



*SP1 & HD2* **DUAL RATED**



**AC Variable Speed Inverter Drives**  
0.4kW - 500kW (0.5HP - 670HP)

# SD1

## Comprehensively specified inverters for AC motors 0.4kW - 11kW (0.5HP - 15HP)

- Single-phase up to 2.2kW (3HP)
- Three-phase up to 11kW (15HP)
- Torque vector control
- STO (Safe Torque OFF) feature
- Integral Modbus-RTU / RS485
- Multiple filter options



### SD1 AC Inverter Drives

The SD1 range is the ultimate variable speed drive for you! Easy to set up, and comprehensively specified for use in virtually any application, the SD1 is IMO's first complete range of variable speed drives which offer STO (SIL2 / SIL3) dependent upon model, along with a huge range of enhanced features, normally found on much more expensive inverter drives.

A range of EMC filter options makes the SD1 suitable for virtually every industrial, commercial or domestic application.

- IP20 (NEMA1)
- Torque Vector Control
- Supports PM DC Motor Operation
- STO\*1 (Safe Torque OFF) - SIL2 / SIL3
- Up to 150% Starting Torque
- Front Mounted RJ45 Socket ( $\leq 2.2\text{kW}/3\text{HP}$ )
- Din Rail Mountable ( $\leq 2.2\text{kW}/3\text{HP}$ )
- Fixed Keypad with Potentiometer ( $\leq 2.2\text{kW}/3\text{HP}$ )
- Detachable Keypad ( $\geq 4\text{kW}/5.5\text{HP}$ )
- HDI Input (Pulse)
- 1/2 Analogue Inputs
- 1/2 Analogue Outputs
- 2 C/O Output Relays
- Transistor Output
- 4/5 Digital Inputs
- Selectable PNP/NPN I/O
- Integral Modbus-RTU / RS485
- PID Control as Standard
- DC Injection Braking
- Integral Brake Chopper ( $\leq 30\text{kW}/40\text{HP}$ )
- Motor Auto-tune (Static & Dynamic)
- Conformal Coating as Standard
- Internal C3 Filter ( $\geq 4\text{kW}/5.5\text{HP}$ )
- Optional C3 Filter ( $\leq 2.2\text{kW}/3\text{HP}$ )
- Optional C1 & C2 Filter
- CE
- RoHS & Reach Compliant
- UL / cUL / TUV
- 2 Year Warranty
- RCM Approval

\*1 See overleaf Features for specific model inclusion.



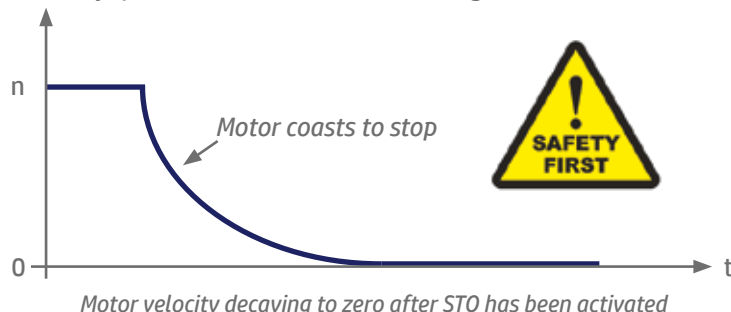
[www.imoautomation.com](http://www.imoautomation.com)

## Safety As Standard

The SD1 is the entry level range of variable speed drives from IMO and includes Safe Torque OFF (STO) as standard on selected models. STO is a hugely important safety feature which could prevent industrial accidents and even save lives. But what exactly is STO?

The STO feature ensures that no torque-generating energy is put through the equipment. STO is used to bring the drive to a complete standstill, and also prevents any unexpected or unintentional starting of the motor or drive. It therefore enables safe working when for example, the protective door or cover is open or removed.

The advantage of an integrated STO functionality compared with standard safety solutions using electromechanical switchgear, is initially the elimination of multiple components and associated part failure and maintenance, but is also considerably quicker due to a shorter switching time than a conventional solution.



### STO Benefits:

- Eliminates requirement for conventional solutions such as power cutting relay or contactor
- Reduces time and costs associated with wiring and maintenance

## High Performance At Low Speeds

The SD1 range offers torque vector control across all models in the range. IMO is renowned for manufacturing market-leading variable speed drives and the Jaguar range has been long established with high-end features such as torque vector control. However, the SD1 range heralds a new era in feature rich inverter drives due to the sheer array of standard features you would normally expect to find in considerably more expensive models.

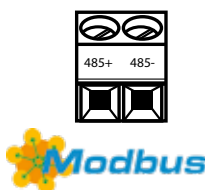
The SD1 range delivers stable torque output even at low speeds, allowing the SD1 to be used in an even wider range of applications including lifts and conveyor systems, and high-inertia loads that demand a higher starting torque.

## Enhanced Control Functionality

As you would expect, a drive from IMO isn't your average run-of-the-mill product. We produce solutions which tick every box, every time, and the SD1 is no different. From offering motor auto-tune which minimises power losses, to PID control which allows motor operation whilst controlling temperature, pressure and flow rate without the use of an external device or controller, together with the inclusion of programmable logic functionality, the SD1 is so packed with features that you wouldn't believe they fit inside its compact and user-friendly form.

## Connected For Communications

Every model in the SD1 range offers communication capability. The connection is completed by way of twisted-pair to the dedicated RS-485 terminals found on the control terminal block - see diagram overleaf. Communications are carried out using the Modbus-RTU protocol.





## Features

Multi-function LED display & status

Keypad fitted as standard to SD1 models  $\leq 2.2\text{kW}$  (3HP) and includes 5 digit LED display for quick commissioning and easy use. Removable keypad on models  $> 2.2\text{kW}$  (3HP)

External keypad connection port

Analogue potentiometer

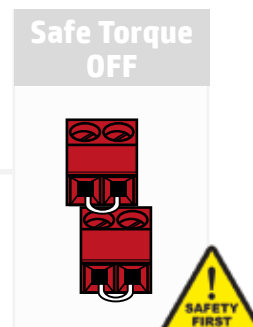
Connection terminals

EMC Filter



[Front View]

**Safe Torque OFF (STO)** is standard on all three phase models and single phase 230V models



**Shielded Barrier Strip** on all models  $\leq 4\text{kW}$  (5.5HP)



## Application Examples

With the array of advanced features and filter options, the SD1 is suited for use in virtually any application, whether it be industrial, commercial or domestic. The following are examples of, but not limited to, the type of application where the SD1 can be employed:-



### Fan Applications

- HVAC
- Water Treatment Plants
- Automatic Milking System



### Pump Applications

- HVAC
- Waste Water
- Process Cooling



[Bottom View]

**NOTE:**  
0.4kW - 2.2kW (0.5HP - 3HP)  
External Filter  
4kW - 11kW (5.5HP - 15HP)  
Internal Filter

Fan hatch

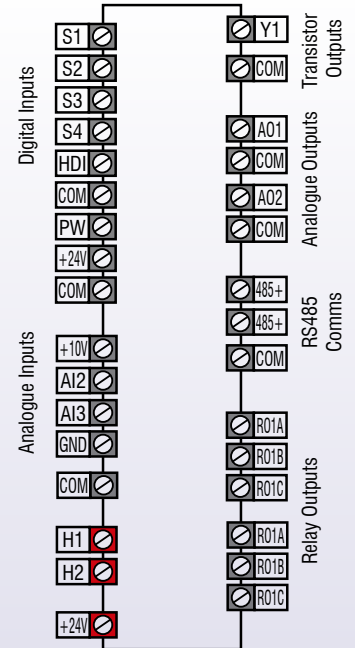
Replaceable fan



EMC Filter (optional)



## Terminal Layout

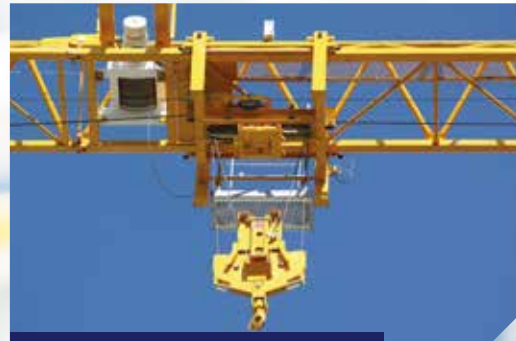


Note: For a more detailed control connections diagram, please refer to the SD1 technical datasheet found at [www.imopc.com](http://www.imopc.com)



### Conveyor Applications

- Mining & Metals
- Logistics
- Food Machinery



### Hoist Applications

- Cranes & Lifts
- Material Handling

**The versatile and feature-rich SD1 is ideal for hundreds of different applications in all segments of industry**

## Ratings & Specifications

Single Phase 110VAC (Output Voltage - 230VAC)					
Model	Frame Size	Output Power		Input Current	Output Current
SD1-2.5A-11	2	0.4kW	0.5HP	8.1A	2.5A
SD1-4.2A-11	2	0.75kW	1.0HP	15.1A	4.2A
SD1-5.8A-11	2	1.1kW	1.4HP	20.0A	5.8A

Single Phase 230VAC (STO As Standard)					
Model	Frame Size	Output Power		Input Current	Output Current
SD1-2.5A-21	1	0.4kW	0.5HP	6.5A	2.5A
SD1-4.2A-21	1	0.75kW	1.0HP	9.3A	4.2A
SD1-7.5A-21	2	1.5kW	2.0HP	15.7A	7.5A
SD1-10A-21	2	2.2kW	3.0HP	24.0A	10.0A

Three Phase 230VAC (STO As Standard)					
Model	Frame Size	Output Power		Input Current	Output Current
SD1-2.5A-23	2	0.4kW	0.5HP	3.7A	2.5A
SD1-4.2A-23	2	0.75kW	1.0HP	5.0A	4.2A
SD1-7.5A-23	3	1.5kW	2.0HP	7.7A	7.5A
SD1-10A-23	3	2.2kW	3.0HP	11.0A	10.0A

Three Phase 480VAC (STO As Standard)					
Model	Frame Size	Output Power		Input Current	Output Current
SD1-2.5A-43	2	0.75kW	1.0HP	3.4A	2.5A
SD1-4.2A-43	2	1.5kW	2.0HP	5.0A	4.2A
SD1-5.5A-43	2	2.2kW	3.0HP	5.8A	5.5A
SD1-9.5A-43	3	4.0kW	5.5HP	13.5A	9.5A
SD1-14A-43	3	5.5kW	7.5HP	19.5A	14.0A
SD1-18.5A-43	4	7.5kW	10.0HP	25.0A	18.5A
SD1-25A-43	4	11.0kW	15.0HP	32.0A	25.0A

## Optional External EMC Filters

Single Phase 230VAC				
Model	C3 Filter / Current		C2 Filter / Current	
SD1-2.5A-21	SD1-RFC3-10	10A	SD1-RFC2-10	10A
SD1-4.2A-21	SD1-RFC3-10	10A	SD1-RFC2-10	10A
SD1-7.5A-21	SD1-RFC3-10	10A	SD1-RFC2-16	16A
SD1-10A-21	SD1-RFC3-10	10A	SD1-RFC2-16	16A

Three Phase 230VAC				
Model	C3 Filter / Current		C2 Filter / Current	
SD1-2.5A-21	SD1-RFC3-7	7A	SD1-RFC2-6	6A
SD1-4.2A-21	SD1-RFC3-7	7A	SD1-RFC2-6	6A
SD1-7.5A-21	Internal	-	SD1-RFC2-16	16A
SD1-10A-21	Internal	-	SD1-RFC2-16	16A

## Options & Ordering Codes

SD1	-	2.5A	-	21	
Series Name		Output Current		Input Voltage & Phase	
				11	110V Single Phase
				21	230V Single Phase
				23	230V Three Phase
				43	480V Three Phase

## Dimensions



Frame Size 1		
Height	Width	Depth
160mm (6¼")	80mm (3⅛")	123.5mm (4⅞")

Frame Size 2		
Height	Width	Depth
185mm (7¼")	80mm (3⅛")	140.5mm (5½")

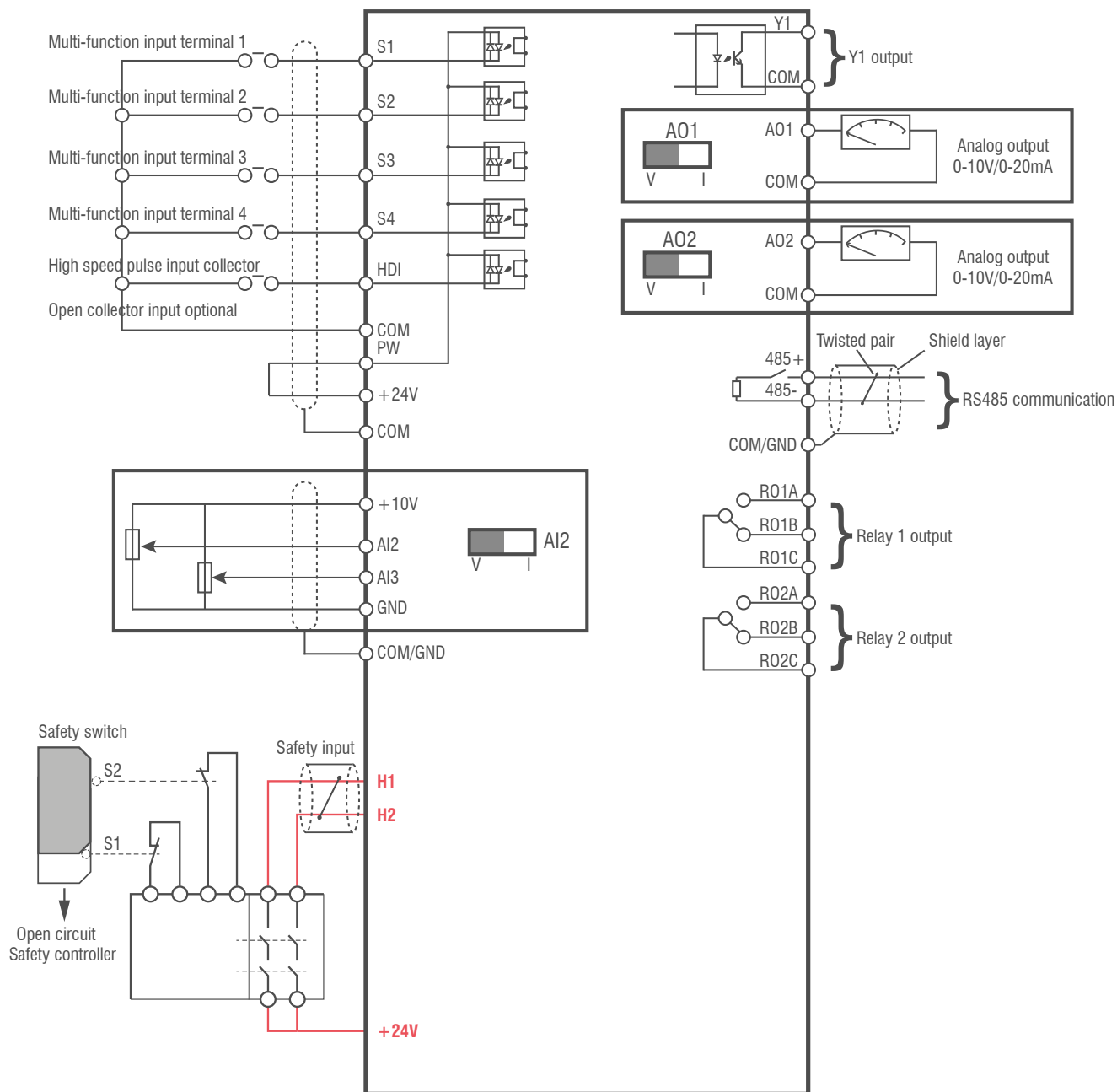
Frame Size 3		
Height	Width	Depth
256mm (10¼")	146mm (5¾")	167mm (6⅝")

Frame Size 4		
Height	Width	Depth
320mm (12⅝")	170mm (6¾")	196.3mm (7¾")

Three Phase 480VAC				
Model	C3 Filter / Current		C2 Filter / Current	
SD1-2.5A-43	SD1-RFC3-7	7A	SD1-RFC2-6	6A
SD1-4.2A-43	SD1-RFC3-7	7A	SD1-RFC2-6	6A
SD1-5.5A-43	SD1-RFC3-7	7A	SD1-RFC2-6	6A
SD1-9.5A-43	Internal	-	SD1-RFC2-16	16A
SD1-14A-43	Internal	-	SD1-RFC2-16	16A
SD1-18.5A-43	Internal	-	SD1-RFC2-32	32A
SD1-25A-43	Internal	-	SD1-RFC2-32	32A



## Power & Control Connections



NOTE: This is a typical circuit which, depending on the rating is subject to change. Please check the user manual for more details.

## Accessories

Model	Description
SD1-KP	Remote Keypad
SD1-KP-CPY	Remote Keypad with Copy function
SD1-KP-MB	Keypad Mounting Bracket

SD1-KP



SD1-KP-MB



## Technical Specifications

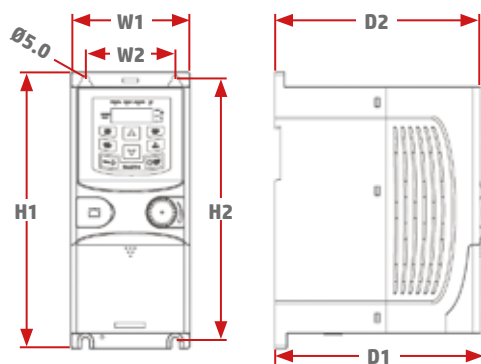
Function Description		Specification
Power Input	Input Voltage (V)	AC 1PH 110V (-15%) to 120V (+10%) AC 1PH 200V (-15%) to 240V (+10%) AC 3PH 200V (-15%) to 240V (+10%) AC 3PH 380V (-15%) to 460V (+10%)
	Input Current (A)	Refer to the rated value
	Input Frequency (Hz)	50Hz/60Hz, allowable range: 47-63Hz
Power Output	Output Voltage (V)	0-Input voltage (SD1-XXA-11 - AC 3ph 230VAC)
	Output Current (A)	Refer to the rated value
	Output Power (kW)	Refer to the rated value
	Output Frequency (Hz)	0-400Hz
Technical Control Performance	Control Mode	SVPWM control, SVC
	Motor Type	Asynchronous motor, Permanent magnet motor (optional)
	Speed Regulation Ratio	Asynchronous motor 1:100 (SVC)
	Speed Control Precision	±0.2% (SVC)
	Speed Fluctuation	±0.3% (SVC)
	Torque Response	<20ms (SVC)
	Torque Control Precision	10% (SVC)
	Starting Torque	0.5Hz / 150% (SVC)
	Overload Capacity	150% of rated current: 1 minute 180% of rated current: 10 seconds 200% of rated current: 1 second
Running Control Performance	Frequency Setup Mode	Digital, analog, pulse frequency, multi-step speed running, simple PLC, PID, Modbus communication. Shift between the set combination and set channel
	Auto-Adjustment of the Voltage	Automatic voltage regulation. Compensates for supply voltage transients
	Fault Protection Function	Provides comprehensive fault protection functions: Overcurrent; Overvoltage; Undervoltage; Overheating; Phase Loss; Overload etc.
	Speed Tracking Restart	Provides smooth ramping during start up
Peripheral Interface	Analog Input	1 (AI2) 0~10V / 0~20mA and 1 (AI3) -10~10V
	Analog Output	2 (AO1, AO2) 0~10V / 0~20mA
	Digital Input	4 standard inputs (max. frequency: 1kHz) 1 high speed input (max. frequency: 50kHz)
	Digital Output	1 Y1 terminal output
	Relay Output	2 programmable relay outputs RO1A NO, RO1B NC, RO1C common terminal RO2A NO, RO2B NC, RO2C common terminal Contact capacity: 3A/250VAC
Other	Mounting Method	Wall & rail mounting
	Ambient Operating Temperature	-10°C to +50°C (derating 1% for every additional 1°C when above 40°C)
	DC Reactor	Standard internal DC reactor for inverters (≥18.5kW)
	Installation Mode	Wall and rail installation of inverters (1PH/200V, 3PH/380V, ≤2.2kW and 3PH/200V, ≤0.75kW) Wall and flange installation of inverters (3PH/380V, ≥4kW and 3PH/200V, ≥1.5kW)
	Braking Unit	Standard for inverters ≤37kW, optional for inverters of 45~110kW
	Protection Level	IP20 Note: Plastic cased inverter should be installed in a metal distribution cabinet, which conforms to IP20 (top surface conforms to IP3X)
	Cooling	Fan cooling
	Braking Unit	Built-in
	EMC Filter	Internal C3 filters for inverters 3PH/380V, ≥4kW and 3PH/200V, ≥1.5kW. Optional external filters to meet the requirement of IEC61800-3 C2, IEC61800-3 C3 For drives >4kW, if internal C3 filter is required, fit supplied jumper link to EMC/J10 observing all safety precautions
	Safety	All SD1 inverters comply to safety standards and are marked accordingly. STO function to SIL level 2/3



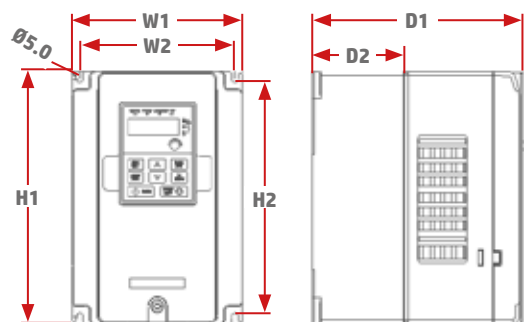


## Dimensions (mm)

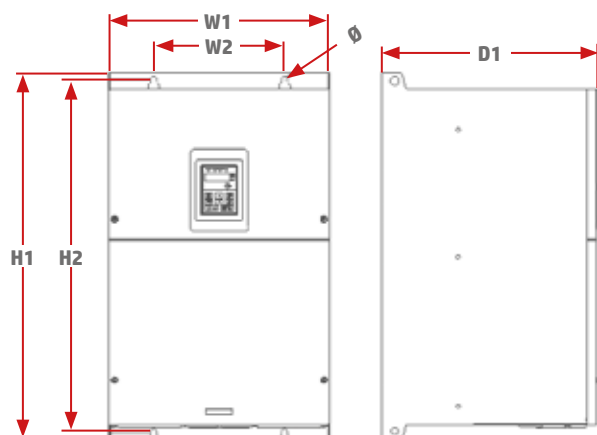
	Model	W1	W2	H1	H2	D1	D2
Single Phase 110V	SD1-2.5A-11	80	60	185	175	140.5	137.3
	SD1-4.2A-11	80	60	185	175	140.5	137.3
	SD1-5.8A-11	80	60	185	175	140.5	137.3
Single Phase 230V	SD1-2.5A-21	80	60	160	150	123.5	120.3
	SD1-4.2A-21	80	60	160	150	123.5	120.3
	SD1-7.5A-21	80	60	185	175	140.5	137.3
	SD1-10A-21	80	60	185	175	140.5	137.3
Three Phase 230V	SD1-2.5A-23	80	60	185	175	140.5	137.3
	SD1-4.2A-23	80	60	185	175	140.5	137.3
	SD1-7.5A-23	146	131	256	243.5	167	84.5
	SD1-10A-23	146	131	256	243.5	167	84.5
Three Phase 480V	SD1-2.5A-43	80	60	185	175	140.5	137.3
	SD1-4.2A-43	80	60	185	175	140.5	137.3
	SD1-5.5A-43	80	60	185	175	140.5	137.3
	SD1-9.5A-43	146	131	256	243.5	167	84.5
	SD1-14A-43	146	131	256	243.5	167	84.5
	SD1-18.5A-43	170	151	320	303.5	196.3	113
	SD1-25A-43	170	151	320	303.5	196.3	113



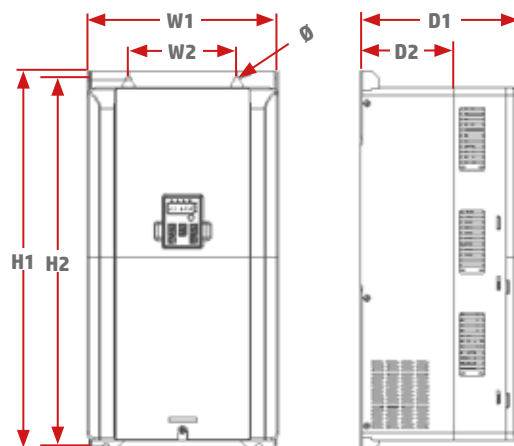
Wall mounting dimensions of 1PH 110V & 230V  
0.4 to 2.2kW SD1 Inverter (unit: mm)



Wall mounting dimensions of 3PH 380V 0.4 to 37kW  
& 3PH 220V 1.5 to 7.5kW SD1 Inverter (unit: mm)



Wall mounting dimensions of 3PH 380V 90 to  
110kW SD1 Inverter (unit: mm)



Wall mounting dimensions of 3PH 45 to  
75kW SD1 Inverter (unit: mm)

# HD2

## High performance, torque vector inverters for AC motors 1.5kW - 500kW (2HP - 670HP)

- Three-phase (480V) up to 500kW (670HP)
- Torque Vector Control
- Integral ModbusRTU / RS485
- Bluetooth & WiFi Communication
- Multiple Expansion Options
- Safe Torque Off (STO) as Standard



### HD2 High Performance AC Inverter Drives

The HD2 range of inverters offer unrivalled performance. Designed for controlling asynchronous AC induction motors and permanent magnet synchronous motors, the HD2 torque vector control range are packed full of features as standard that you would usually expect to find on considerably higher specified inverters.

Utilising the most advanced vector control technology, the HD2 range delivers sensorless and closed loop vector control for both asynchronous and synchronous motors giving exceptional speed response and control. HD2 offers unparalleled reliability, environmental adaptability, high precision and stable performance - everything you have come to expect from an IMO inverter drive.

The HD2 also offers some significant advantages to the customer including a huge range of functions with simple operation, industrial communication protocols (ModbusRTU, EtherCAT and Profinet) along with Bluetooth and WiFi communication for programming, and with more communication options in development.



Modbus

CANopen

EtherNet/IP

PROFI  
BUS

PROFI  
NET



[www.imoautomation.com](http://www.imoautomation.com)

## Setting High Standards

The level of functionality offered by the HD2 range sets the bar high for others to compete with. For example, the HD2 offers two sets of motor parameters which allow users to deploy one HD2 inverter to control different motors, which ultimately leads to costs savings.

## High Performance At Low Speeds

The HD2 range offers torque vector control across the full range. IMO is well renowned for manufacturing market-leading variable speed drives and the HD2, along with its sister HD1 inverter, heralds a new era in feature rich inverter drives due to the vast array of standard features included that you would normally expect only to find in considerably more expensive models.

The HD2 range delivers stable torque output even at low speeds thanks to its high speed processor, allowing the HD2 to be used in an even wider range of applications including lifts, conveyor systems and high-inertia loads that demand a higher starting torque and rapid controlled braking.

## Enhanced Control Functionality

As you would expect, a drive from IMO isn't your average run-of-the-mill product. We produce solutions which tick every box, every time and the HD2 is no different. From offering motor auto-tune (both static and dynamic) which minimizes power losses, to PID control which allows motor operation whilst controlling temperature, pressure and flow rate without the use of an external device or controller, together with the inclusion of programmable logic functionality and encoder feedback capability, the HD2 is so packed with features that you wouldn't believe they fit inside its compact and user-friendly form.

- Torque Vector control
- Up to 150% starting torque
- Permanent magnet motor control
- Detachable keypad with copy
- Advanced LCD keypad
- IP20 / NEMA1 (full range)
- High speed processor
- Motor Auto-tune (static and dynamic)
- Safe Torque Off (STO)
- 2 motor parameter sets
- DC Injection braking
- Flux braking
- Integral brake chopper (<37kW)
- PID Control as standard
- PLC option card
- PG card (multiple options)
- DCR (18.5kW-110kW)
- Conformal Coating as Standard

## Connected For Communications

Every model in the HD2 range offers communication capability. The connection is completed by way of twisted-pair to the dedicated RS-485 terminals found on the control terminal block using the Modbus-RTU protocol or using any of the many communication option cards for which models up to and including 5.5kW can use two option cards simultaneously, whilst models upward of 7.5kW can use three.

New to this range are Bluetooth and WiFi wireless communication.

- Ethernet (proprietary) Card
- Modbus RTU/RS485 built in
- Profibus DP card
- CANopen card
- CAN master/slave card
- Profinet card
- Bluetooth card
- WiFi card
- PLC Option Cards
- I/O Expansion Card
- 6 Digital Inputs
- 2 Analogue Inputs
- 1 Analogue Output
- 2 Relay Outputs
- USB Port for firmware updates
- Ethernet IP Card
- EtherCAT Card
- Modbus TCP Card



## HD2 Hardware Features

Backlit LCD Display  
with 16 lines of text

Removable Keypad

Screw Connection Terminals

USB Connection Port



Backlit LCD Display  
with graphical capability

## HD2 Application Examples

With the array of advanced features and filter options, the HD2 is suited for use in virtually any application, whether it be industrial, commercial or domestic. The following are examples of, but not limited to, the type of application where the HD2 can be employed:-



### Heavy Duty Machinery

- Oil
- Mining
- Aggregates



### Hoist Applications

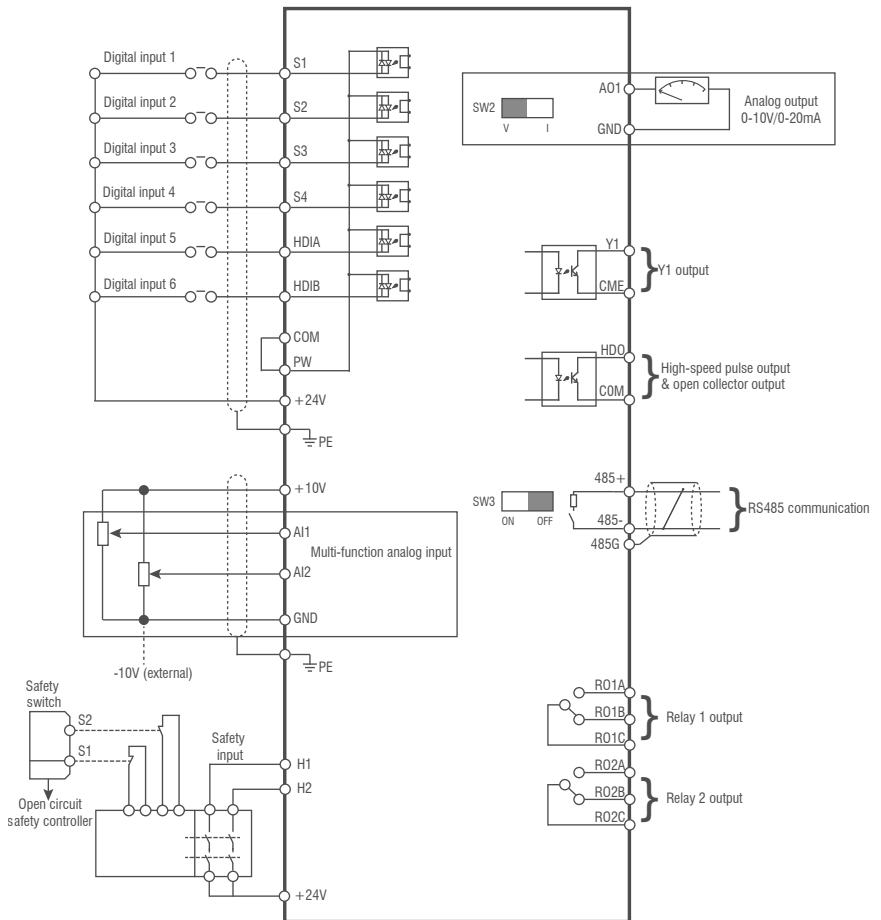
- Elevators / Lifts
- Material Handling
- RTG Cranes





## HD2 Terminal Layout

Terminal	Description
R01A / R02A	Relay Output N/O
R01B / R02B	Relay Output N/C
R01C / R02C	Relay Output Common
PE	Ground
PW	Input for external 24VDC supply
+24V	+24V for digital inputs
+10V	+10V for analog inputs
COM	0V common for digital inputs
CME	0V common for digital output
GND	0V common for analog input
H1	STO input 1
H2	STO input 2
S1 - S4	Digital input
HD1A / HD1B	Digital input / pulse input
AI1 / AI2	Analog input
A01	Analog output
Y1	Digital output
HDO	Pulse output
485+	Comms +
485-	Comms -
485G	Comms ground



### Conveyor Applications

- Metals
- Logistics
- Food Machinery



### Pump & Fan Applications

- Fans
- HVAC
- Pumps
- BMS Systems
- Air Compression

## Options & Ordering Codes

HD2 - 75A - 43 - UL		
Series	HD2	Input 480V Three Phase
Output Power kW (HP)		
1.5kW (2HP)	3.7A	22kW (30HP) 45A
2.2kW (3HP)	5A	30kW (40HP) 60A
4.0kW (5.5HP)	9.5A	37kW (50HP) 75A
5.5kW (7.5HP)	14A	45kW (60HP) 92A
7.5kW (10HP)	18.5A	55kW (75HP) 115A
11kW (15HP)	25A	75kW (100HP) 150A
15kW (20HP)	32A	90kW (125HP) 180A
18.5kW (25HP)	38A	110kW (150HP) 215A

HD2 - 260A - 43		
Series	HD2	Input 480V Three Phase
Output Power kW (HP)		
132kW (175HP)	260A	280kW (375HP) 530A
160kW (215HP)	305A	315kW (420HP) 600A
185kW (250HP)	340A	355kW (475HP) 650A
200kW (270HP)	380A	400kW (535HP) 720A
220kW (300HP)	425A	450kW (600HP) 820A
250kW (335HP)	480A	500kW (670HP) 860A

HD2 - 70A - 23		
Series	HD2	Input 230V Three Phase
Output Power kW (HP)		
0.75kW (1HP)	4.5A	15kW (20HP) 55A
1.5kW (2HP)	7A	18.5kW (25HP) 70A
2.2kW (3HP)	10A	22kW (30HP) 80A
4.0kW (5.5HP)	16A	30kW (40HP) 110A
5.5kW (7.5HP)	20A	37kW (50HP) 130A
7.5kW (10HP)	30A	45kW (60HP) 160A
11kW (15HP)	42A	55kW (75HP) 200A

## HD2 Ratings & Specifications

Model	HD Mode (150% Overload - 1 min)			ND Mode (120% Overload - 1 min)		
	Rated Power kW (HP)	Rated Input Current (A)	Rated Output Current (A)	Rated Power kW (HP)	Rated Input Current (A)	Rated Output Current (A)
HD2-3.7A-43-UL	1.5 (2)	5	3.7	-	-	-
HD2-5A-43-UL	2.2 (3)	5.8	5	-	-	-
HD2-9.5A-43-UL	4 (5.5)	13.5	9.5	5.5 (7.5)	19.5	14
HD2-14A-43-UL	5.5 (7.5)	19.5	14	7.5 (10)	25	18.5
HD2-18.5A-43-UL	7.5 (10)	25	18.5	11 (15)	32	25
HD2-25A-43-UL	11 (15)	32	25	15 (20)	40	32
HD2-32A-43-UL	15 (20)	40	32	18.5 (25)	47	38
HD2-38A-43-UL	18.5 (25)	47	38	22 (30)	56	45
HD2-45A-43-UL	22 (30)	56	45	30 (40)	70	60
HD2-60A-43-UL	30 (40)	70	60	37 (50)	80	75
HD2-75A-43-UL	37 (50)	80	75	45 (60)	94	92
HD2-92A-43-UL	45 (60)	94	92	55 (75)	128	115
HD2-115A-43-UL	55 (75)	128	115	-	-	-
HD2-150A-43-UL	75 (100)	160	150	90 (125)	190	180
HD2-180A-43-UL	90 (125)	190	180	110 (150)	225	215
HD2-215A-43-UL	110 (150)	225	215	-	-	-
HD2-260A-43	132 (175)	265	260	160 (215)	310	305
HD2-305A-43	160 (215)	310	305	185 (250)	345	340
HD2-340A-43	185 (250)	345	340	200 (270)	385	380
HD2-380A-43	200 (270)	385	380	220 (300)	430	425
HD2-425A-43	220 (300)	430	425	250 (335)	485	480
HD2-480A-43	250 (335)	485	480	280 (375)	545	530
HD2-530A-43	280 (375)	545	530	315 (420)	610	600
HD2-600A-43	315 (420)	610	600	350 (470)	625	650
HD2-650A-43	350 (470)	625	650	400 (535)	715	720
HD2-720A-43	400 (535)	715	720	-	-	-
HD2-860A-43	500 (670)	890	860	-	-	-

Model	Rated Power kW (HP)	Rated Input Current (A)	Rated Output Current (A)
HD2-4.5A-23	0.75 (1)	5	4.5
HD2-7A-23	1.5 (2)	7.7	7
HD2-10A-23	2.2 (3)	11	10
HD2-16A-23	4 (5.5)	17	16
HD2-20A-23	5.5 (7.5)	21	20
HD2-30A-23	7.5 (10)	31	30
HD2-42A-23	11 (15)	43	42
HD2-55A-23	15 (20)	56	55
HD2-70A-23	18.5 (25)	71	70
HD2-80A-23	22 (30)	81	80
HD2-110A-23	30 (40)	112	110
HD2-130A-23	37 (50)	132	130
HD2-160A-23	45 (60)	163	160
HD2-200A-23	55 (75)	200	200



## Technical Specifications

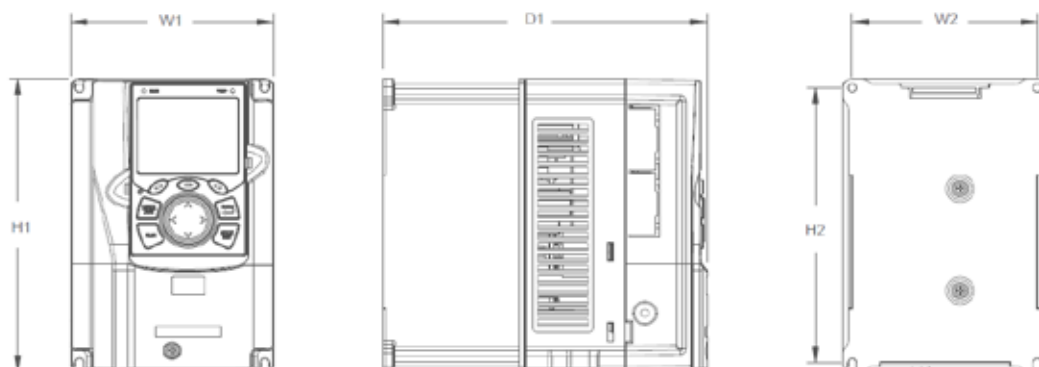
	Function Description	Specification
Power Input	Input Voltage (V)	AC 3PH Rated Voltage - 230V; AC 3PH Rated Voltage - 480V;
	Allowable Voltage Fluctuation	-15% to +10%
	Input Frequency (Hz)	50Hz/60Hz, allowable range: 47-63Hz
Power Output	Output Voltage (V)	0-Input voltage
	Output Frequency (Hz)	0-400Hz
Technical Control Performance	Control Mode	SVPWM control, SVC, VC
	Motor Type	Asynchronous motor, permanent-magnet synchronous motor
	Speed Regulation Ratio	Asynchronous motor 1:200 (SVC); Synchronous motor 1:20 (SVC); 1:1000 (VC)
	Speed Control Precision	±0.2% (SVC), ±0.02% (VC)
	Speed Fluctuation	±0.3% (SVC)
	Torque Response	<20ms (SVC), <10ms (VC)
	Torque Control Precision	10% (SVC), 5% (VC)
	Starting Torque	Asynchronous motor: 0.25Hz / 150% (SVC) Synchronous motor: 2.5Hz / 150% (SVC) 0Hz / 200% (VC)
	Overload Capacity	Constant Torque: 150%: 1 min; 180%: 10s; 200%: 1s Variable Torque: 120%: 1 min; 150%: 10s; 180%: 1s
Running Control Performance	Frequency Setup Mode	Digital, analog, pulse frequency, multi-step speed running, simple PLC, PID, Modbus communication, multiple Ethernet-based communication
	Automatic Voltage Regulation Function	Keep the output voltage constant when grid voltage changes
	Fault Protection Function	Provide over 30 kinds of fault protection functions: overcurrent, overvoltage, undervoltage, over-temperature, phase loss and overload, etc.
	Speed Tracking Restart	Realise impact-free starting of the motor in rotating
Peripheral Interface	Analog Input	2 (AI1: 0-10V/4-20mA; AI2: -10V-+10V)
	Analog Output	1 (AO1: 0-10V/4-20mA)
	Digital Input	4x DI, 2x High Speed Inputs
	Digital Output	1x DO, 1x Pulse Output
	Relay Output	2x programmable relay output, NO/NC contact
	Communication Interface	1x RS485 (non-isolated), 1x USB
	STO Input	2x redundant input
Optional Cards	See Optional Expansion Cards p.18	
Other	Installation Mode	Wall mounting, Flange mounting, Floor mounting
	Temperature	-10°C to +50°C (Derating is required if the ambient temperature exceeds 40°C)
	Protection Level	IP20
	Cooling Mode	Forced air cooling
	Braking Unit	15kW or below built-in (230V models); 30kW or below built-in (480V models)
	STO Level	SIL2
	EMC Filter	All models fulfill the requirements of IEC61800-3 C3, up to 30m cable length shielded

## Dimensions (mm)

	Model	W1	W2	H1	H2	D1	Frame Style
200V	HD2-4.5A-23	126	115	186	175	185	A
	HD2-7A-23 to HD2-10A-23	146	131	256	243.5	192	
	HD2-16A-23 to HD2-20A-23	170	151	320	303.5	219	
	HD2-30A-23	230	210	330	311	217	
	HD2-42A-23 to HD2-55A-23	255	237	400	384	242	
	HD2-70A-23 to HD2-110A-23	270	130	555	540	325	B
	HD2-130A-23 to HD2-200A-23	325	200	680	661	365	

	Model	W1	W2	W3	W4	H1	H2	D1	D2	Frame Style
400V	HD2-3.7A-43-UL to HD2-5A-43-UL	126	115	-	-	186	175	185	-	A
	HD2-9.5A-43-UL to HD2-14A-43-UL	146	131	-	-	256	243.5	192	-	
	HD2-18.5A-43-UL to HD2-25A-43-UL	170	151	-	-	320	303.5	219	-	
	HD2-32A-43-UL to HD2-38A-43-UL	230	210	-	-	330	311	217	-	
	HD2-45A-43-UL to HD2-60A-43-UL	255	237	-	-	400	384	242	-	
	HD2-75A-43-UL to HD2-115A-43-UL	270	130	-	-	555	540	325	-	B
	HD2-150A-43-UL to HD2-215A-43-UL	325	200	-	-	680	661	365	-	C
	HD2-260A-43 to HD2-380A-43	500	180	-	-	870	850	360	-	D
	HD2-425A-43 to HD2-600A-43	750	230	714	680	1410	1390	380	150	E
	HD2-650A-43 to HD2-860A-43	620	230	572	-	1700	1678	560	240	F

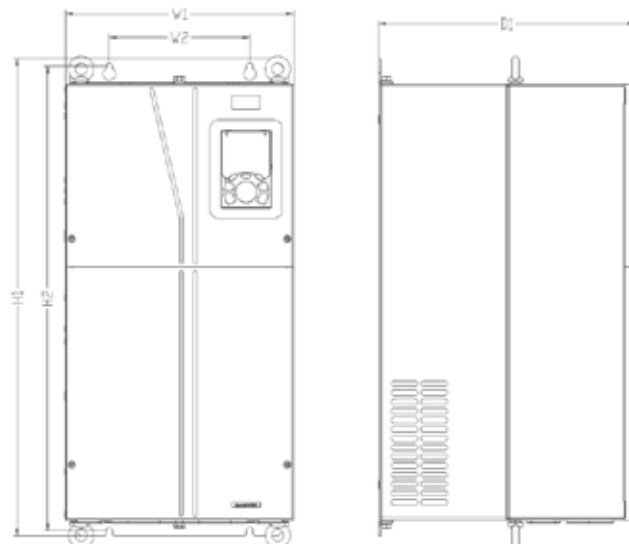
Frame Style A



Frame Style B

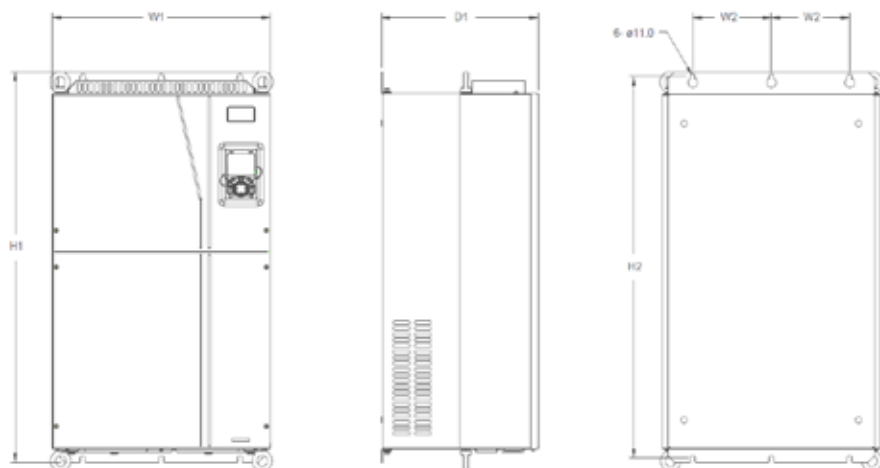


Frame Style C

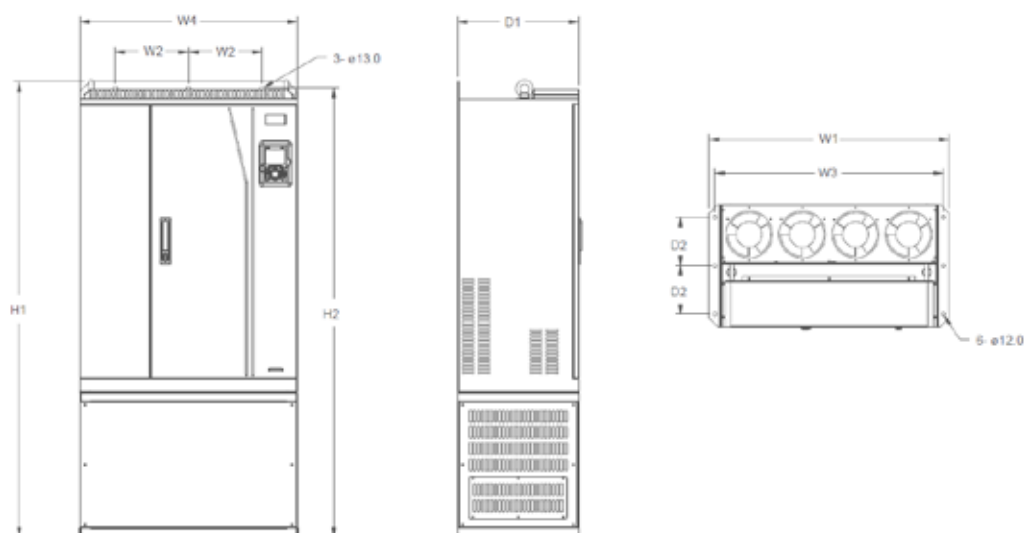




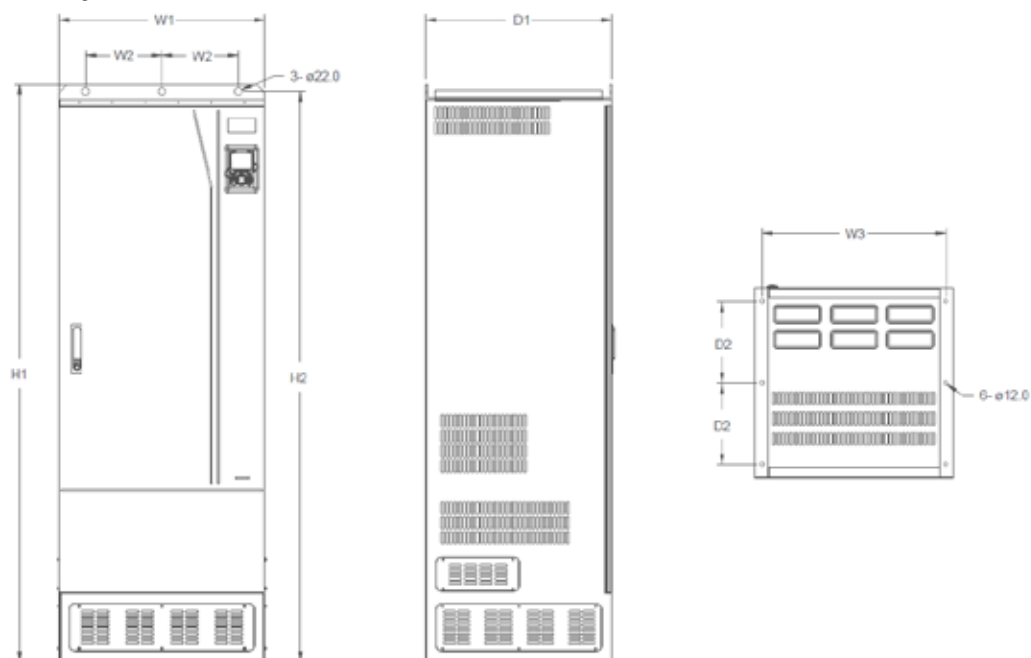
**Frame Style D**



**Frame Style E**



**Frame Style F**



## Optional Expansion Cards

Expansion Card Type	Part Number	Part Description
I/O Card	<b>HD2-E-IO</b>	IO Expansion Card (4DI, 1 DO, 1 AI, 1 AO, 2RO)
	<b>HD2-E-IO2</b>	IO Expansion Card (1 PT100, 1 PT1000, 4 DI, 2 RO)
PLC Card	<b>HD2-E-PLC</b>	Programmable Expansion Card (CODESYS)
Communication Card	<b>HD2-E-BTP</b>	Bluetooth Communication Card (Internal Antenna)
	<b>HD2-E-BTM</b>	Bluetooth Communication Card (External Antenna)
	<b>HD2-E-ENET</b>	Ethernet Communication Card
	<b>HD2-E-EIP</b>	Ethernet/IP Communication Card
	<b>HD2-E-ECAT</b>	EtherCAT Communication Card
	<b>HD2-E-WFP</b>	WiFi Communication Card (Internal Antenna)
	<b>HD2-E-WFM</b>	WiFi Communication Card (External Antenna)
	<b>HD2-E-COP</b>	CANopen Communication Card
	<b>HD2-E-CAN</b>	CAN Master-Slave Communication Card
	<b>HD2-E-PDP</b>	PROFIBUS-DP Communication Card
	<b>HD2-E-PRF</b>	PROFINET Communication Card
	<b>HD2-E-MTCP</b>	Modbus TCP Communication Card
PG Card	<b>HD2-E-PGIM</b>	Multi-Function Incremental PG Card
	<b>HD2-E-PGIM-24</b>	24V Multi-Function Incremental PG Card
	<b>HD2-E-PGI</b>	5V Differential PG Card
	<b>HD2-E-PGR</b>	Rotary Transformer PG Card
Power Supply Card	<b>HD2-E-APS</b>	24V DC Aux. Power Supply Card
Accessories	<b>HD2-KP</b>	LCD Multi-function keypad
	<b>HD2-KP-MB</b>	Keypad mounting bracket

HD2-E-IO



HD2-E-PDP



HD2-E-WFP



HD2-E-PGI



## Accessories

Inverter	Input Reactor	DC Reactor	Output Reactor	Braking unit
HD2-3.7A-43-UL	ACLC-1.5-4	DCLC-004-4	OCLC-1.5-4	Integral
HD2-5A-43-UL	ACLC-2.2-4	DCLC-7R5-4	OCLC-2.2-4	Integral
HD2-9.5A-43-UL	ACLC-4.0-4	DCLC-7R5-4	OCLC-4.0-4	Integral
HD2-14A-43-UL	ACLC-5.5-4	DCLC-015-4	OCLC-5.5-4	Integral
HD2-18.5A-43-UL	ACLC-7.5-4	DCLC-015-4	OCLC-7.5-4	Integral
HD2-25A-43-UL	ACLC-11-4	DCLC-018-4	OCLC-11-4	Integral
HD2-32A-43-UL	ACLC-15-4	DCLC-022-4	OCLC-15-4	Integral
HD2-38A-43-UL	ACLC-18-4	DCLC-030-4	OCLC-18-4	Integral
HD2-45A-43-UL	ACLC-22-4	DCLC-037-4	OCLC-22-4	Integral
HD2-60A-43-UL	ACLC-37-4	DCLC-045-4	OCLC-37-4	Integral
HD2-75A-43-UL	ACLC-37-4	DCLC-055-4	OCLC-37-4	Integral
HD2-92A-43-UL	ACLC-45-4	DCLC-055-4	OCLC-45-4	DBU45/75-4
HD2-115A-43-UL	ACLC-55-4	DCLC-075-4	OCLC-55-4	DBU45/75-4
HD2-150A-43-UL	ACLC-75-4	DCLC-090-4	OCLC-75-4	DBU45/75-4
HD2-180A-43-UL	ACLC-110-4	DCLC-132-4	OCLC-110-4	DBU90/110-4
HD2-215A-43-UL	ACLC-110-4	DCLC-132-4	OCLC-110-4	DBU90/110-4
HD2-260A-43	ACLC-160-4	DCLC-132-4	OCLC-200-4	DBU132-4
HD2-305A-43	ACLC-160-4	DCLC-160-4	OCLC-200-4	DBU160/200-4
HD2-340A-43	ACLC-200-4	DCLC-200-4	OCLC-200-4	DBU160/200-4
HD2-380A-43	ACLC-200-4	DCLC-220-4	OCLC-200-4	DBU160/200-4
HD2-425A-43	Integral	DCLC-280-4	OCLC-280-4	DBU220/250-4
HD2-480A-43	Integral	DCLC-280-4	OCLC-280-4	DBU220/250-4
HD2-530A-43	Integral	DCLC-280-4	OCLC-280-4	DBU160/200-4 (x2)
HD2-600A-43	Integral	DCLC-315-4	OCLC-350-4	DBU160/200-4 (x2)
HD2-650A-43	Integral	DCLC-400-4	OCLC-350-4	DBU160/200-4 (x2)
HD2-720A-43	Integral	DCLC-400-4	OCLC-400-4	DBU160/200-4 (x2)
HD2-820A-43	Integral	DCLC-500-4	OCLC-500-4	DBU160/200-4 (x2)
HD2-860A-43	Integral	DCLC-500-4	OCLC-500-4	DBU220/250-4 (x2)



## Bespoke Training Courses for all levels

### Key Features

- In-house or On-site
- Standard & Advanced levels catered for
- Bespoke offering to suit your requirements
- Modular courses



IMO offers in-house or on-site training for all its HMI, PLC and Variable Speed Drives products. The training modules can be standard or higher level, tailored to the application requirement. They are designed to familiarise customers with the use and programming of IMO automation products. Each module is usually based on one product range.

IMO is flexible in offering a training program that best suit's the requirements of the customer.

	Description	Location	Duration
<b>SOFTWARE-ENGINEERING</b>	Software & Engineering Support Services Course	In House	Project Dependent
<b>AUTOTRAIN1</b>	Full Day Automation Technical Training Course	In-House or On-Site	1 Day
<b>AUTOTRAIN2</b>	Half Day Automation Technical Training Course	In-House or On-Site	½ Day
<b>VSDTRAIN1</b>	Full Day Inverter Technical Training Course	In-House or On-Site	1 Day
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