNAA VFD0A8ME11ANSAA VFD0A8ME21ANNAA VFD0A8ME21ANSAA VFD0A8ME23ANNAA VFD0A8ME23ANSAA VFD1A6ME11ANNAA VFD1A6ME11ANSAA VFD1A6ME21ANNAA VFD1A6ME21ANSAA VFD1A6ME23ANNAA VFD1A6ME23ANSAA	VFD2A8ME23ANNAA VFD2A8ME23ANSAA	VFD2A5ME11ANNAA VFD2A5ME11ANSAA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

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

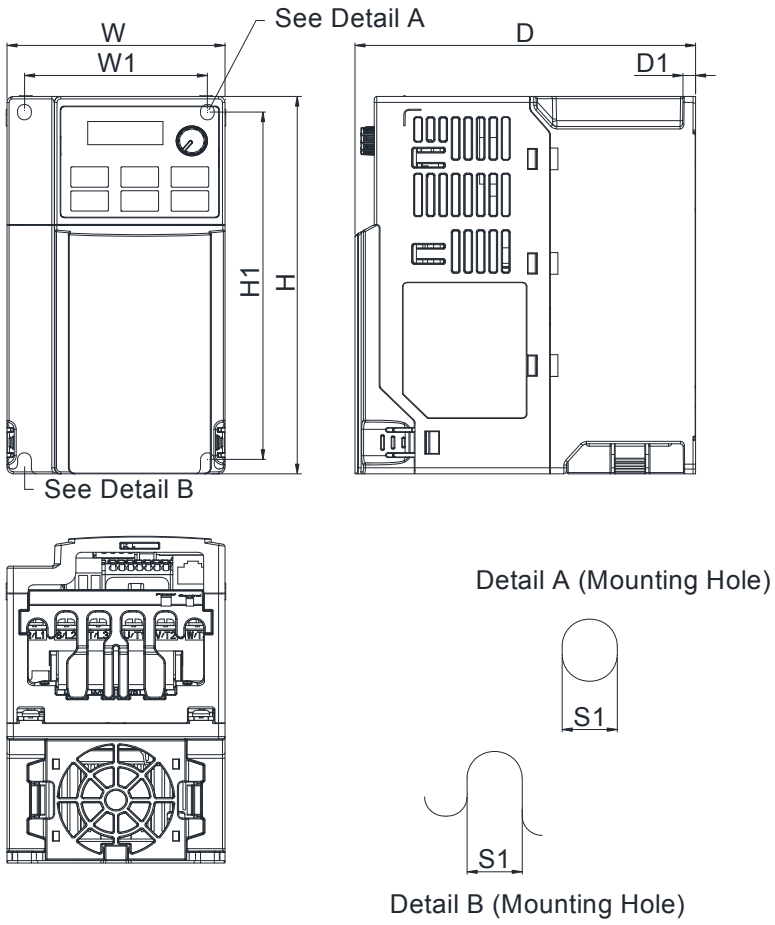


Model **Frame** B1	**Frame** B2	**Frame** B3	
VFD7A5ME23ANNAA VFD7A5ME23ANSAA VFD4A2ME43ANNAA VFD4A2ME43ANSAA	VFD4A8ME21ANNAA VFD4A8ME21ANSAA	VFD0A8ME21AFNAA VFD0A8ME21AFSAA VFD1A6ME21AFNAA VFD1A6ME21AFSAA VFD2A8ME21AFNAA VFD2A8ME21AFSAA VFD4A8ME21AFNAA VFD4A8ME21AFSAA VFD1A5ME43AFNAA VFD1A5ME43AFSAA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

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

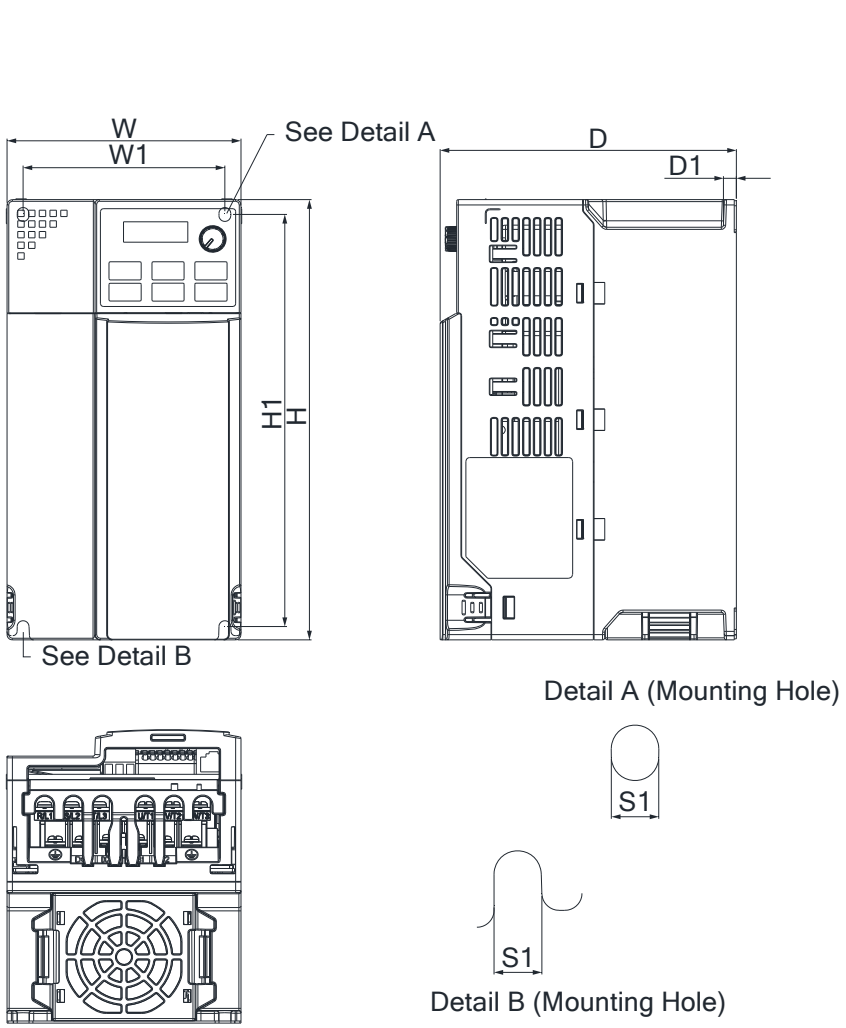
Frame C



Model **Frame** C1		**Frame** C2
VFD4A8ME11ANNAA	VFD9A0ME43ANNAA	VFD7A5ME21AFNAA
VFD4A8ME11ANSAA	VFD9A0ME43ANSAA	VFD7A5ME21AFSAA
VFD7A5ME21ANNAA		VFD11AME21AFNAA
VFD7A5ME21ANSAA		VFD11AME21AFSAA
VFD11AME21ANNAA		VFD5A5ME43AFNAA
VFD11AME21ANSAA		VFD5A5ME43AFSAA
VFD11AME23ANNAA		VFD7A3ME43AFNAA
VFD11AME23ANSAA		VFD7A3ME43AFSAA
VFD17AME23ANNAA		VFD9A0ME43AFNAA
VFD17AME23ANSAA		VFD9A0ME43AFSAA
VFD5A5ME43ANNAA		
VFD5A5ME43ANSAA		
VFD7A3ME43ANNAA		
VFD7A3ME43ANSAA		

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	**Frame** D2
VFD25AME23ANNAA VFD25AME23ANSAA VFD13AME43ANNAA VFD13AME43ANSAA VFD17AME43ANNAA VFD17AME43ANSAA	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

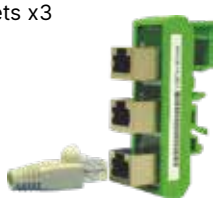
RJ45 Extension Cable for Digital Keypad

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

EMC Filter

N : None
F : Built-in EMC Filter

Safe Torque Off (STO)

N : None
S : STO Model

Model Type

A : Standard model

Version

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	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 ~ 599 Hz)	
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

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