



Digitized Automation for a Changing World

Delta Standard Compact Drive MS300 Series



Compact and Intelligent

The new standard for micro drives

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

Delta's MS300 series are the new generation high performance and standard compact vector control drives that inherit Delta's superior drive technology—all in a compact drive that has been reduced 40% in size.

A variety of 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. This saves the need for additional hardware, while providing more installation space for the power cabinet. 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.

Saving space, reducing setup and wiring time, and providing high efficiency and a highly stable system, the MS300 micro drives are your key to improving market competitiveness and ensuring success.





Models Overview

Standard Models
High Speed Models
Exterior Design and Interfaces
Optional Cards



Optimized Space Utilization

Compact Design
Side-by-Side Installation



Outstanding Drive Performance

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



Strong System Support

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



Stable, Safe and Reliable

Safety Standards
Enhanced Conformal Coating
IP40 Models
Built-in EMC Filter



Easy to Install

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



Wide Range of Applications

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



Specifications

Product Specifications
Wiring
Dimensions
Accessories
Model Name Explanation
Ordering Information

Models Overview

Standard Models (IP20 /IP40)

115V Single-phase

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

230V Single-phase

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

230V Single-phase - with 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 - with 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

230V Single-phase - with 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	

Standard Models (IP66)

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 - with 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	

Flat Models

460V 3-phase

Applicable Motor Output (kW)	0.75	1.5	2.2	3	3.7
Applicable Motor Output (HP)	1	2	3	4	5
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 - with 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 - with 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

EtherCAT CMM-EC02



EtherCAT ^{NEW} CMM-EC03



PROFIBUS DP CMM-PD02



PROFINET ^{NEW} CMM-PN02



EtherNet/IP & Modbus TCP CMM-EIP02



EtherNet/IP & Modbus TCP CMM-EIP03



DeviceNet CMM-DN02



CANopen CMM-COP02



Built-in 1 Option Slot



Optimized Space Utilization

Compact Design

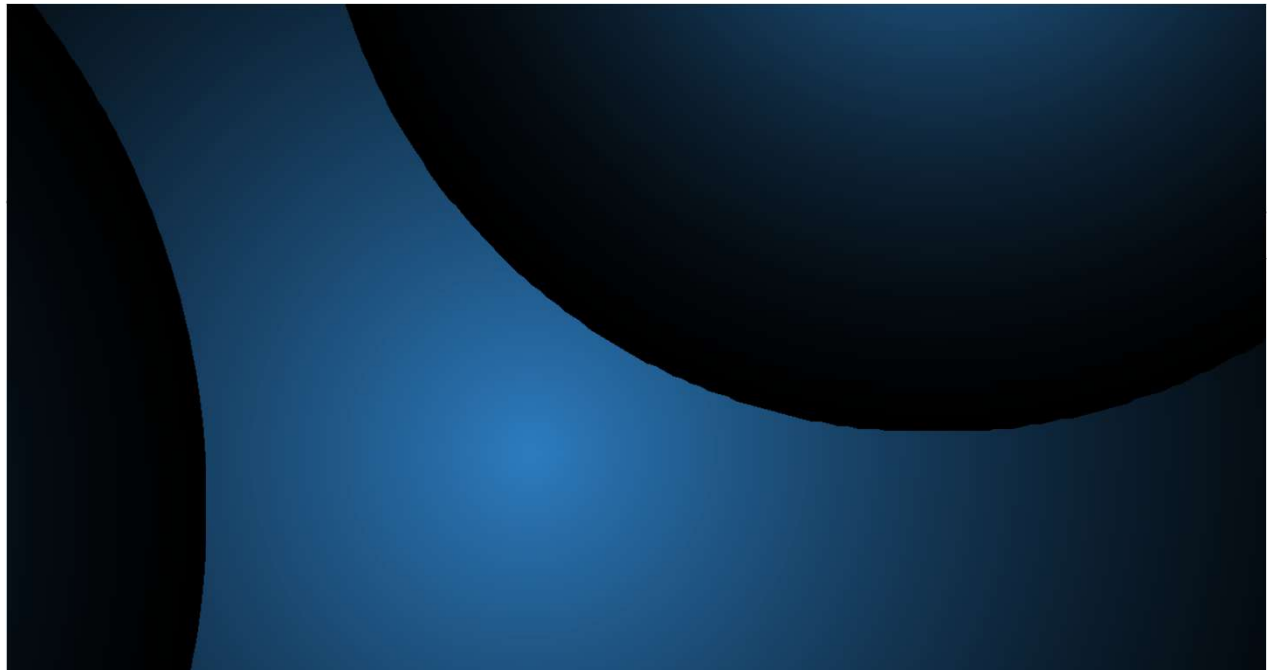
Provides more powerful features in smaller sizes with reduction up to 40% that effectively optimizes the installation space



Side-by-Side Installation

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

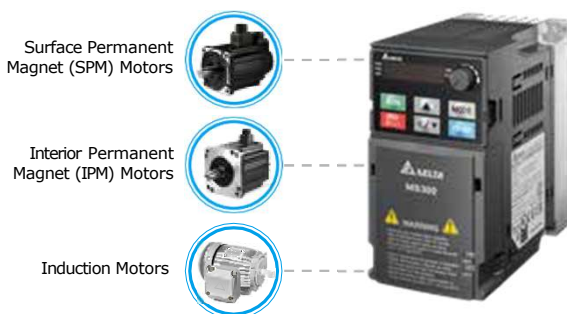
Substantial savings in space!



Outstanding Drive Performance

Supports IM and PM Motors

Supports 4 independent induction motor control parameter sets



Delta PMa Synchronous Reluctance Motor MSI Series

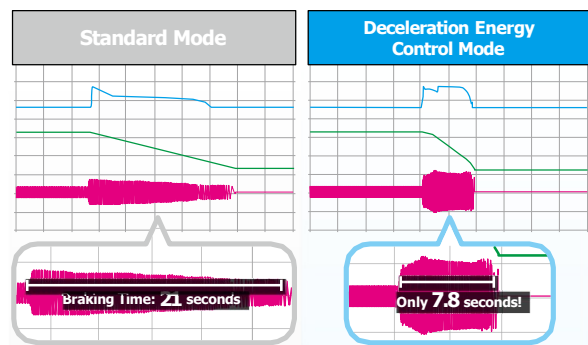
Can be used with Delta PMa Synchronous Reluctance Motor MSI Series to achieve IE5 high-efficiency energy-saving system solution

Note: For detailed description of motor series products, please refer to Delta's official website.



Enhanced Braking Capability

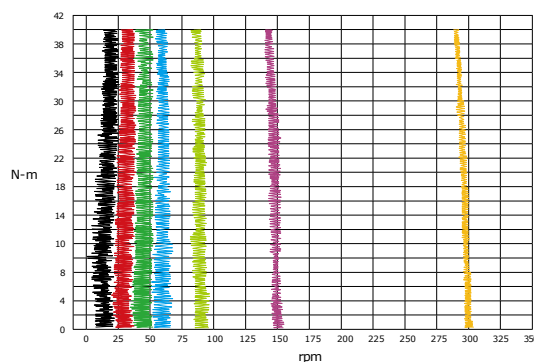
Provides Deceleration Energy Control Mode to shorten braking time by adjusting the motor speed and current, replacing break resistors



* Actual deceleration performance varies upon different system loads

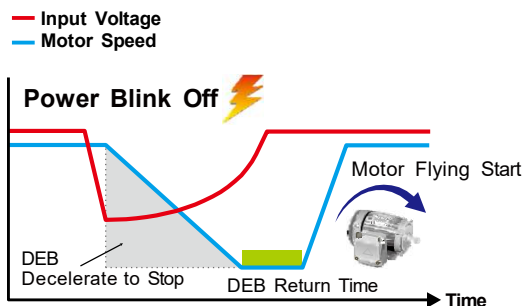
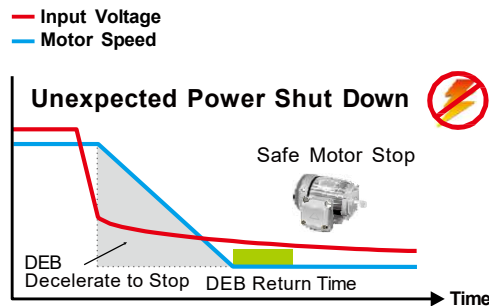
High Starting Torque

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



Deceleration Energy Backup (DEB)

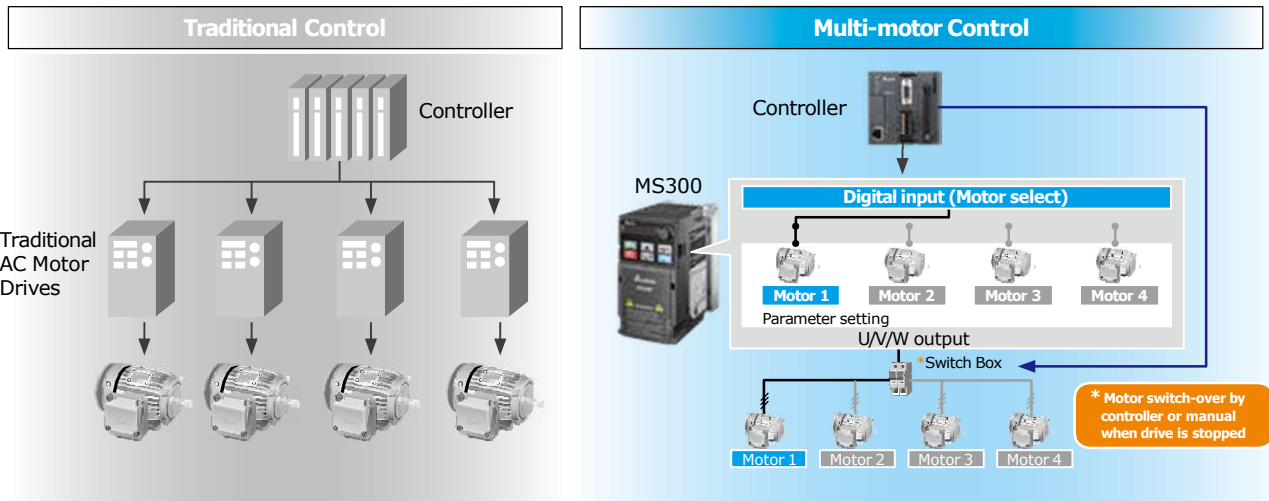
Controls the motor deceleration to a stop when an unexpected power shut-down occurs to prevent mechanical damage. When power resumes, the motor will accelerate to its previous speed



Strong System Support

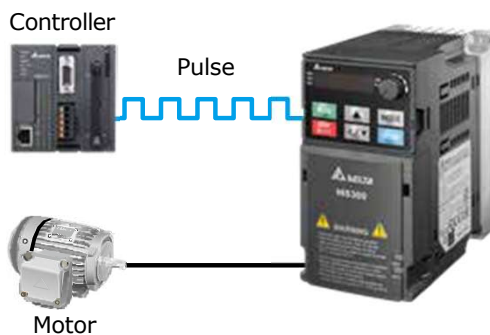
Multi-motor Control

Supports 4 induction motors switching control



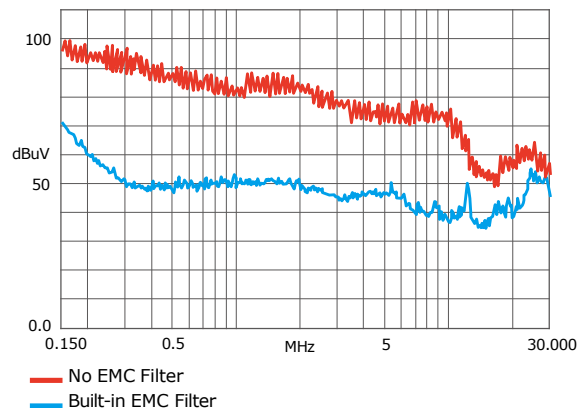
Pulse Input

Supports single pulse input signal from controller as frequency command



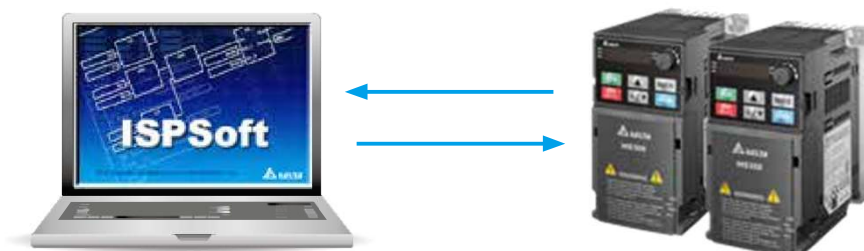
Built-in EMC Filter

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



Built-in PLC

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



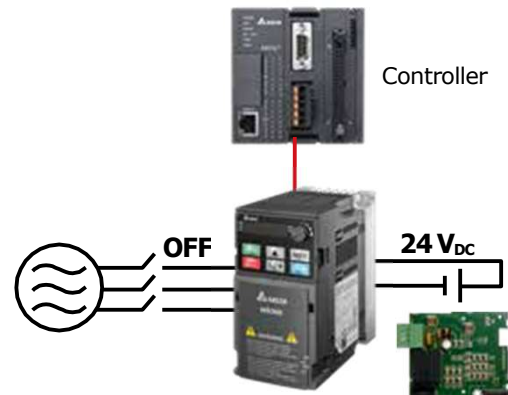
High-Speed Applications

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
PROFINET	Optional

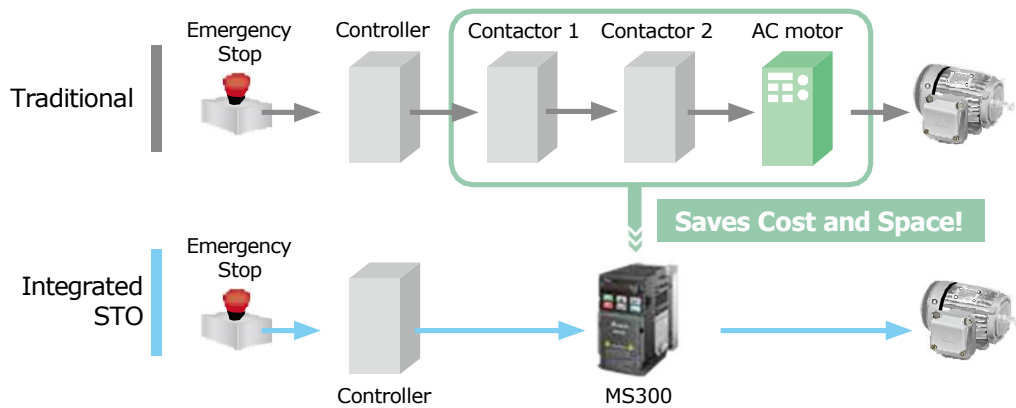
Stable, Safe and Reliable



Safety Standard

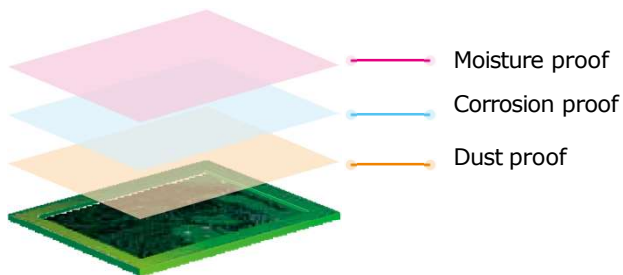
Integrated Safe Torque Off (STO), compliance with:

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



PCB Coating

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



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

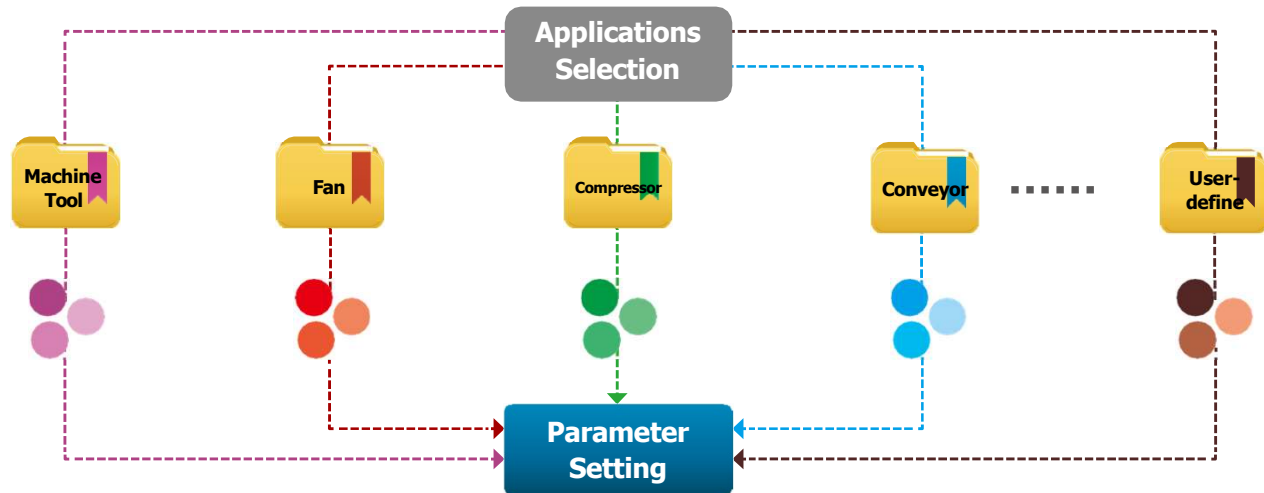
IIP66/NEMA4X water-proof and dust-proof design enables stable operation under harsh environment. Quick installation without control cabinet saves cost



Easy to Install

Application Groups (Macro)

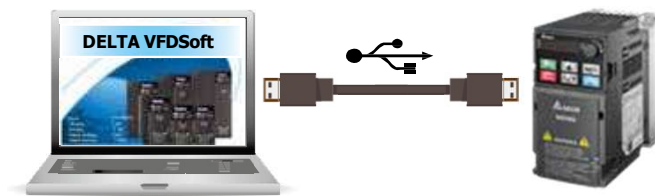
Simplifies the parameter setting process by grouping the parameters for different applications to use



Built-in USB Port

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

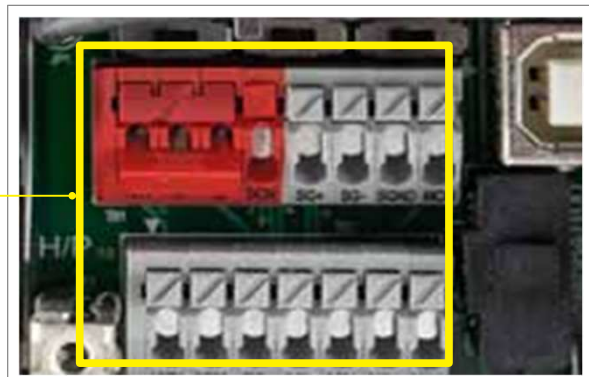
- No need of USB or RS-485 connectors
- Supports offline (drive power off) parameter setting/copying and system update



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

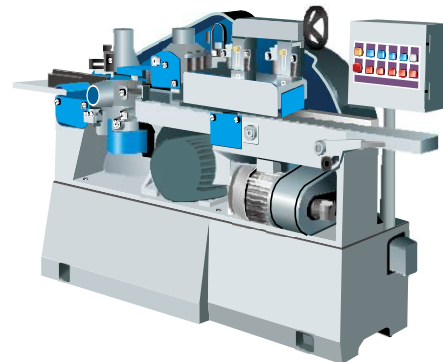
- High-speed models support main spindle 1500Hz frequency output; suitable for complex and high precision processing applications
- Timely acceleration/deceleration control to improve machinery operation efficiency
- Built-in brake chopper to save on purchasing cost
- Built-in PLC capacity for flexible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

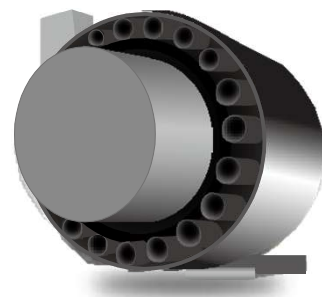
- Timely acceleration/deceleration control improves machinery operation efficiency
- Built-in STO function ensures operator safety and effectively reduces accident risk
- Built-in PLC capacity saves on purchasing cost
- Built-in EMC filter effectively reduces electromagnetic interference
- Compact in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



Automatic Tool Changers (ATC)

Features and Benefits

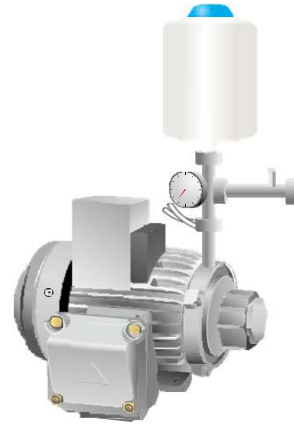
- Compact design of drive provides more cabinet space for other devices to use
- Quick start and timely acceleration/deceleration control function effectively shortens tool changing time and improves system efficiency and productivity
- Simple structure is easy to install and maintain
- Built-in STO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



Packaging Machines

Features and Benefits

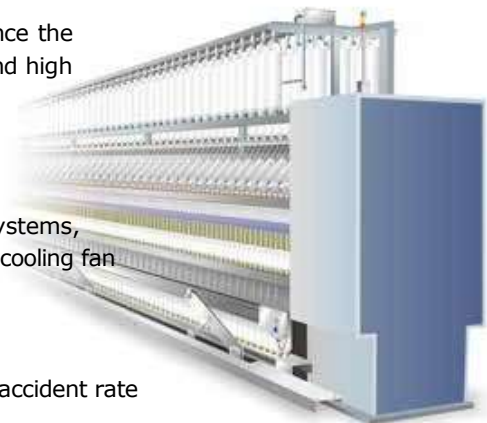
- Compact design to save installation space
- Built-in STO function ensures operator safety and effectively reduces accident rate
- Built-in brake chopper saves on system construction cost
- Built-in RS-485 (Modbus) and various communication cards upon selection (optional)
- High-speed pulse input
-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



Textile Machines

Features and Benefits

- Optimized structural layout and hardware anti-pollution design enhance the frequency converter's environmental tolerance in dust, cotton fluff, and high temperatures (providing IP40 models and flat panel models)
- Improved heatsink design prevents fiber clogging the airway; modular design of fan is easy to clean and provides longer lifetime
- Plate-mount design, allowing customers to design their own cooling systems, with flexible installation and no need to worry about fluff clogging the cooling fan
- 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 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	4.8
	Normal Duty	Rated Output Current (A)	1.8	2.7	5.5
Input	Rated Voltage/Frequency		1-phase AC 100V ~120V (-15%~+10%), 50/60 Hz		
	Mains Input Voltage Range		85 ~132V		
	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)			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 200V ~240V (-15%~+10%), 50/60 Hz				
	Mains Input Voltage Range		170~265V				
	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×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 200V~240V (-15%~+10%), 50/60Hz										
	Mains Input Voltage Range		170~265V										
	Mains Frequency Range		47~63Hz										
Carrier Frequency (kHz)			2~15 (default 4)										
Brake Chopper			Built-in										
DC Reactor			Optional										
AC Reactor			Optional										
Cooling Method			Natural air cooling			Fan cooling							
Size: W×H (mm)			68×128			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 380V~480V (-15%~+10%), 50/60Hz										
	Mains Input Voltage Range		323~528V										
	Mains Frequency Range		47~63Hz										
Carrier Frequency (kHz)			2~15 (default 4)										
Brake Chopper			Built-in										
DC Reactor			Optional										
AC Reactor			Optional										
Cooling Method			Fan cooling										
Size: W×H (mm)			72×142			87×157		109×207		130×250		175×300	
Size: D (mm)			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×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 575V (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 500V~600V (-15%~+10 %), 50/60Hz										
	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×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__		7A5MS21MN	7A5MS21MF	11AMS21__	
			<u>M</u> <u>N</u>	<u>M</u> <u>F</u>	<u>M</u> <u>N</u>	<u>M</u> <u>F</u>			<u>M</u> <u>N</u>	<u>M</u> <u>F</u>
Applicable Motor Output (kW)			0.4		0.75		1.5	1.5	2.2	
Applicable Motor Output (HP)			0.5		1		2	2	3	
Inverter Output	Heavy Duty	Rated Output Current (A)	2.8		4.8		7.5	7.2	11	
		Carrier Frequency (kHz)	2~15 (default 4)							
	Normal Duty	Rated Output Current (A)	3.2		5		8.5	8.5	12.5	
		Carrier Frequency (kHz)	2~15 (default 4)							
Input	Heavy Duty	Rated Input Current (A)	7.3		10.8		16.5	16.5	24.2	
	Normal Duty	Rated Input Current (A)	8.3		11.3		18.5	18.5	27.5	
	Rated Voltage/Frequency		1-phase AC 200 V~240V, 50/60 Hz							
	Operating Voltage (<i>V_{AC}</i>)		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 230V								
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)	2.8	4.8	7.5	11	17	25
		Carrier Frequency (kHz)	2~15 (default 4)					
	Normal Duty	Rated Output Current (A)	3.2	5	8	12.5	19.5	27
		Carrier Frequency (kHz)	2~15 (default 4)					
Input	Heavy Duty	Rated Input Current (A)	3.4	5.8	9.0	13.2	20.4	30
	Normal Duty	Rated Input Current (A)	3.8	6.0	9.6	15	23.4	32.4
	Rated Voltage/Frequency		3-phase AC 200V~240V, 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_ _		5A5MS43MN	5A5MS43MF	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)	1.5		2.7		4.2		5.5	5.5	9	
		Carrier Frequency (kHz)	2~15 (default 4)									
	Normal Duty	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 Input Current (A)	2.1		3.7		5.8		6.1	6.1	9.9	
	Normal Duty	Rated Input Current (A)	2.5		4.2		6.4		7.2	7.2	11.6	
	Rated Voltage/Frequency		3-phase AC 380 V ~480V, 50/60 Hz									
	Operating Voltage (V _{AC})		323~528 (-15%~+10%)									
	Mains Frequency Range (Hz)		47~63									
Net Weight (kg)			2.35	2.65	2.6	2.8	2.8	3.1	3.6	3.8	3.45	3.95
Cooling Method			Natural air cooling							Fan cooling		
EMC Filter			Optional	Built-in	Optional	Built-in	Optional	Built-in	Optional	Built-in	Optional	Built-in
Protection Rating			IP66 / NEMA 4X									

3-phase 460 V						
Frame			c			
VFD_____SAA			13AMS43__		17AMS43__	
			<u>M N</u>	<u>M F</u>	<u>M N</u>	<u>M F</u>
Applicable Motor Output (kW)			5.5		7.5	
Applicable Motor Output (HP)			7.5		10	
Inverter Output	Heavy Duty	Rated Output Current (A)	13		17	
		Carrier Frequency (kHz)	2~15 (default 4)			
	Normal Duty	Rated Output Current (A)	15.7		20.5	
		Carrier Frequency (kHz)	2~15 (default 4)			
Input	Heavy Duty	Rated Input Current (A)	14.3		18.7	
	Normal Duty	Rated Input Current (A)	17.3		22.3	
	Rated Voltage/Frequency		3-phase AC 380 V~480V, 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			

Flat Models

Three Phase 460 V (without built-in EMC filter)							
Frame			A	B	C		
Applicable Motor Output (kW)			0.75	1.5	2.2	3	3.7
Applicable Motor Output (HP)			1	2	3	4	5
Inverter Output	Heavy Duty	Rated Output Current (A)	2.7	4.2	5.5	7.3	9
	Normal Duty	Rated Output Current (A)	3	4.6	6.5	8	10.5
Input	Rated Voltage/Frequency		Three Phsaae AC 380V~480V (-15%~+10%), 50/60Hz				
	Operating Voltage (V _{AC})		323~528V				
	Mains Frequency Range (Hz)		47~63Hz				
Carrier Frequency (kHz)			2~15 (default 4)				
Brake Chopper			Built-in				
DC reactor			Optional				
AC reactor			Optional				
Cooling Method			Plate-mount model, matching the heat dissipation method of customer equipment				
Size: W×H (mm)			68×162		72×162		129×157
Size: D (mm)			110.6		110.6		110.8



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: 1500.0Hz (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%/0.5Hz (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 ~ +10V / -10V ~ +10V, 4 ~ 20 mA / 0 ~ +10V, 1 pulse input (33kHz), 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, PROFINET
	External DC power supply	EMM-BPS02 (DC 24V power supply card)
Digital Controller		A removable keypad as standard
Certifications		UL, CE, TUV, RoHS, RCM, 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.

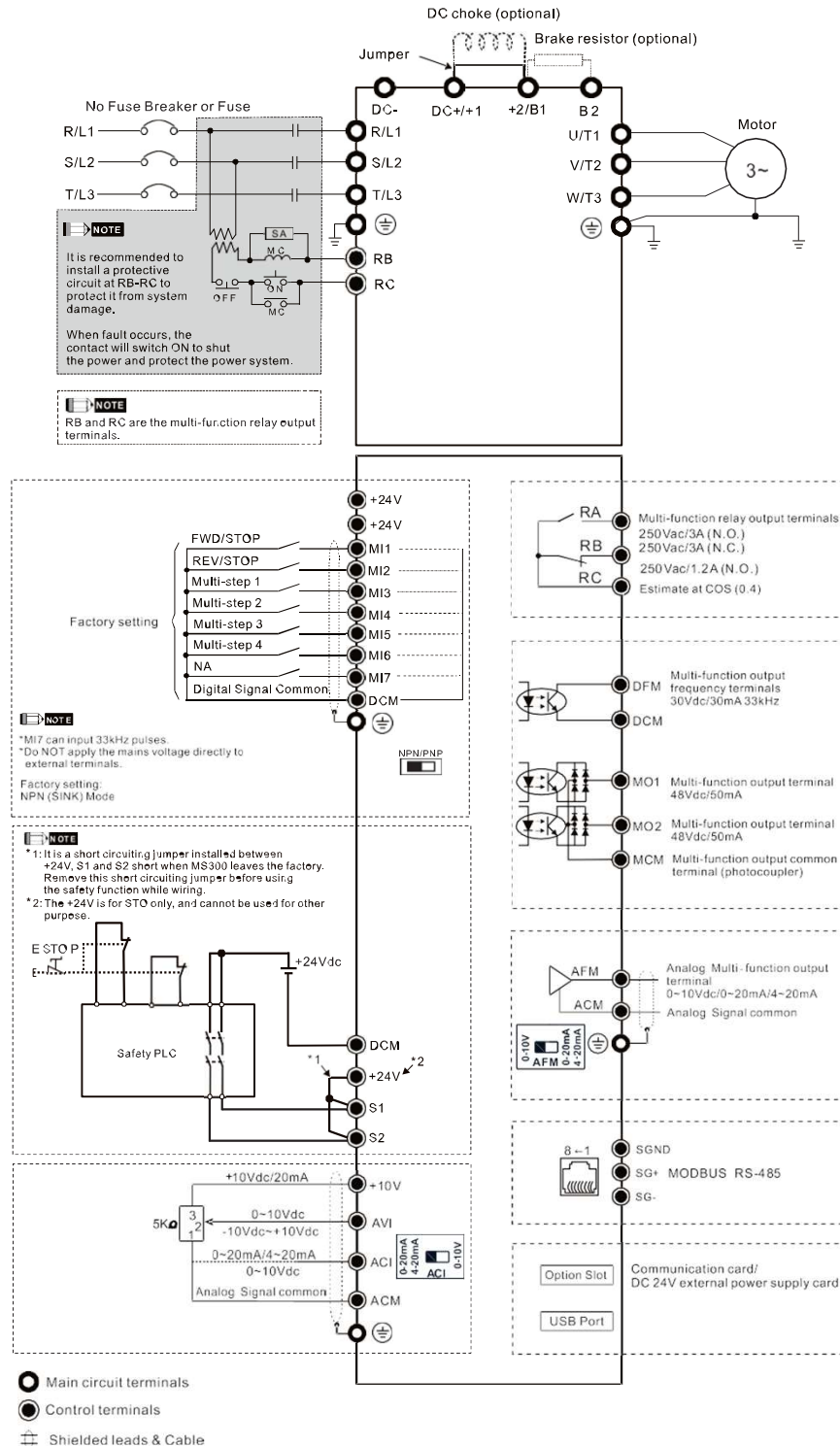
MS300 Operating Environment

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	
			IP66/NEMA 4X/UL Type 4X	-20 to 40 -20 to 50 (needs derating)
			Zero stacking Installation	
			The cooling requirements for the base plate of the plate drive	The base plate temperature must not exceed 90° C
		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 ~ 1000m for normal operation (derating is required for installation at an altitude above 1000m)		
Vibration		Compliance to IEC 60068-2-6		
Shock		Compliance to IEC/EN 60068-2-27		

Please refer to MS300 user manual for more details.

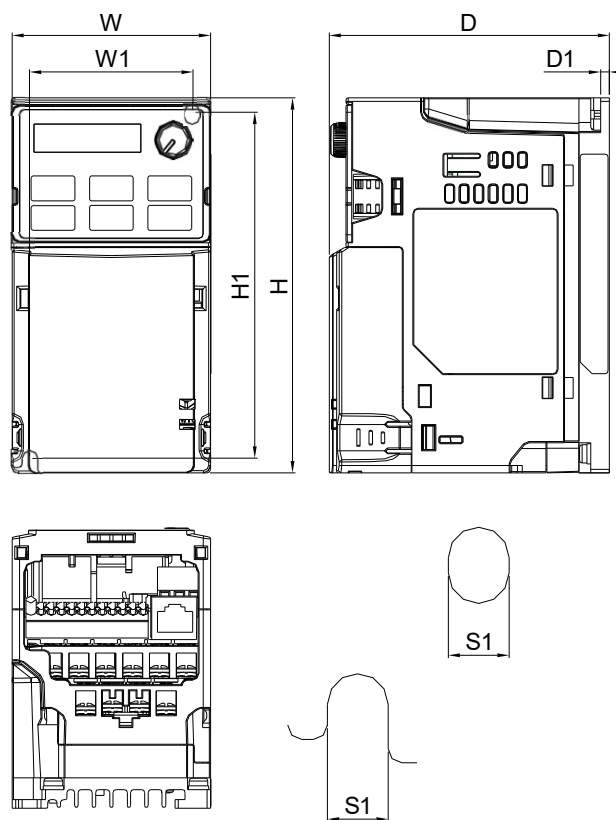
Wiring

Input: Single-phase /3-phase power



Dimensions: IP20 /IP40 Models

Frame A



Mounting hole

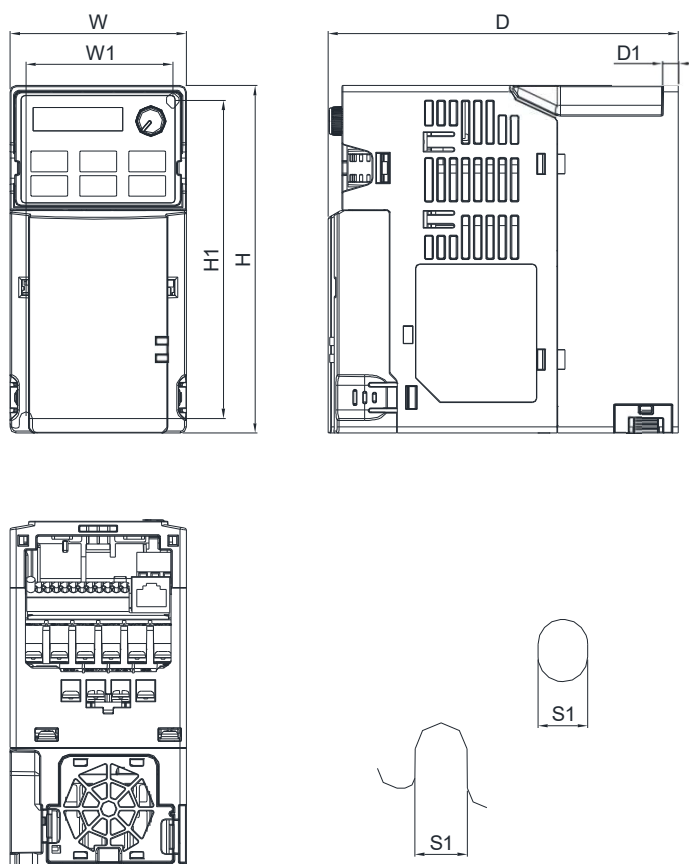
MODEL	FRAME A1	FRAME A2	FRAME A3	FRAME A4	FRAME A5
	VFD1A6MS11ANSAA	VFD2A8MS23ANSAA	VFD2A5MS11ANSAA	VFD1A5MS43ANSAA	VFD4A8MS23ANSAA
	VFD1A6MS11ENSAA	VFD2A8MS23ENSAA	VFD2A5MS11ENSAA	VFD1A5MS43ENSAA	VFD4A8MS23ENSAA
	VFD1A6MS21ANSAA		VFD2A8MS21ANSAA		VFD2A7MS43ANSAA
	VFD1A6MS21ENSAA		VFD2A8MS21ENSAA		VFD2A7MS43ENSAA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

Frame		W	H	D	W1	H1	D1	S1
A1	mm	68.0	128.0	96.0	56.0	118.0	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

Dimensions: IP20 /IP40 Models

Frame B



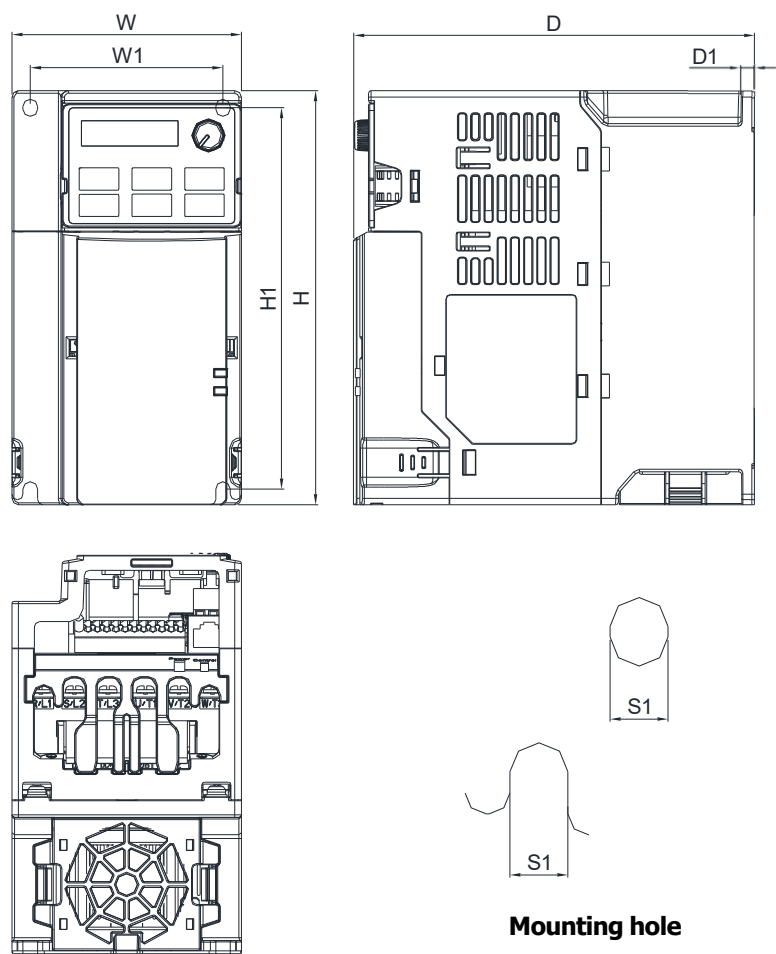
Mounting hole

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

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

Dimensions: IP20 /IP40 Models

Frame C



MODEL

FRAME C1

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

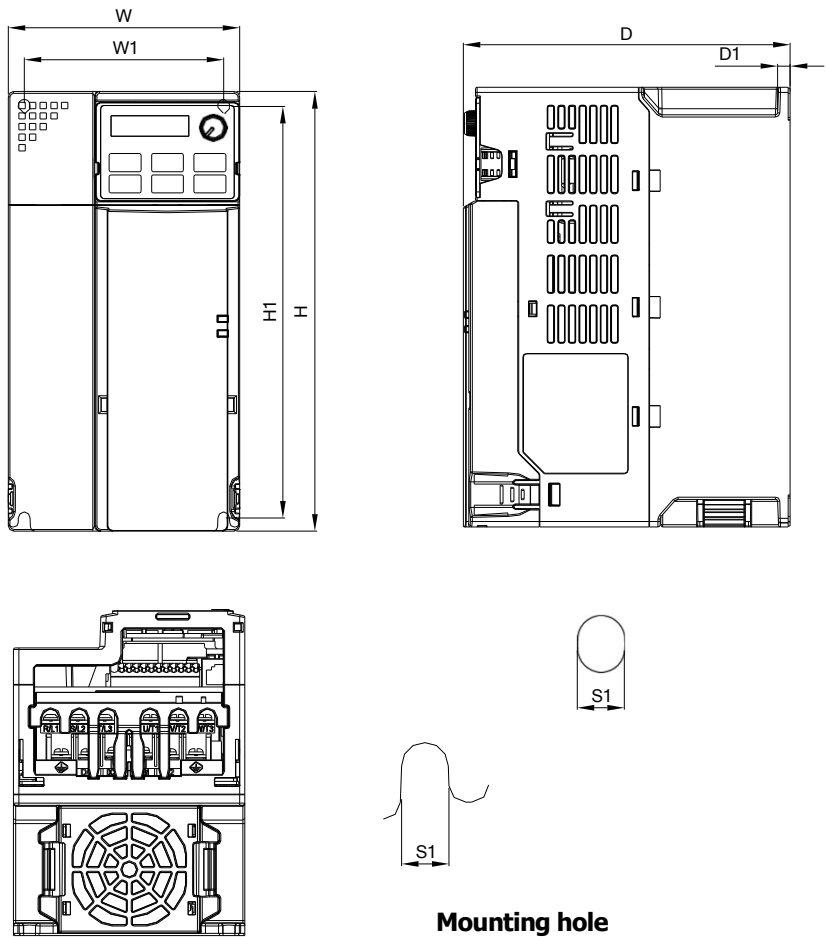
VFD9A0MS43ANSAA VFD9A0MS43ENSAA

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

Dimensions: IP20 /IP40 Models

Frame D

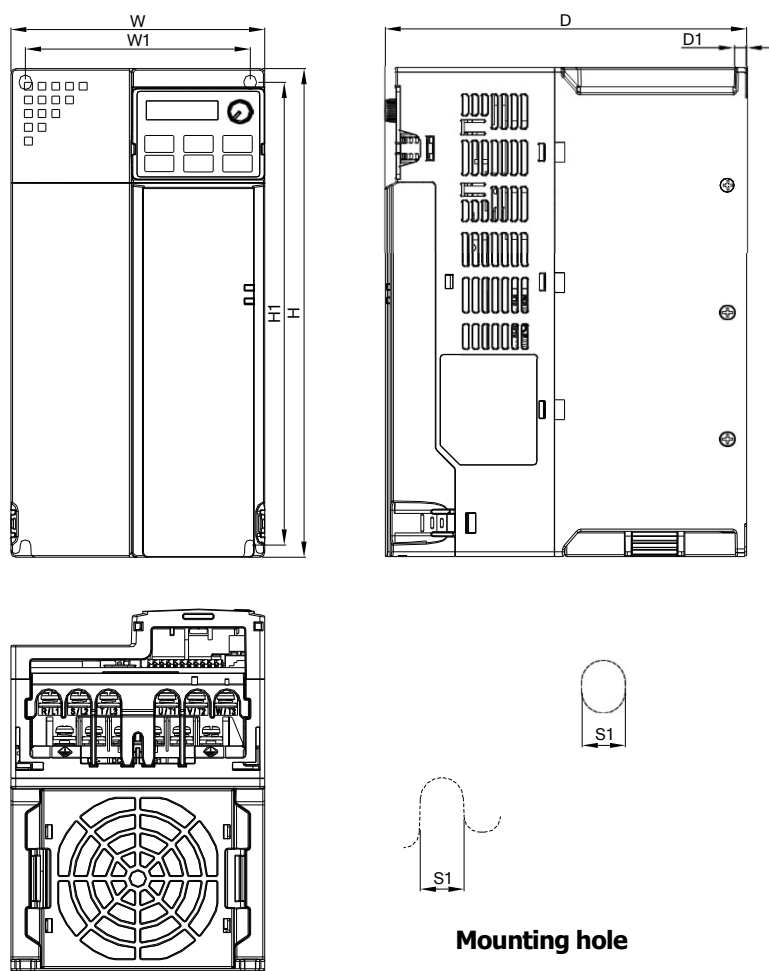


MODEL

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

Standard Models:
VFD33AMS23ANSAA
VFD33AMS23ENSAA
VFD49AMS23ANSAA
VFD49AMS23ENSAA
VFD25AMS43ANSAA
VFD25AMS43ENSAA
VFD32AMS43ANSAA
VFD32AMS43ENSAA

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

FRAME E2

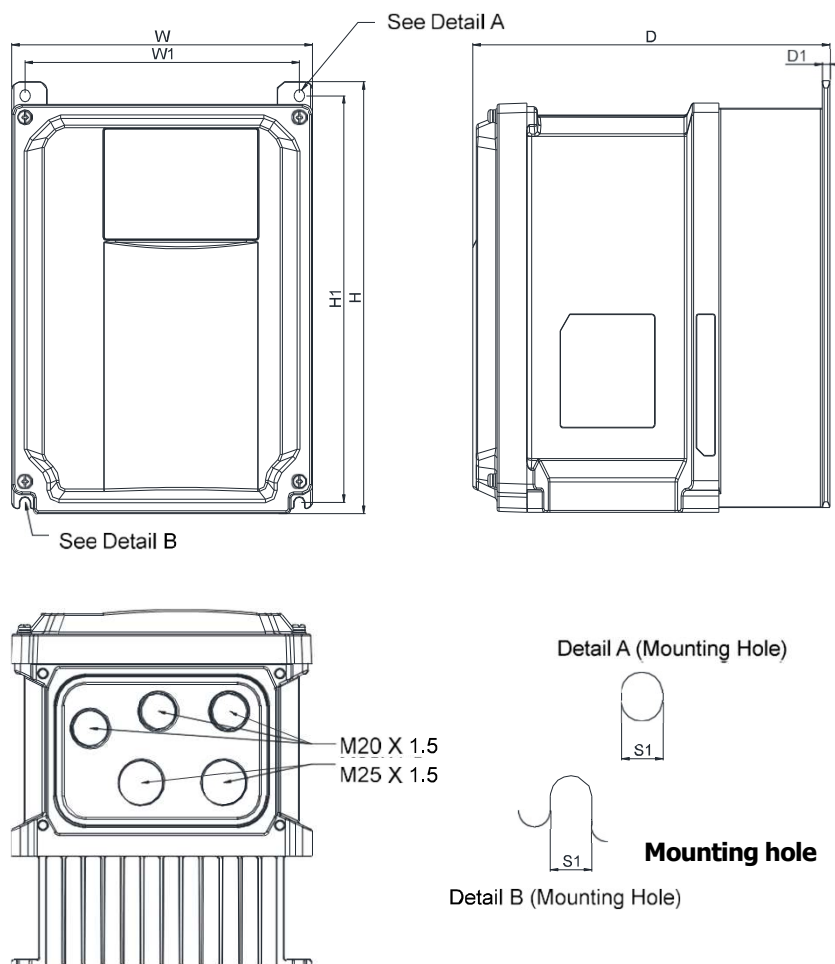
Standard Models:
VFD25AMS43AFSAA
VFD32AMS43AFSAA

High Speed Models:
VFD25AMS43AFSHA
VFD32AMS43AFSHA

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

Dimensions: IP66 /NEMA 4X Models

Frame A



MODEL

FRAME A1

VFD2A8MS21MNSAA
VFD1A5MS43MFSAA
VFD2A7MS43MNSAA
VFD2A8MS21MFSAA
VFD4A8MS21MNSAA
VFD2A7MS43MFSAA

FRAME A2

VFD2A8MS23MNSAA
VFD4A8MS21MFSAA
VFD1A5MS43MNSAA
VFD4A8MS23MNSAA

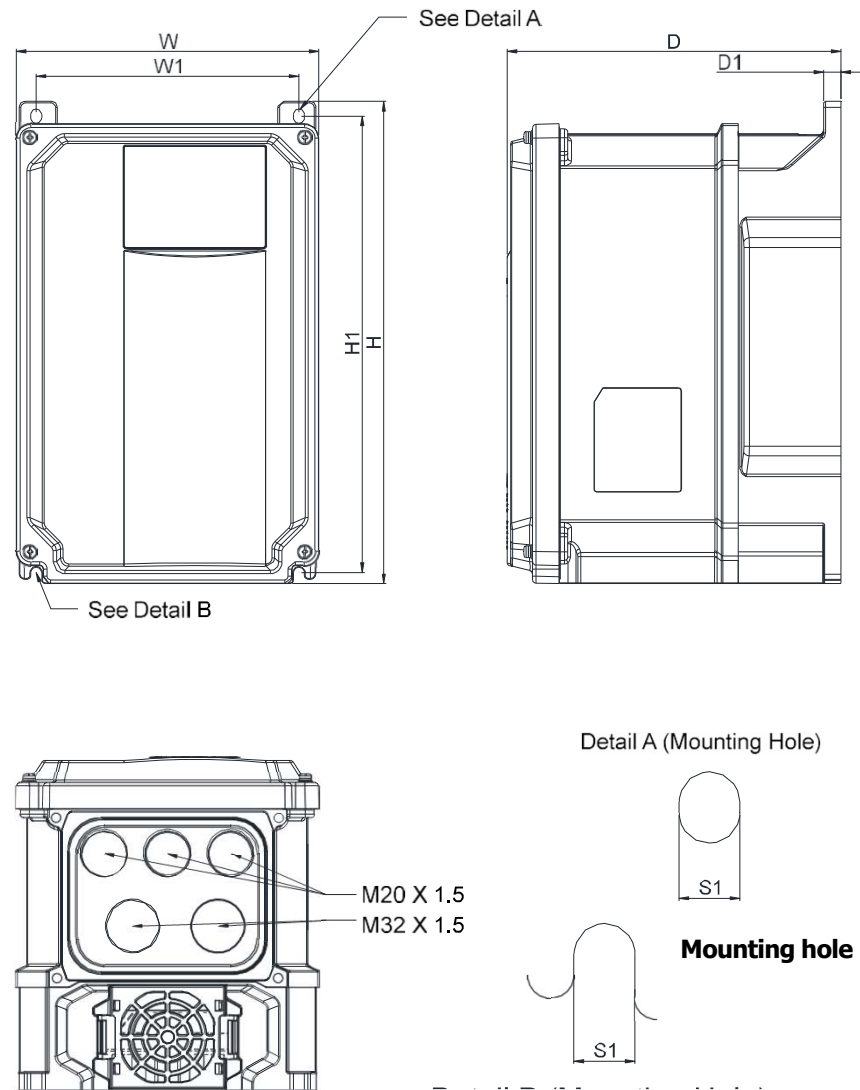
FRAME A3

VFD5A5MS43MNSAA

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

Dimensions: IP66 /NEMA 4X Models

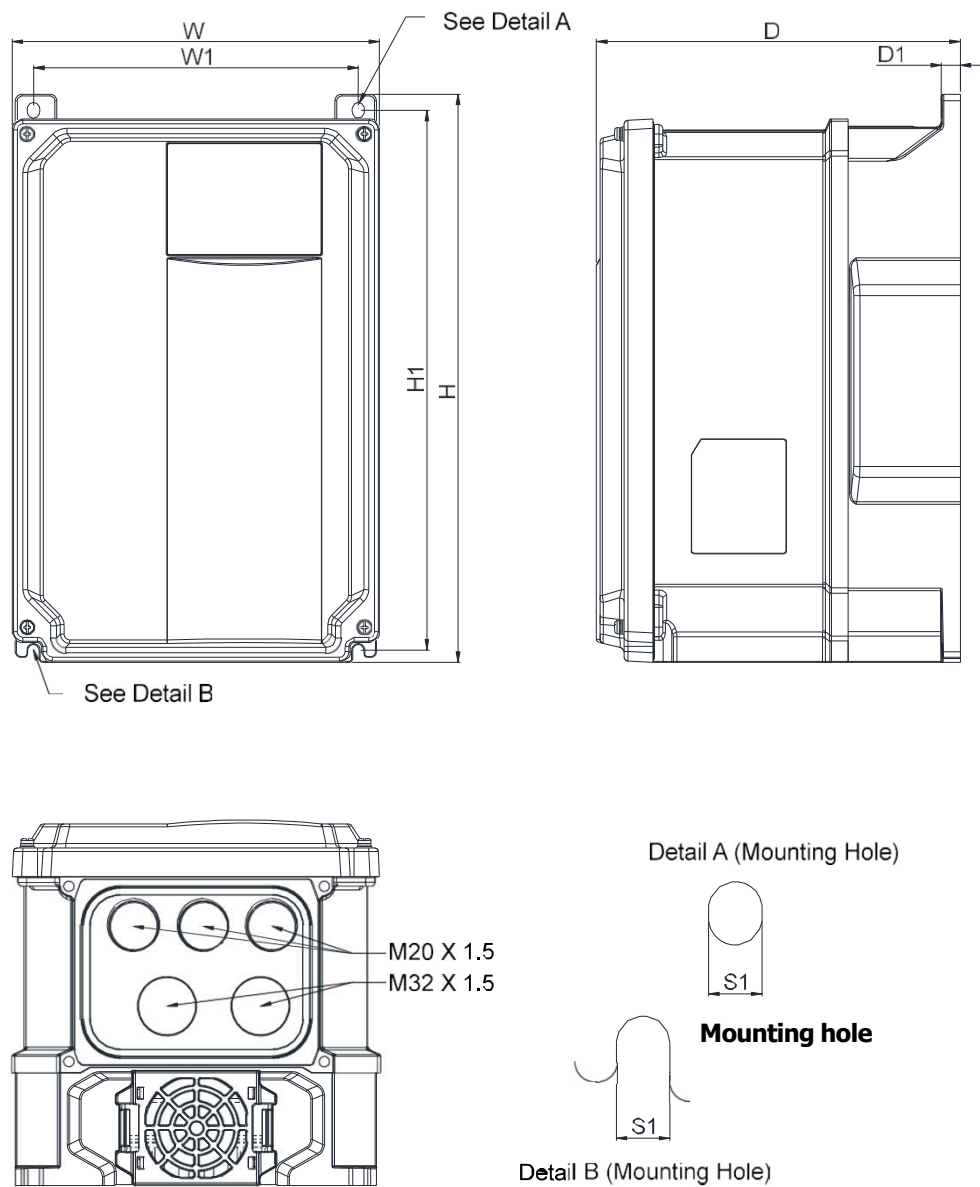
Frame B



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



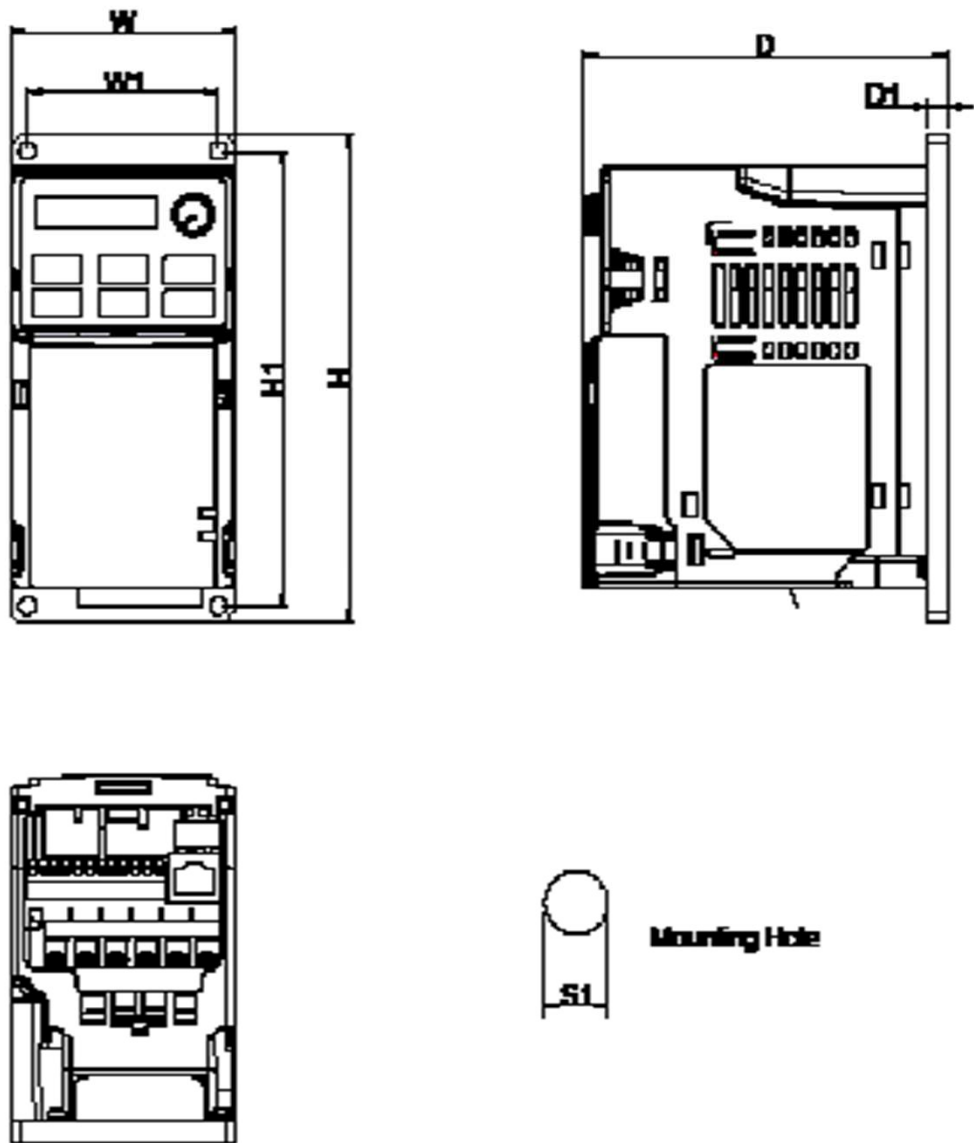
MODEL
FRAME C

VFD13AMS43MNSAA VFD17AMS43MFSAA	VFD13AMS43MFSAA	VFD25AMS23MNSAA	VFD17AMS43MNSAA
------------------------------------	-----------------	-----------------	-----------------

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

Dimensions: Plate-mount Type

Frame A



Models

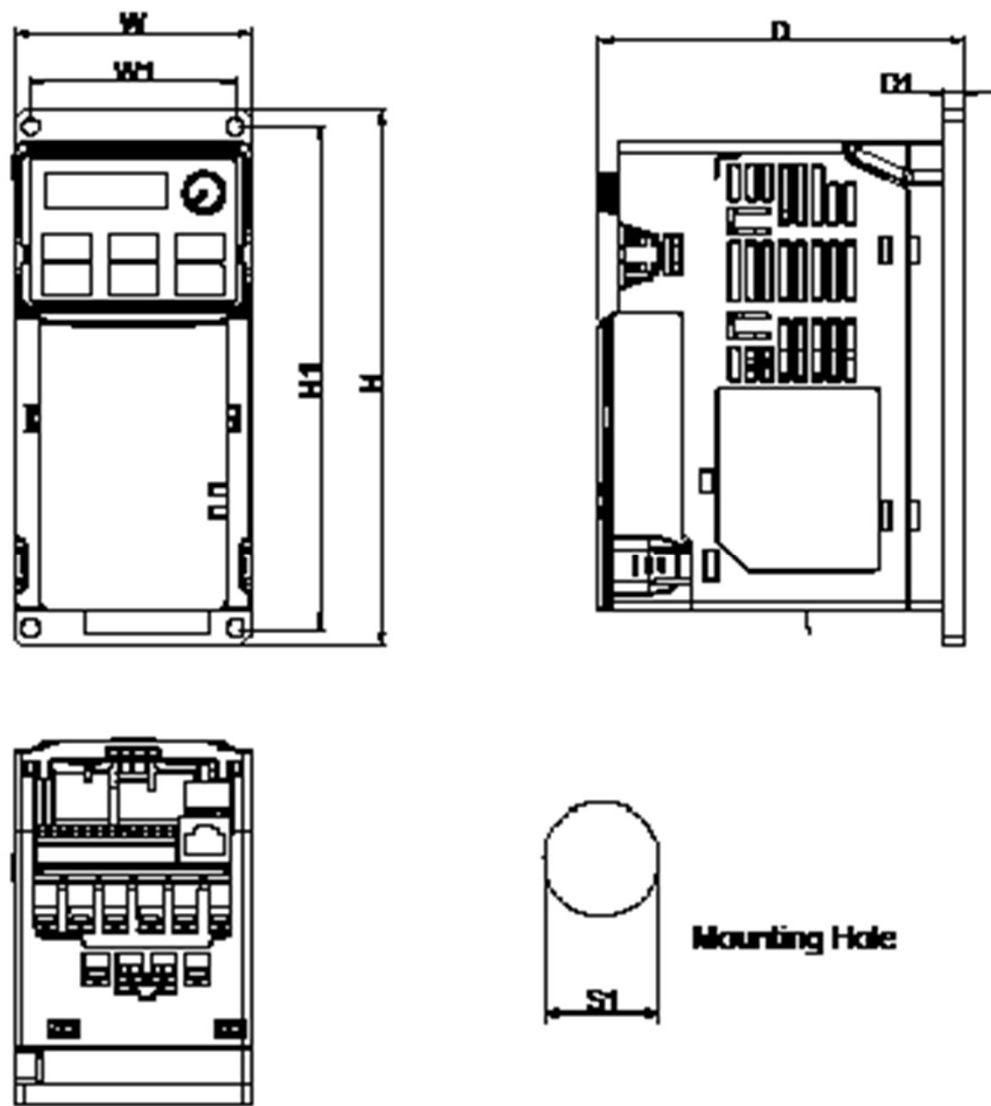
Frame A

Plate Mount Models:
VFD2A7MS43PNSAA

Frame		W	W1	H	H1	D	D1	S1
A	mm	68.0	58.0	148.0	138.0	110.6	6.0	5.0
	inch	2.68	2.28	5.83	5.43	4.35	0.24	0.20

Dimensions: Plate-mount Type

Frame B



Models

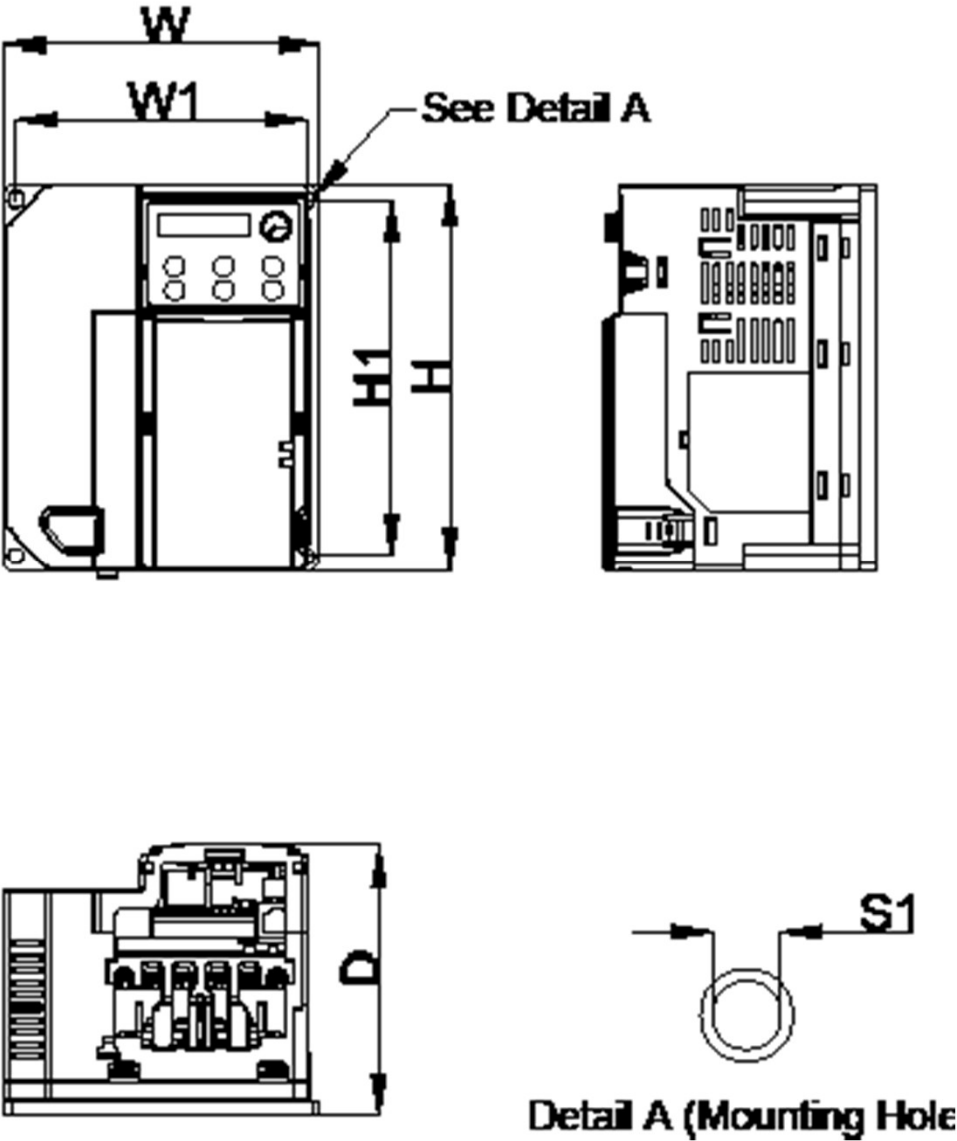
Frame B

Plate Mount Models:
VFD4A2MS43PNSAA

Frame		W	W1	H	H1	D	D1	S1
B	mm	72.0	62.0	162.0	152.0	110.6	6.0	5.0
	inch	2.83	2.44	6.38	5.98	4.35	0.24	0.20

Dimensions: Plate-mount Type

Frame C



Models

Frame C

Plate Mount Models:
VFD5A5MS43PNSAA
VFD7A3MS43PNSAA
VFD9A0MS43PNSAA

Frame		W	W1	H	H1	D	S1
C	mm	129.0	119.0	157.0	145.0	110.8	5.5
	inch	5.08	4.69	6.18	5.71	5.04	0.22

Accessories

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

▪ PROFINET Option Card

CMM-PN02



Features

- ▶ Supports PROFINET IO/RT
- ▶ Profibus and Profinet International (PI) certificate

Network Interface

Network protocol	PROFIBUS DP	Interface	DB9
Transmission speed	9.6Kbps/19.2Kbps/93.75Kbps/187.5Kbps/500Kbps/1.5Mbps/3Mbps/6Mbps/12Mbps	Number of port	2
Transmission method	Periodic/non-periodic data exchange	Transmission cable	DMCNET
Transmission distance	100m/12Mbps		

▪ EtherCAT Option Card

CMM-EC02 /CMM-EC03



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
- ▶ CMM-EC03 supports Dynamic Recognition

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

▪ 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/500Kbps/250Kbps/125Kbps/100Kbps/50Kbps	Number of ports	2
Transmission method	PDO, SDO	Transmission cable	Delta standard
Transmission distance	25m/1Mbps		

▪ 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	100m/12Mbps		

▪ EtherNet/IP 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 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	100m, extension is allowed via switch		

▪ DeviceNet Option Card

CMM-DN02



Features

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

Network Interface

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

24V Power Shift Card

EMM-BPS02

Terminals	Description
PE GND 24V	<p>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.</p> <p>Input power: 24V $\pm$ 5%</p> <p>Maximum input current: 0.5A</p> <p>Note: 1) Do not connect the control terminal +24V (Digital control signal common: SOURCE) directly to the EMC-BPS01 input terminal 24V.</p> <p>2) Do not connect control terminal GND directly to the EMC-BPS01 input terminal GND in order to achieve good isolation.</p>

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

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

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

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

Screw Specification of Option Card Terminals

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

Accessories

Standard Fieldbus Cables

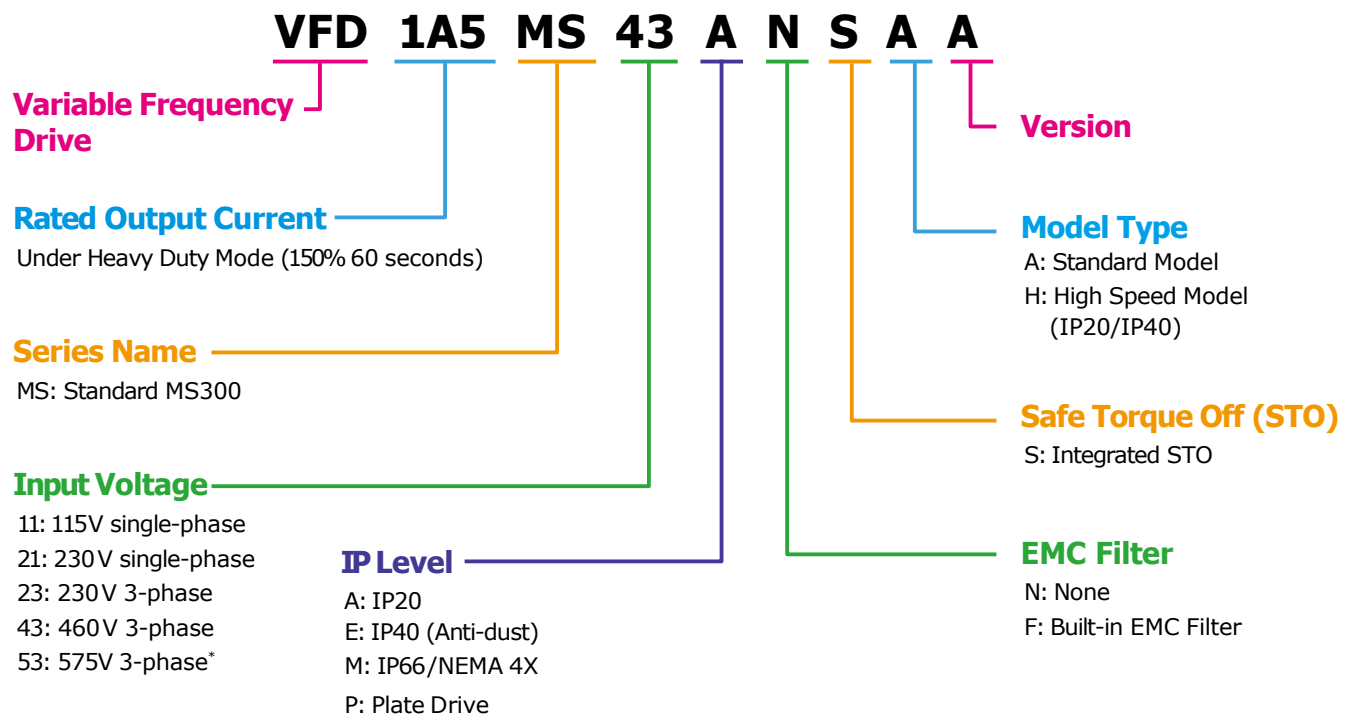
Delta Cables	Part Number	Description	Length
CANopen Cable	UC-CMC003-01A	CANopen cable, RJ45 connector	0.3m
	UC-CMC005-01A	CANopen cable, RJ45 connector	0.5m
	UC-CMC010-01A	CANopen cable, RJ45 connector	1m
	UC-CMC015-01A	CANopen cable, RJ45 connector	1.5m
	UC-CMC020-01A	CANopen cable, RJ45 connector	2m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

Extension Cable for Digital Keypad

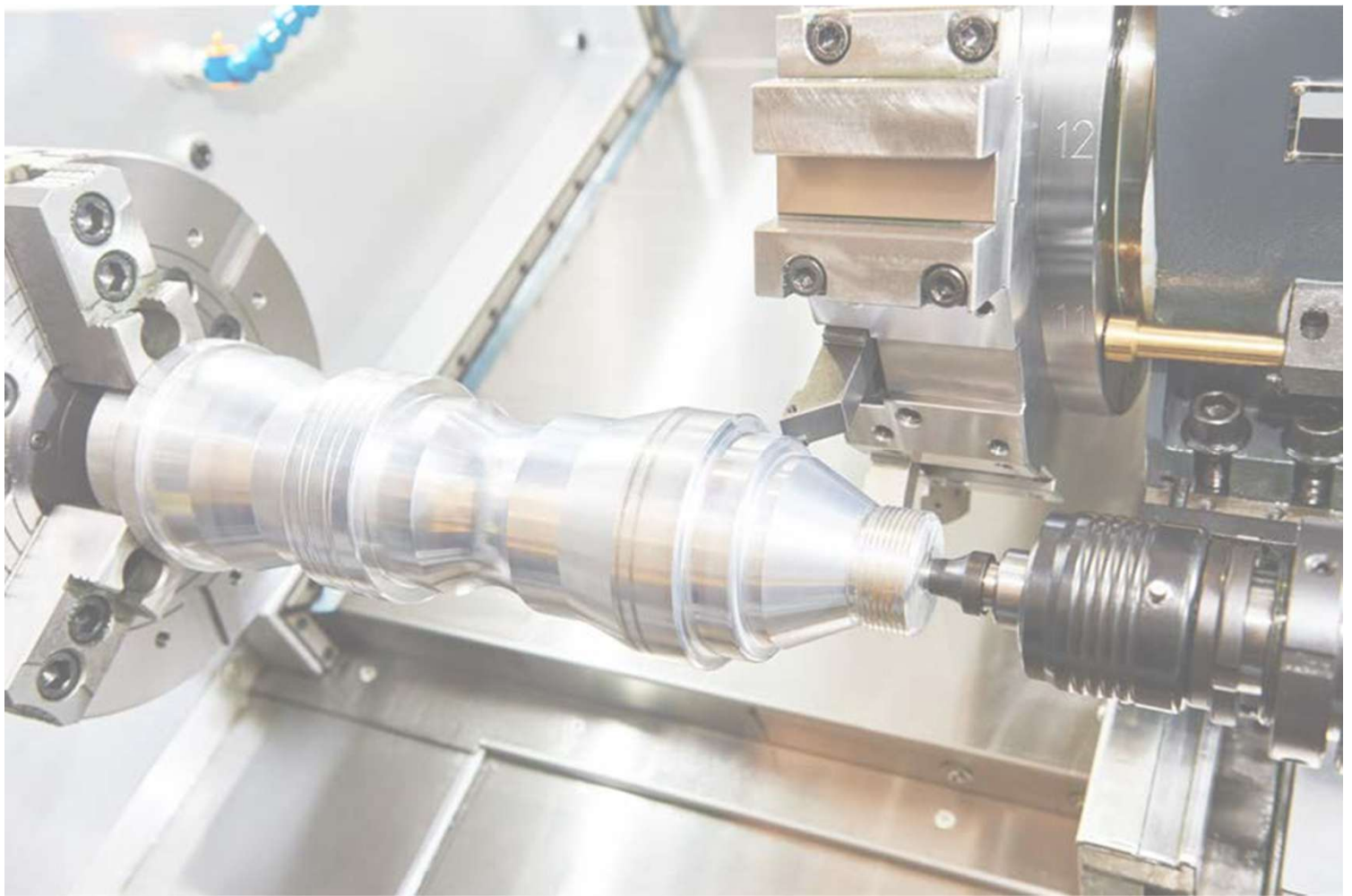


Part No.	L	
	mm	[inch]
EG0610C	600	23.6
EG1010C	1000	39.4
EG2010C	2000	78.7
EG3010C	3000	118.1
EG5010C	5000	196.8

Model Name Explanation



* 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]				
115V /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
230V /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

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]				
460V /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	-
575V /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	-	-

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	-

IP66 Standard Models (0~599 Hz)

Power Range			Frame Size	Model Name	Built-in EMC Filter
Max. Applicable Motor Capacity		Drive Rated Output Current [A]			
[HP]	[kW]				
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

Plate Mount Models (0~599 Hz)

Power Range			Frame Size	Model Name	Built-in EMC Filter
Max. Applicable Motor Capacity		Drive Rated Output Current [A]			
[HP]	[kW]				
460 V /3-phase					
1	0.75	2.7	A	VFD2A7MS43PNSAA	-
2	1.5	4.2	B	VFD4A2MS43PNSAA	-
3	2.2	5.5	C	VFD5A5MS43PNSAA	-
4	3	7.3		VFD7A3MS43PNSAA	-
5	3.7	9		VFD9A0MS43PNSAA	-