

HITACHI

Inspire the Next

Low Voltage Variable Frequency Drive

Range: 0.7 kW to 75 kW

HH200 Series

Low Voltage Drive



Most Energy Efficient Means of Process Control

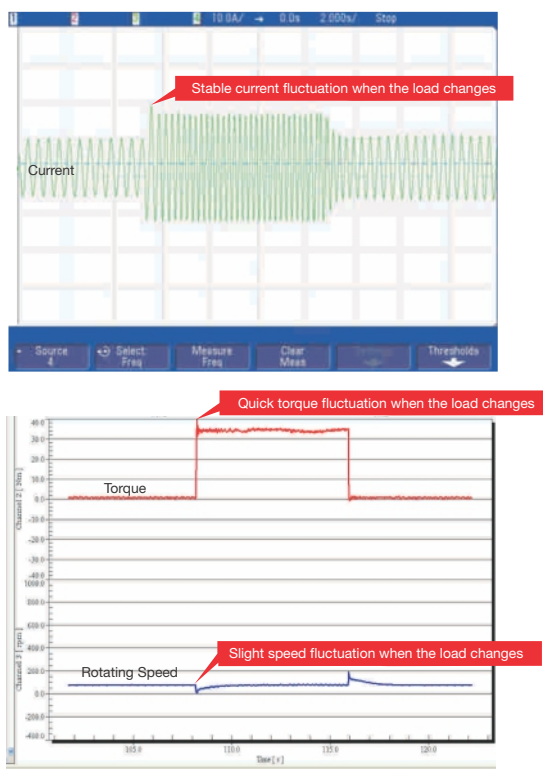
High Performance

More Accurate Motor Autotuning

- Accurate rotating and static motor autotuning
- Convenient debugging and easy operation

Rotating Autotuning	Static Autotuning
De-couple from the load Applied to the situation with high control accuracy	No need to de-couple from the load applied when rotating autotuning is not available

Optimized V / F Control



The current, torque and speed waveforms when sudden loading or unloading in SVPWM control mode with 2 Hz running frequency and full load.

Perfect voltage and current control, reduce the fault protection time

OC Fault

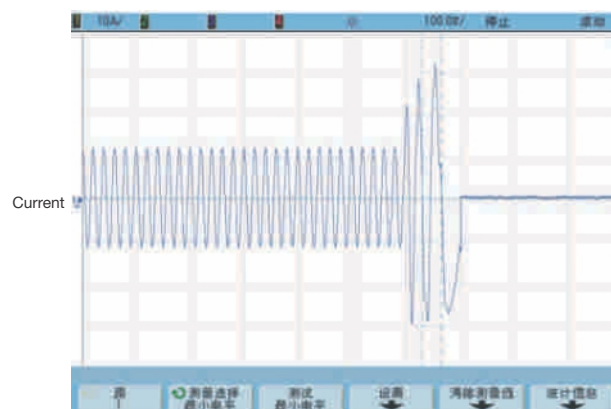
Adjust the output frequency to avoid over-current of the inverter during acceleration

OV Fault

Adjust the output frequency to avoid over-voltage of the DC bus during deceleration

Multiple braking modes and instant stopping

Dynamic Braking	DC Braking	Flux Braking
Configure braking units and resistors	No need to configure braking units and resistors	No need to configure braking units and resistors
Available in the situation of big inertia load and frequent braking	Available in the situation when we start the running motor after braking and in the situation when we keep the moment output after braking to zero speed	Available in the instant stop situation with big inertia load and no frequent braking
Big braking torque and quick braking	Not available in the situation of big inertia load or instant stop braking in high speed running	Not available in the situation of big inertia load and frequent braking (the energy consumed on the stator and its cooling is better than DC braking)

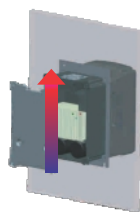


Flux braking current waveform when the running frequency is 50 Hz, deceleration time is 0.1s with full load in asynchronous motor SVPWM control mode.

Multi-function with Simple Operation

Separate air-duct

The separate air-duct prevents the contaminants into the electronic parts / components and greatly improves the protective effect of the inverter, as well as its reliability and service life, to adapt various complicated site environments. It can also facilitate the heat-releasing in control cabinets and the heat-releasing design of the customer.



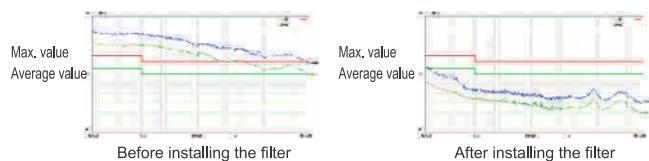
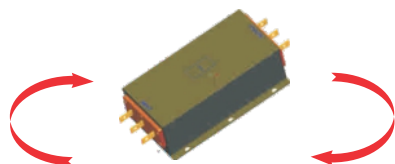
Multiple installation modes

1.5~55 kW: Wall mounting and flange mounting



C3 input filter (standard configuration) and C2 filter (optional)

C3 input filter is embedded in the factory to meet different application requirements, save installation space and avoid electromagnetic interference caused by incorrect selection and site installation.



Conduction interference test

Remarks:

C2 filter: EMC performance of the drive achieves the limited usage requirement in civil environment.

C3 filter: EMC performance of the drive achieves the limited usage requirement in industrial environment.

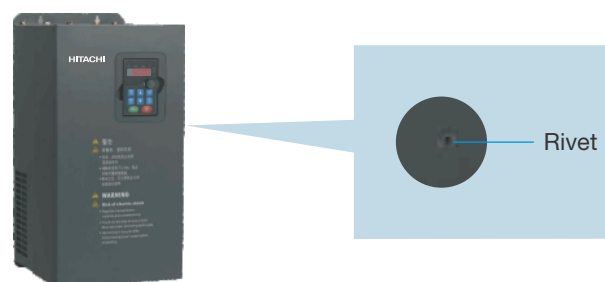
Book structure

- Parallel installation
- Smaller installation space with low cost and beautiful appearance.



The rivet design ensures reliable integration connection

- Greener proper grounding
- Stronger corrosion-resistance excellent EMC performance



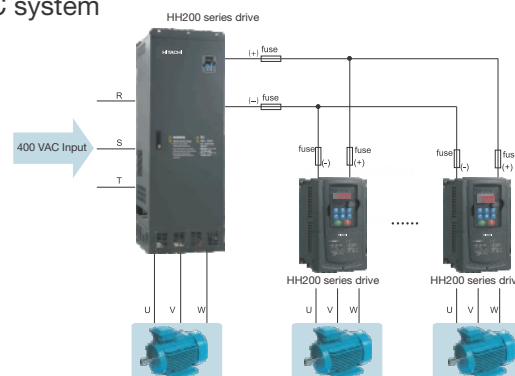
Smaller size

Due to the thermal simulation and advanced modularized design, the size of our product is reduced greatly.

Supporting common DC bus

Reduce the power lost on DBR

Note the impact current and the capacity of the input AC system



Various external interfaces and swappable terminal board convenient for replacement and maintenance



Terminals	Quantity	Features
ON-OFF input	8 channels	1 kHz NPN and PNP
High speed pulse input	1 channels	50 kHz NPN and PNP
Analog input	3 channels	AI1, AI2 0~10 V / 0~20 mA AI3 -10~10 V
ON-OFF output	1 channels	Max. output frequency: 1 kHz
High speed pulse output	1 channels	Max. output frequency: 50 kHz
Analog output	2 channels	0~10 V, 0~20 mA
Relay output	2 channels	3 A / 250 VAC, 1 A / 30 VDC, NO+NC

High performance keypad



External keypad

External LED keypad is standard and detachable in drives 22 kW and above.

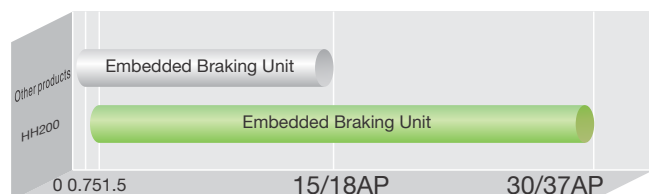
For detachable option VFD rating below 22 kW please contact local Hitachi sales office.



The standard LED keypad supports parameters loading and unloading with Max. length of 200 m and digital potentiometer.

Embedded braking units of 1.5-30 kW drive

Reduce the occupied space and decrease the cost

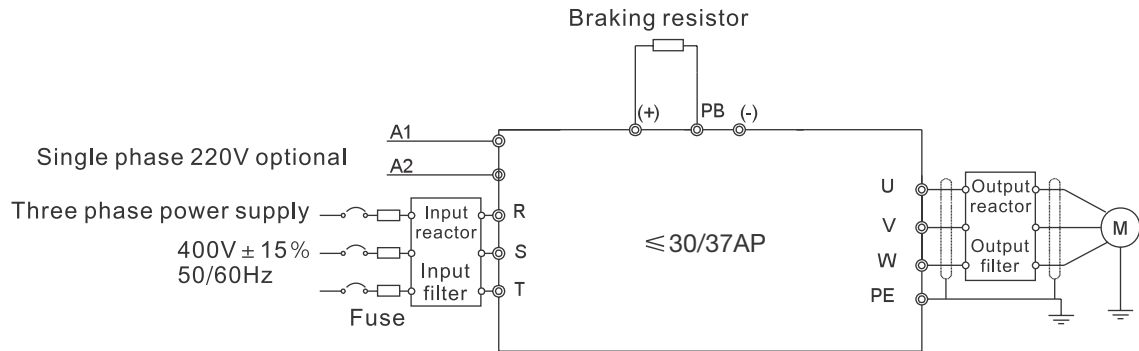


Technical Specifications

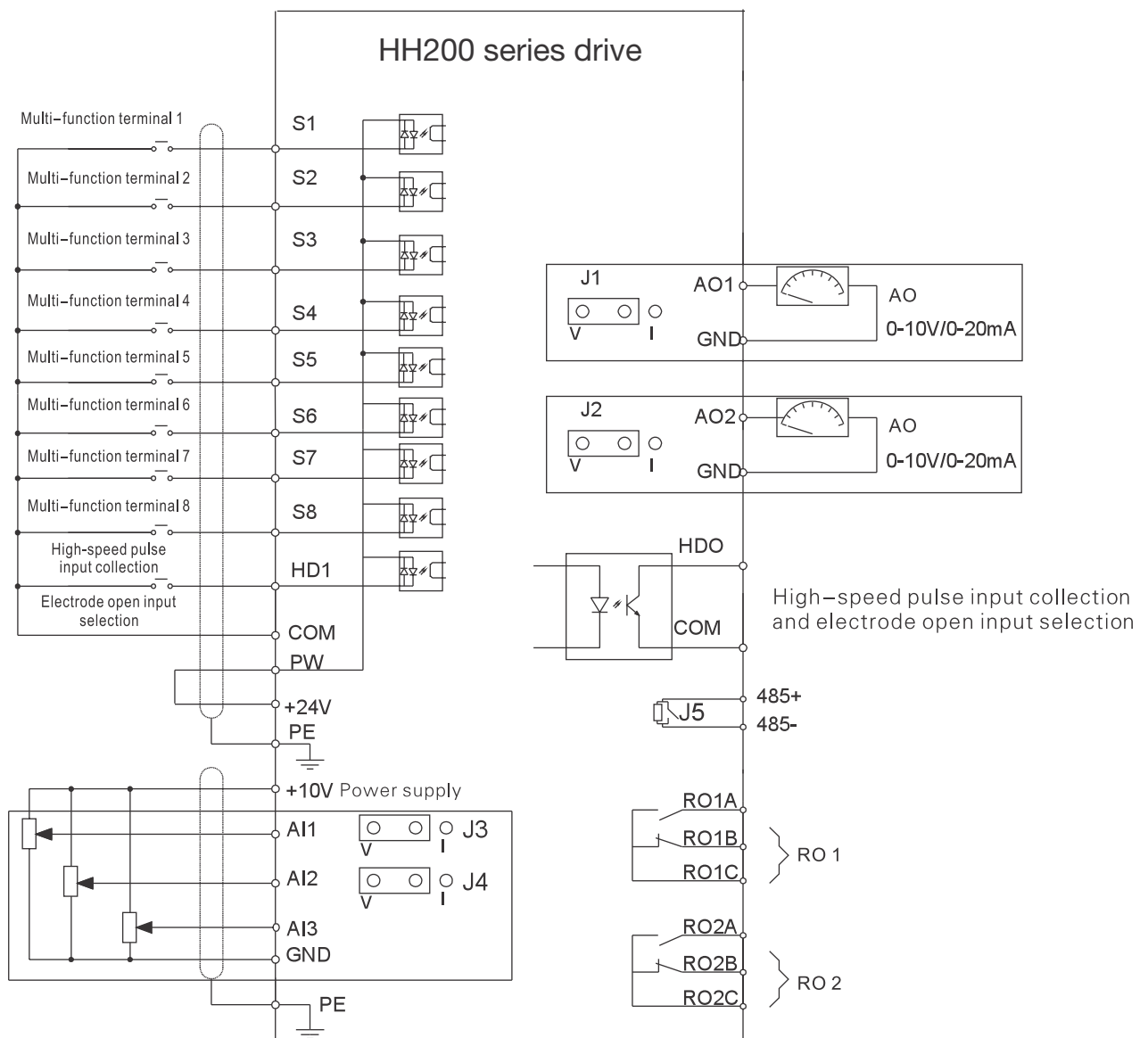
	Function	Specification
Input	Input Voltage (V)	AC 3 ph 380 V (-15%)~440 V (+10%)
	Input Frequency (Hz)	50 Hz or 60 Hz Allowed range. 47~63 Hz
Output	Output Voltage (V)	0~input voltage
	Output Frequency (Hz)	0~400 Hz
Technical Control Feature	Control Mode	SVPWM
	Motor Type	Asynchronous motor
	Speed-adjusting Ratio	Asynchronous motor 1:100
	Starting Torque	Asynchronous motor: 0.5 Hz / 150%
	Overload Capability	Heavy Duty: 150% of rated current 60 seconds Normal Duty: 120% of rated current 60 seconds
Running Control Feature	Frequency Setting	Digital setting, analog setting, pulse frequency setting, multi-step speed running setting, simple PLC setting, PID setting, MODBUS communication setting. Realize the shifting between the set combination and set channel.
	Auto Voltage Adjustment	Keep a stable voltage automatically when the grid voltage fluctuates
	Fault Protection	Provide over 30 fault protection functions: overcurrent, overvoltage, undervoltage, overheating, phase failure and overload, etc.
	Speed Tracking	Restart the rotating motor smoothly
Peripheral Interface	Terminal Analog Input Resolution	≤ 10 mV
	Terminal Switch Input Resolution	≤ 2 ms
	Analog Input	2 channels (AI1, AI2) 0~10 V / 0-20 mA and 1 channel (AI3) -10~10 V
	Analog Output	2 channels (AO1, AO2) 0~10 V / 0~20 mA
	Digital Input	8 channels common input, the Max. frequency: 1 kHz 1 channel high speed pulse input, the Max. frequency: 50 kHz
	Digital Output	1 channel high speed pulse output, the Max. frequency: 50 kHz; 1 channel Y terminal open collector output
	Relay Output	2 channels programmable relay output RO1A NO, RO1B NC, RO1C common terminal RO2A NO, RO2B NC, RO2C common terminal Contactor capability: 3A / AC 250 V,1A / DC 30 V
Others	Mountable Method	Wall, flange and floor mountable
	Temperature of the Running Environment	-10~50°C, derate above 40°C
	Ingress Protection	IP20
	Cooling	Air-cooling
	Braking Unit	Built-in braking unit up to HH200-300A / 370AP-4 External braking unit require for others
	Braking Resistor	Optional external configuration
	EMC Filter	Built-in C3 filter: meet the degree requirement of IEC61800-3 C3 External filter: meet the degree requirement of IEC61800-3 C2

Wirings

Wiring diagram of the main circuit



Wiring diagram of the control circuit



Power Ratings

Type Code	Power Rating P (KW)		I continuous (A)	
	Heavy Duty (OL- 150% for 1 Min.)	Normal Duty (OL- 120% for 1 Min.)	Heavy Duty (OL- 150% for 1 Min.)	Normal Duty (OL- 120% for 1 Min.)
HH200-0R7A-4	0.7	NA	2.5	NA
HH200-1R5A-4	1.5	NA	3.7	NA
HH200-2R2A-4	2.2	NA	5	NA
HH200-4R0A/5R5AP-4	4	5.5	9.5	14
HH200-5R5A/7R5AP-4	5.5	7.5	14	18.5
HH200-7R5A/110AP-4	7.5	11	18.5	25
HH200-110A/150AP-4	11	15	25	32
HH200-150A/185AP-4	15	18.5	32	38
HH200-185A/220AP-4	18.5	22	38	45
HH200-220A/300AP-4	22	30	45	60
HH200-300A/370AP-4	30	37	60	75
HH200-370A/450AP-4	37	45	75	92
HH200-450A/550AP-4	45	55	92	115
HH200-550A/750AP-4	55	75	115	150

Type Designation Key

HH200 - 5R5A - 4

① ② ③ ④

Sign	Detailed description of the sign
①	Drive Series Name
②	Power Rating in kW
③	A - Heavy Duty AP - Normal Duty
④	Voltage Class 4-400 V Class

Dimensions

Installation dimension when wall mounting

(Units : mm)

Drive Model	W1	W2	H1	H2	D1	Installation Hole
1.5~2.2 kW	126	115	186	175	174.5	5
4~5.5 kW	146	131	256	243.5	181	6
7.5~15 kW	170	151	320	303.5	216	6
18.5 kW	230	210	342	311	216	6
22~30 kW	255	237	407	384	245	7
37~55 kW	270	130	555	540	325	7

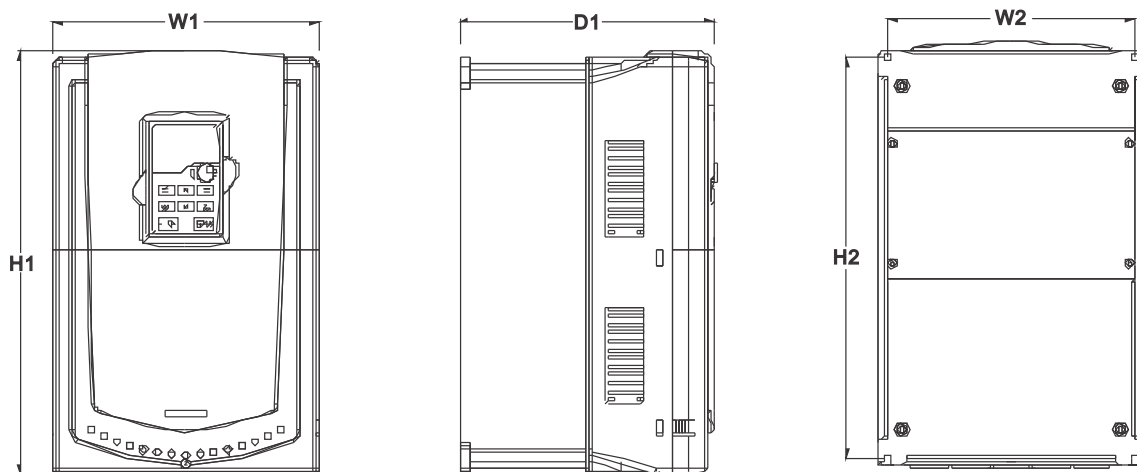
Installation dimension when flange mounting

(Units : mm)

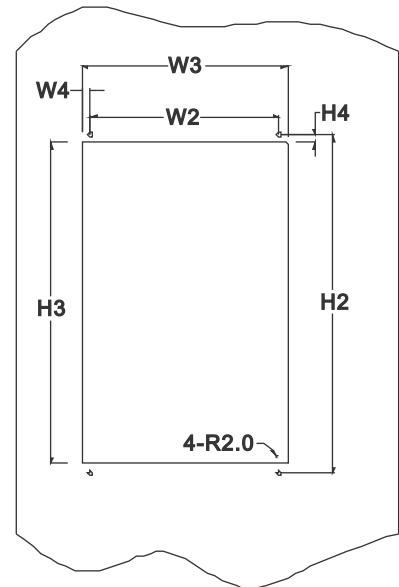
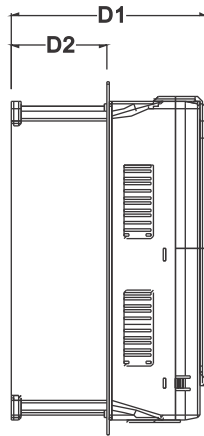
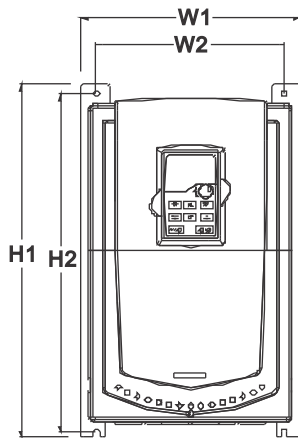
Drive Model	W1	W2	W3	W4	H1	H2	H3	H4	D1	D2	Installation Hole
1.5~2.2 kW	150	115	130	7.5	234	220	190	13.5	155	65.5	5
4~5.5 kW	170	131	150	9.5	292	276	260	6	167	84.5	6
7.5~15 kW	191	151	174	11.5	370	351	324	15	196	113	6
18.5 kW	250	210	234	12	375	356	334	10	216	108	6
22~30 kW	275	237	259	11	445	426	404	10	245	119	7
37~55 kW	270	130	261	11	445	426	404	10	245	119	7

Installation Diagram

Wall mounting for 1.5~55 kW drive

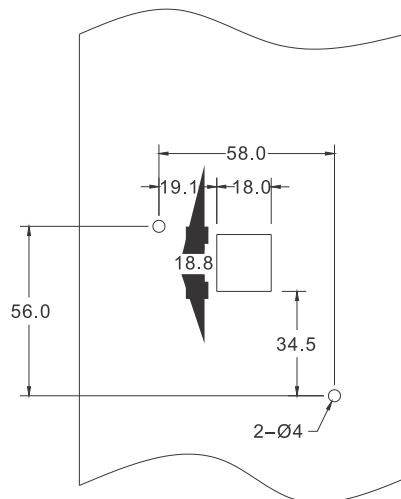
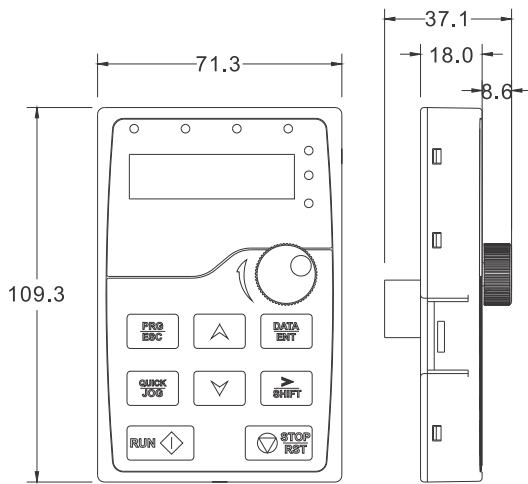


Flange mounting for 1.5~55 kW drive

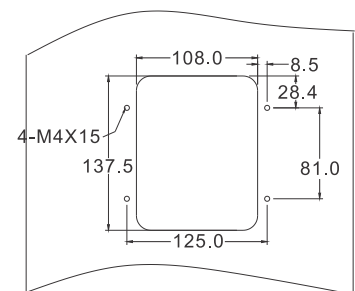


Installation hole

Keypad Dimension



Installation hole for keypad



Installation hole for bracket

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- Pop Reel
- Press
- Sectional Roll
- Rewinder
- Refiner
- Pulper



Plastic

- Extruder
- Compressor
- Injection moulding
- Tape Line Machin



Textile

- Ring frame
- Compressor
- Spinning mill
- Winder
- Cooling fan
- Doubling machine
- Stentar Machine



Power

- ID Fan, FD Fan, PA Fan
- Pump
- Compressor
- Conveyors
- Cooling Tower



Ceramic

- Ball mill & Blunger
- Compressor
- Spray dryer blower
- Kiln blowers
- Agitator motor
- Hydraulic press
- Conveyors



Steel & Mining

- Fan
- Ball mill
- Pump
- Conveyors
- Crane
- Wire Drawn Machine
- Roller Table
- Crusher
- Vibro Feeder



Cement

- Fan
- Mixture
- Ball mill
- Crusher
- Conveyors
- Kiln



Chemical

- Centrifugal pump
- Compressor
- Fan
- Agitator

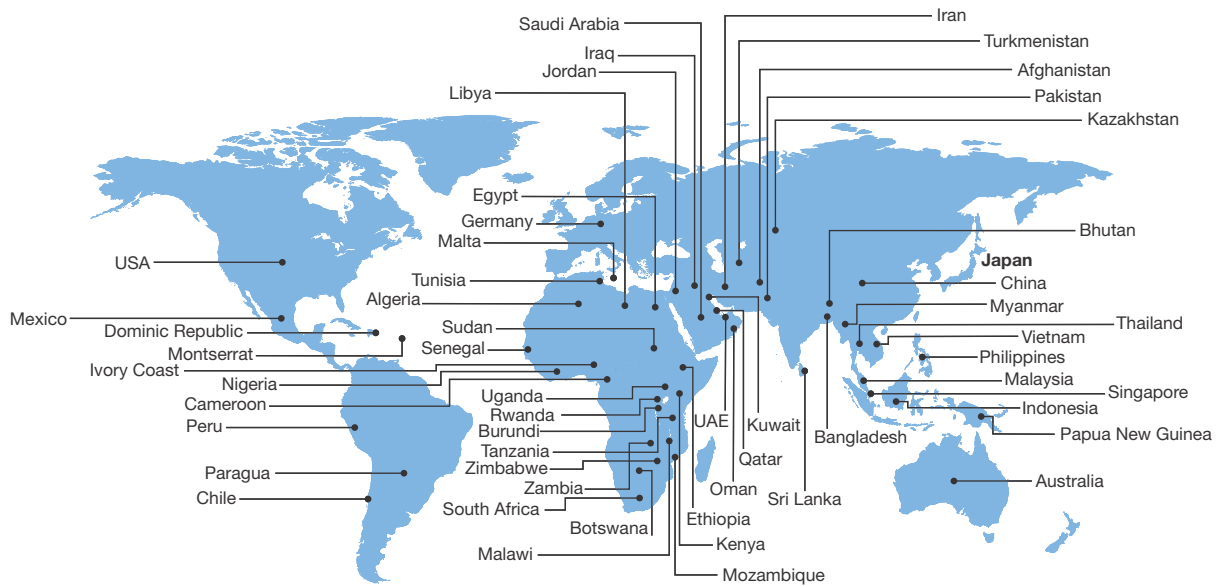


Food and Beverages

- Compressor
- HVAC
- Packing

and many more...

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