ERIC DRIVE®
TRANSISTORIZED INVERTER
AC MOTOR SPEED CONTROLLER

RICH INVERTER

Flux Vector Control AC Inverter

EI-SUPER N Series

220V Class (3-Phase Input) 1HP~150HP
440V Class (3-Phase Input) 1HP~1200HP

Rich Electric
Drives the world

ISO 9001
No:119764

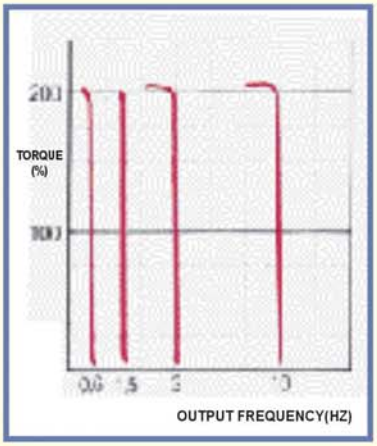
RICH ELECTRIC

Eric Inverter Super N Flux Vector Control

Any type of machine starts smoothly at low speeds of 1/100

- SUPER N features full-scale flux vector current control that directly controls motor torque based on present control theory utilizing a magnetic flux observer and neuro-control. There is high starting torque at 1/100 rated speed even when PG (Pulse Generator) feedback is not added.
- It features full torque control even at zero speed when PG option is added.

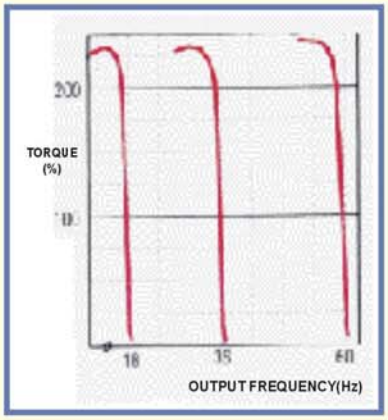
Diagram :1.High starting torque at low speed without PG feedback (speed control range is 100:1)
2.Control speed range is 1000:1 with PG feedback



Precise control over a wide speed range

- Super N features highly precise operation throughout entire speed range from 1/100 low speed to high speed, even under fluctuating load conditions.

Diagram :1.The rated speed control can be set from light load to heavy duty when there is no PG feedback. (The speed control accuracy is ±0.2% / 0-100% load fluctuation)
2.The speed control accuracy is ±0.02%/0-100% load fluctuation when there is PG feedback.



Four controls in one drive; the ultimate drive for all applications

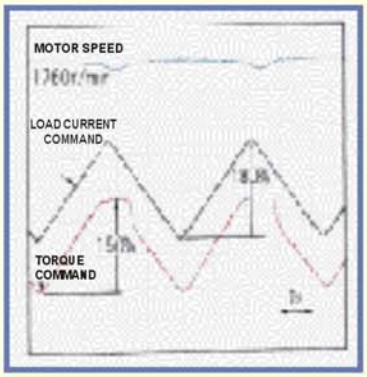
- Four control methods are included
  1.Standard V/F control
  2.V/F control with PG feedback
  3.Sensorless flux vector control
  4.Flux vector current control with PG feedback
- Simply select the parameters, SUPER N can be applied to a wide range of applications from servo-like precision machinery to multiple motor drives.
- Factory defaults at sensorless vector control type, it can be configured to the V/F control mode for applications requiring multiple motors on one drive, or to flux vector current control mode (with PG) for highly precise vector operation

Note: 1. PG-B interface card is requested when PG feedback control is used, PG-B card is optional.
2. At low speed, high torque and continuous operation, a forced cooling special motor must be used.

Reliable torque control

- Output torque is controlled by a precise torque limit function, it ensures safe, tripless operation in the most severe conditions. The drive demonstrates its ruggedness and excellent performance in conveyors and other heavy transport machinery.

Diagram: Torque limit characteristics
(Torque Limit 150%)

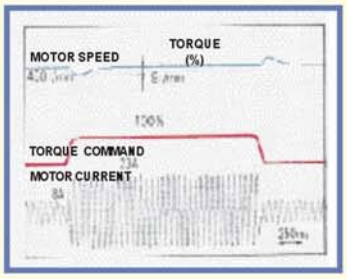


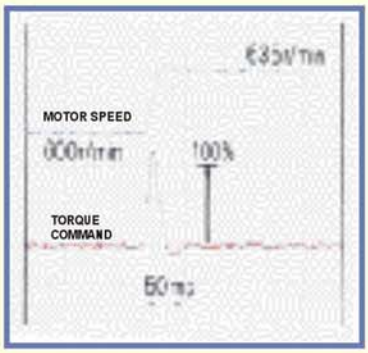
~ Simple • Precise • Powerful~

Outstanding servo-like response (With PG feedback)

- Flux vector control function ensures quick response to the changes of the speed feedback signal, and keeps motor speed at stable condition against severe change loading.

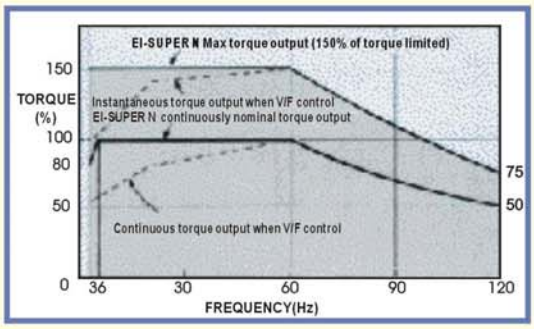
Left Diagram: It makes good adjustment to the rapid change of load.
Right Diagram: Vector control with PG feedback makes quick response to the changes of the load torque.





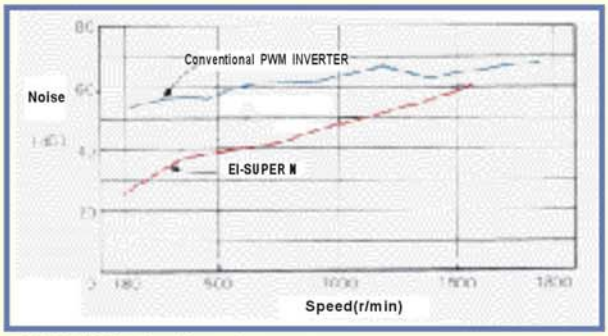
1:10 control range of standard motor, easy to fulfill 100% continuously nominal torque operation

- Perfect control method, expending the standard motor's continuously nominal torque operation. Do not decrease output torque over 6Hz, be able to reach 1:20 fluctuating range at 100% continuous operation. 80% continuously nominal operation can be reached as well.



Flux vector control allows motor with low noise and high efficiency performance

- By adequately control the magnetic flux of the motor, plus PWM control method, we have succeeded in eliminating the motor noises.



220V/5HP 4 poles motor

Suitable for variant type of motors

- Its proprietary auto-tuning function enables high-performance tuning of motors manufactured worldwide.

Vast range of FA complex application

- Built-in RS-232 communication interface connect with PC or PLC available for remote control and monitor.

Specifications 220V Class

	Model EI-SUPER N-	001L	002L	003L	005L	007L	010L	015L	020L	025L	030L	040L	050L	060L	075L	100L	150L
	Max. Applicable Motor Output Kw*1	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	110
	Output Capacity KVA	2.3	3.0	4.2	6.7	9.5	13	19	24	30	37	50	61	70	85	110	150
	Rated Output Current(A)	6	8	11	17.5	25	33	49	64	80	96	130	160	183	224	300	450
	Protective Level	Enclosed wall-mounted type〔NEMA1〕IP20															
Power Supply	Max. Input Voltage • Frequency	3-phase 200/208/220/230V 50/60Hz															
	Allowable Voltage Fluctuation	±10%															
	Allowable Frequency Fluctuation	±5%															
	Max. Output Voltage	3-phase 200/208/220/230V Proportional to input voltage															
	Rated Output Frequency	Up to 400 Hz available by programming															
Control Characteristics	Control Method	Sine wave PWN type,four control methods:(1)V/F (2)V/F with PG (3)open loop vector (4)flux vector															
	Starting Torque	150%/1Hz (150%/or/min with PG)															
	Speed Control Range	1:100 (1:1000 with PG)															
	Speed Control Accuracy	±0.2%(±0.02% with PG)															
	Speed Response	5Hz(200ms) 30Hz(33ms) with PG															
	Torque Limit	Available (Parameter setting, 4 steps can be changed)															
	Torque Accuracy	±5%															
	Torque Response	20Hz(50ms) 40Hz(25ms) with PG															
	Frequency Control Range	0.1~400Hz Option 0.1~1000Hz															
	Frequency Accuracy (Temperature Change)	Digital command :±0.01%(-10°C~+40°C),Analog command:±0.1%(25°C±10°C)															
	Frequency Setting Resolution	Digital reference: 0.01Hz Analog reference: 0.03Hz/60Hz(11bit+code)															
	Output Frequency Resolution	0.01Hz															
	Overload Capacity	150% of rated output current for1 minute															
	Frequency Setting Signal	DC-10 ~ +10V,0~10V,(20KΩ), 4 ~ 20mA(250Ω)															
	Accel/Decel Time	0.01 ~ 6000.0 sec(Accel/decel time setting independently,4 steps available)															
	Braking Torque	Approx.20%															
Protective Functions	Motor Overload Protection	Protected by electronic thermal overload relay															
	Instantaneous Overcurrent	Motor coasts to a stop at approx.200% of inverter rated current															
	Blown Fuse Protection	Motor coasts to a stop by blown-fuse															
	Overload	Motor coasts to a stop after 1 minute at 150% of rated output current															
	Overvoltage	Motor coasts to a stop if DC output voltage exceeds 400V															
	Undervoltage	Motor coasts to a stop if DC output voltage drops to 200V or below															
	Momentary Power Loss	Immediately stop by 15 ms and above momentary power loss(factory setting). Continuous operation during power loss less than 2 sec is equipped as standard															
	Heatsink Overheat	Protected by thermistor															
	Stall Prevention	Stall prevention during accel/decel and constant speed operation															
	Ground Fault	Protected by electronic circuit(overcurrent level)															
	Power Charge Indication	Charge LED stays on until bus voltage drops below 50 V															
Environment	Location	Indoor (protected from corrosive gases and dust)															
	Ambient Temperature	-10°C~+45°C(enclosed wall-mounted type), -10°C~+50°C (open chassis type)															
	Storage Temperature (*2)	-20 ~+ 60°C															
	Humidity	90% RH or less															
	Vibration	1G at less than 20Hz, up to 0.2G at 20~50Hz															

Note:(1)Max.applicable motor referring to standard 4 poles motor.
(2)High storage temperature may damage the capacitors in inverter.

Specifications 440V Class

	Model EI-SUPER N-	001H	002H	003H	005H	007H	010H	015H	020H	025H	030H	040H	050H	060H	075H	100H	125H	150H	175H	200H	250H	300H	400H	600H	900H	1200H
	Max. Applicable Motor Output Kw*1	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	95	110	130	160	185	220	300	400	600	800
	Output Capacity KVA	2.6	3.7	4.7	6.1	11	14	21	26	31	40	50	61	73	98	130	150	170	200	230	260	340	460	600	900	1200
	Rated Output Current(A)	3.4	4.8	6.2	8	14	18	27	34	41	52	65	80	96	128	165	195	224	262	300	340	450	605	800	1200	1600
	Protective Level	Enclosed wall-mounted type〔NEMA1〕IP20																						Distributive Panel		
Power Supply	Max. Input Voltage • Frequency	3-phase 380/400/415/440/460V 50/60Hz																								
	Allowable Voltage Fluctuation	±10%																								
	Allowable Frequency Fluctuation	±5%																								
	Max. Output Voltage	3-phase 380/400/415/440/460V Proportional to input voltage																								
	Rated Output Frequency	Up to 400 Hz available by programming																								
Control Characteristics	Control Method	Sine wave PWN type,four control methods:(1)V/F (2)V/F with PG (3)open loop vector (4)flux vector																								
	Starting Torque	150%/1Hz (150%/or/min with PG)																								
	Speed Control Range	1:100 (1:1000 with PG)																								
	Speed Control Accuracy	±0.2%(±0.02% with PG)																								
	Speed Response	5Hz(200ms) 30Hz(33ms) with PG																								
	Torque Limit	Available (Parameter setting, 4 steps can be changed)																								
	Torque Accuracy	±5%																								
	Torque Response	20Hz(50ms) 40Hz(25ms) with PG																								
	Frequency Control Range	0.1~400Hz Option 0.1~1000Hz																								
	Frequency Accuracy (Temperature Change)	Digital command :±0.01%(-10°C~+40°C),Analog command:±0.1%(25°C±10°C)																								
	Frequency Setting Resolution	Digital reference: 0.01Hz Analog reference: 0.03Hz/60Hz(11bit+code)																								
	Output Frequency Resolution	0.01Hz																								
	Overload Capacity	150 % of rated output current for1 minute																								
	Frequency Setting Signal	DC-10 ~ +10V,0~10V,(20KΩ), 4 ~ 20mA(250Ω)																								
	Accel/Decel Time	0.01 ~ 6000.0 sec(Accel/decel time setting independently,4 steps available)																								
	Braking Torque	Approx.20%																								
Protective Functions	Motor Overload Protection	Protected by electronic thermal overload relay																								
	Instantaneous Overcurrent	Motor coasts to a stop at approx.200% of inverter rated current																								
	Blown Fuse Protection	Motor coasts to a stop by blown-fuse																								
	Overload	Motor coasts to a stop after 1 minute at 150% of rated output current																								
	Overvoltage	Motor coasts to a stop if DC output voltage exceeds 800V																								
	Undervoltage	Motor coasts to a stop if DC output voltage drops to 400V or below																								
	Momentary Power Loss	Immediately stop by 15 ms and above momentary power loss(factory setting). Continuous operation during power loss less than 2 sec is equipped as standard																								
	Heatsink Overheat	Protected by thermistor																								
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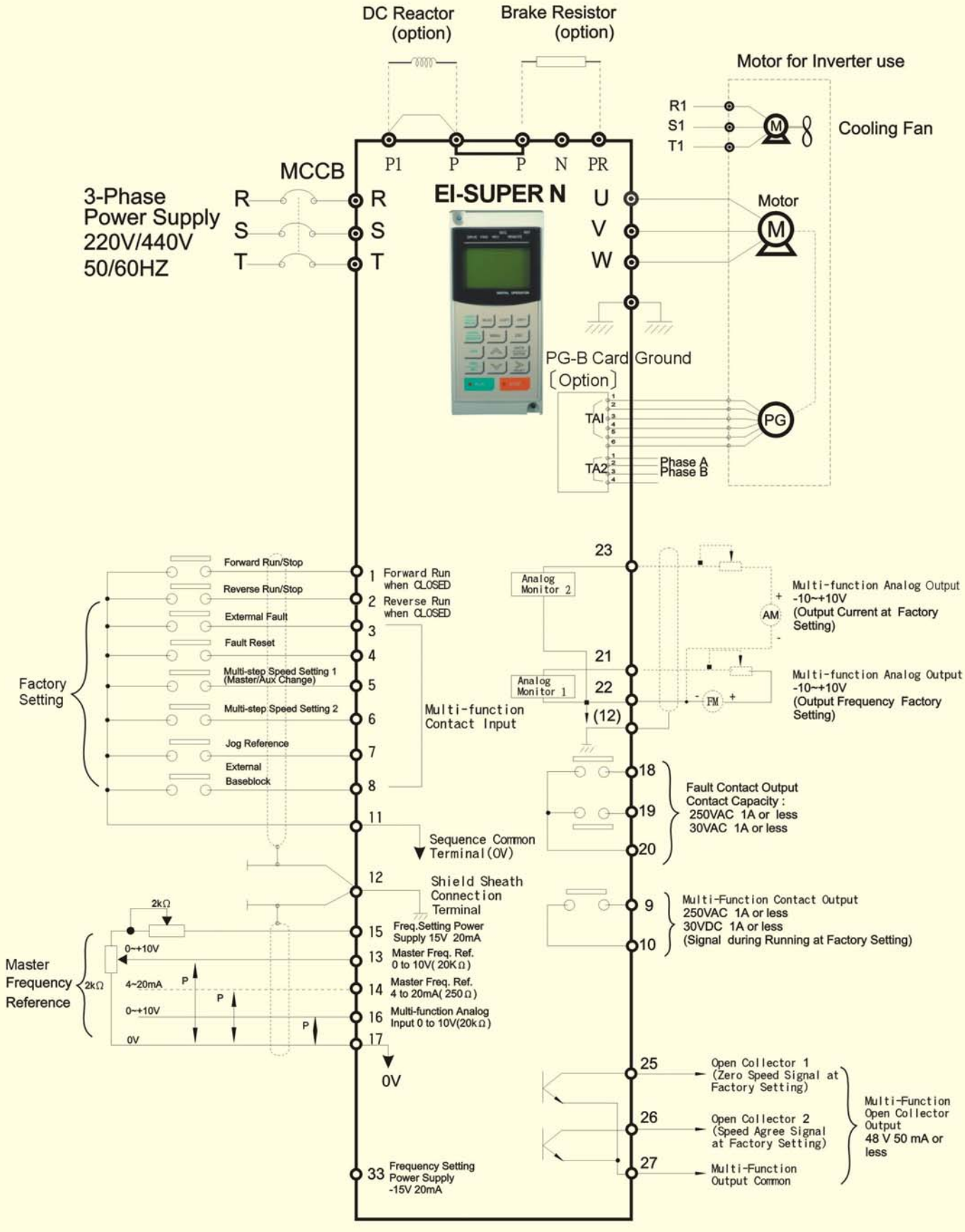
	Ground Fault	Protected by electronic circuit(overcurrent level)																								
	Power Charge Indication	Charge LED stays on until bus voltage drops below 50 V																								
Environment	Location	Indoor (protected from corrosive gases and dust)																								
	Ambient Temperature	-10°C~+45°C(enclosed wall-mounted type), -10°C~+50°C (open chassis type)																								
	Storage Temperature (*2)	-20 ~+60°C																								
	Humidity	90% RH or less																								
	Vibration	1G at less than 20Hz, up to 0.2G at 20~50Hz																								

Note:(1)Max.applicable motor referring to standard 4 poles motor.
(2)High storage temperature may damage the capacitors in inverter.

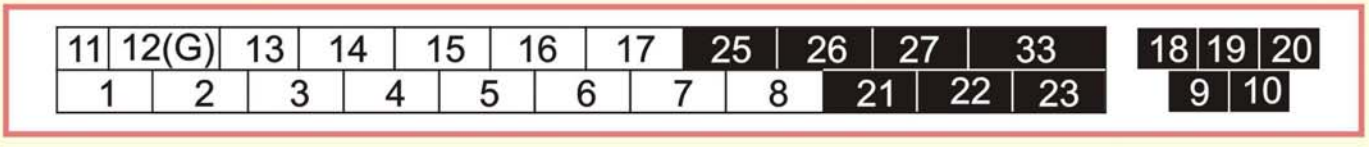
Connection Diagram



Functions of Control Circuit Terminals (Factory Preset)

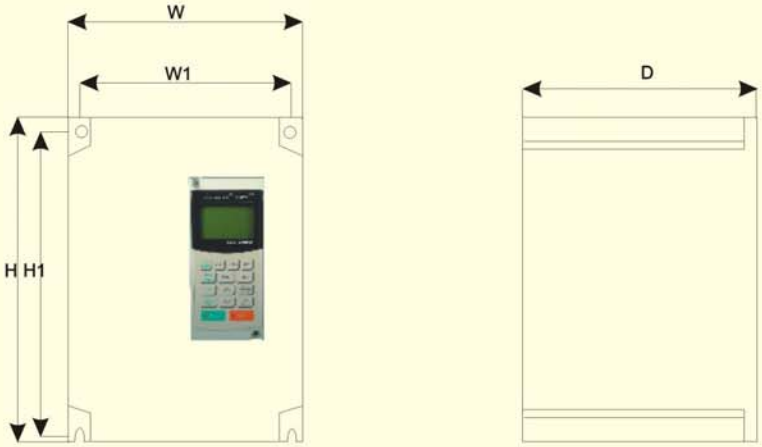
Classification	Terminal	Signal Function	Description		Signal Level
Sequence Input Signal	1	Forward run/stop	Forward run when closed, stop when open		Photo-coupler insulation Input : +24 VDC 8mA
	2	Reverse run/stop	Reverse run when closed, stop when open		
	3	External fault input	Fault when closed, normal state when open	Terminal 3-8 Multi-function contact inputs (H1-01 to H1-06)	
	4	Fault reset input	Reset when closed		
	5	Master/Auxiliary change (Multi-step speed reference 1)	Auxiliary frequency reference when closed		
	6	Multi-step speed reference 2	Effective when closed		
	7	Jog reference	Jog run when closed		
	8	External baseblock	Inv.output stop when closed		
	11	Sequence control input common terminal	Short circuit 11 with any of 1-8		
Analog Input Signal	15	+15 V Power supply output	For analog command+15V power supply		+15V (Allowable current 20 mA max.)
	33	-15 V Power supply output	For analog command-15V power supply		-15V (Allowable current 20 mA max.)
	13	Master frequency reference	-10 to +10 V/-100% to +100% 0 to +10V/100% 4 to 20mA/100%		-10 to +10V (20kΩ), 0 to +10V/(20kΩ) 4 to 20mA(250Ω)
	14				
	16	Multi-function analog input	-10 to +10 V/-100% to +100% 0 to +10V/100%	Auxiliary analog input (H3-05)	-10 to +10V (20kΩ), 0 to +10V/(20kΩ)
	17	Common terminal for control circuit	Common terminal for terminal 13.14.16		——
	12	Connection to shield sheath of signal lead	——		——
Sequence Output Signal	9	During running (1A Contact)	Closed when running		Dry contact Contact capacity : 250 VAC 1 A or less 30 VDC 1 A or less
	10				
	25	Zero speed detection	Makes at min. freq.(EI-09) or less		Open collector output 48 V 50 mA or less
	26	Speed agree detection	Makes when the freq.reaches to ± 1 Hz of set freq.		
	27	Open collector output common			
	18	Fault contact output 18~20.A Contact 19~20.B Contact	Fault when closed between terminals 18 and 20 Fault when open between terminals 19 and 20		Dry contact Contact capacity : 250 VAC 1 A or less 30 VDC 1 A or less
	19				
	20				
Analog Output Signal	21	Frequency meter output	0 to +10V/100% freq.	Multi-function analog monitor 1 (H4-01,H4-02)	0 to ±11V Max.±5% 20mA or less
	22	Common			
	23	Current monitor	5 V/inverter rated current	Multi-function analog monitor 2 (H4-04,H4-05)	

Terminal Array

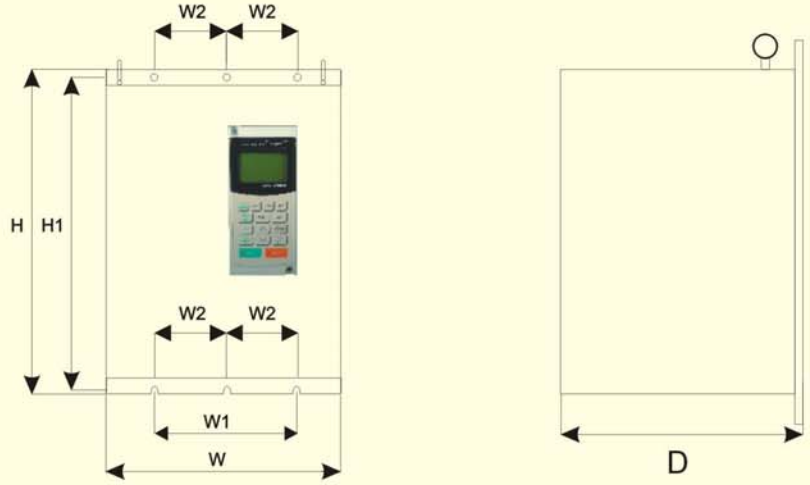


Dimensions

Unit:mm



Type	Input Power	Capacity	W	W1	H	H1	D	Hole Diameter	DC Reactor
01L~05L	220V	1HP~5HP	138	115	278	264	174	ϕ6	Option
01H~07H	440V	1HP~7HP							
07L~10L	220V	7HP~10HP	228	204	300	285	206	ϕ6	Option
10H~15H	440V	10HP~15HP							
15L~30L	220V	15HP~30HP	300	270	450	435	238	ϕ8	Option
20H~40H	440V	20HP~40HP							



Type	Input Power	Capacity	W	W1	W2	H	H1	D	Hole Diameter	DC Reactor
40L	220V	40HP	345	247		650	630	320	ϕ10	Option
50H~60H	440V	50H~60H								
50L	220V	50HP	385	287		755	730	320	ϕ10	Option
75H~100H	440V	75H~100H								
60L~75L	220V	60HP~75HP	575	480	240	785	765	320	ϕ10	Option
125H~150H	440V	125HP~150HP								
100L~125L	220V	100HP~125HP	695	580	290	955	935	320	ϕ10	Option
175H~200H	440V	175HP~200HP								
150L	220V	150HP	860	580	290	1090	1050	405	ϕ12	Option
250H~300H	440V	250HP~300HP								
400H	440V	400HP	975	780	390	1085	1060	400	ϕ12	Option

※For size over 400HP AC Drive, please contact with our sales dept for your need.

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