TECO INVERTER

Speecon 7200GA

380 to 460V 1HP~400HP(0.75~300KW)

200 to 230V 1HP~100HP(0.75~75KW)

CE

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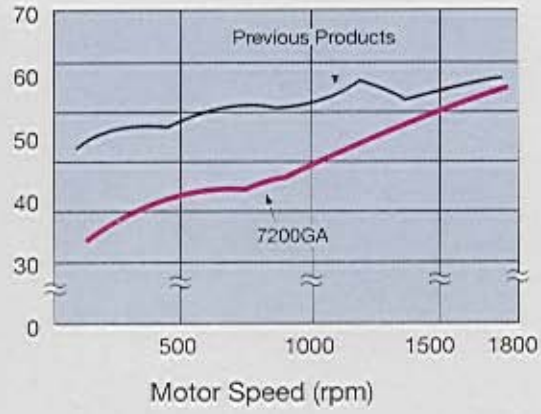
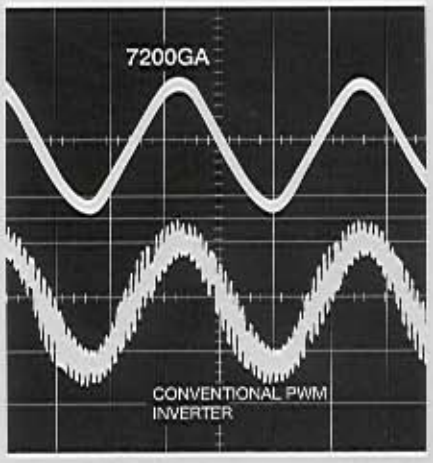
TECO 7200GA Inverter– The Best Solution For Your Energy-Saving Applications

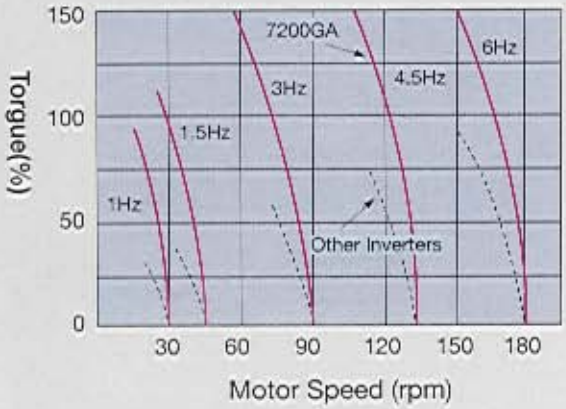




Current Wavefrom example at 10Hz

Super Low Noise

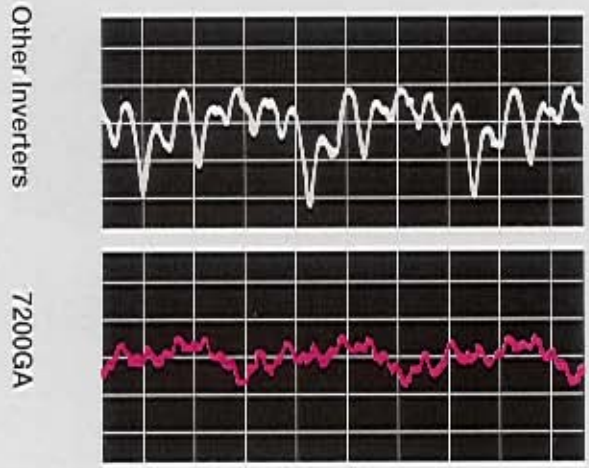
Quiet operation is provided by perfect waveform control coupled with the high performance IGBT.



High Starting Torque

– Fully automatic torque control at all speeds

– Over 150% starting torque at 1/20 speed



Smooth rotation at low speed (at 1.5Hz) (4.5 rpm/DIV)

Running Smoothly

– Precise sinewave control providing the slip correction function to improve motor performance.

Fully Digital Control

– Flexible and optional software functions giving all 7200GA users an optimum and easy control condition

Superior Reliability

– Standardised design, SMT and unique LSI/IGBT technology used in every control or drive circuit to minimise complicated connections for the best reliability in the inverter market.

Multi-Functions

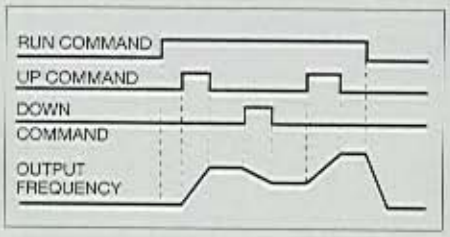
Simple multi-step operation

Operation speed can be set by up to nine steps by switching four-contact input signals. Various sequence operations can also be easily set.

Basic and application functions ready to use

Over 200 intelligent functions including overtorque detection, reverse prevention, and frequency upper and lower limiter are supplied as standard. The following new functions are also provided:

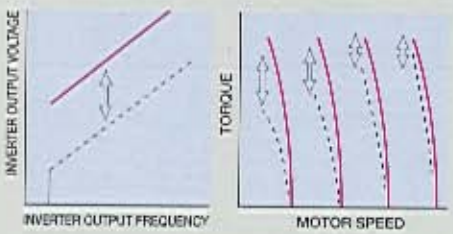
- External control of accel/decel (by switching or analog input)
- Variable output voltage function by external signals.
- **UP/DOWN function**



A well-stocked sofware library customizes the inverter for each machine

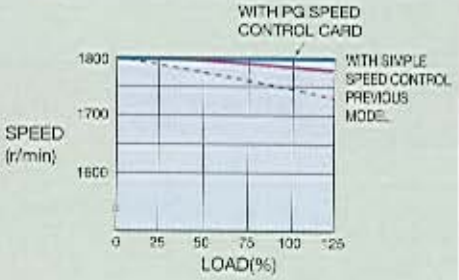
- Adjusts the motor voltage to the optimum level by exact calculation of torque required for the load. This assures continuous operation even under overload conditions.

  Full-range, fully automatic torque boost by vector control operation



- Guarantees high-precision and constant operation regardless of load fluctuations. Slip compensation circuit reduces motor slip to less than 1%. Use of PG speed control card (FB-C) improves up to aprox. 0.03%.

(Example of 200V, 10HP (7.5kW), 4-pole motor)



Enhanced output interface

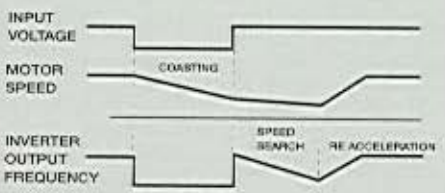
Two new open collector output signals (a total of three output signals including the contact output) together with the multifunction output selection make possible more enhanced control of machines.

- At zero-speed, at set speed with hysterisis on decel ramp or accel ramp. (as standard)
- Frequency detection (detects a set frequency, below or above)
- Overtorque detected (machine overloaded)
- Low voltage detected (Input voltage insufficient)
- Other

Quickly recovers from external problems and continues operation to assure final product quality.

- Two seconds momentary Power loss ride-thru.

  0.5 to 1 sec for less than 3HP (2.2kW), 230V / 460V (2 sec. ride-thru is optional.)



(OPERATION CONTINUATION AFTER MOMENTARY POWER LOSS)

- Automatic restart after fault

  After a fault occurs, the microcomputer performs self diagnosis and restarts automatically without stopping motor. (Up to 10 retries)

  Stall prevention during Accel/decel/running
- The stall prevention function ensures tripless operation.

Various monitors

A scalable analog output for frequency or current measurement is provided as a standard. Changing the ammeter, voltmeter, and wattmeter outputs is also possible by setting system constants.

OUTPUT FREQUENCY METER

Load Operation indication

The output frequency can be scaled by many units such as motor speed, load axis speed (r/min), line speed (m/min), and flow (m^3/min) .

MOTOR SPEED DISPLAY (1800 r/min)

Easy set-up

Accel/decel time, frequency reference, and frequency meter scale, can be adjusted while the machine is running. This speeds start-up and reduces downtime for system tuning.

Options

Easy to link with PLC

Motor speed can be precisely set with an external signal. Either 4 digits BCD (binary code decimal) or 16 binary bits can be used (onboard option).

Computer link

Computer control with a personal computer or high-order sequencer can be accomplished through RS-232C, -422, -485 high-speed communication interface.

High-accuracy operation by speed feedback control

Speed regulation caused by slip is minimized using speed feedback function of pulse generator (PG) mounted on a motor.

Remote controlled operation

Operation can be controlled at the machine side or from a remote control panel (within 3m)

* For other options please refer to manufacturer.

BASIC SPECIFICATIONS

440V CLASS

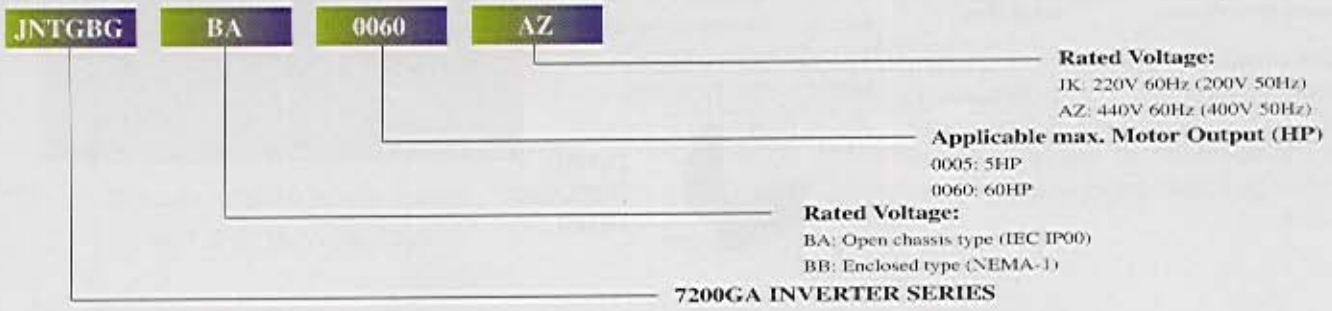
Inverter Model		JNTGBG BA/BB □□□□ AZ---																				
		0001	0002	0003	0005	7R50	0010	0015	0020	0025	0030	0040	0050	0060	0075	0100	0125	0150	0175	0215	0250	0300	0400
Max. Applicable Motor Output Hp (kw)*1		1 (0.75)	2 (1.5)	3 (2.2)	5 (3.7)	7.5 (5.5)	10 (7.5)	15 (11)	20 (15)	25 (18.5)	30 (22)	40 (30)	50 (37)	60 (45)	75 (55)	100 (75)	125 (90)	150 (110)	175 (132)	215 (160)	250 (185)	300 (220)	400 (300)
Output Characteristics	Inverter Capacity (KVA)	2.2	3.4	4.1	6.9	10.3	13.7	20.6	27.4	34	41	54	68	82	110	138	180	195	230	260	290	385	514
	Rated Output Current(A)	2.6	4.0	4.8	8	12	16	24	32	40	48	64	80	96	128	165	210	224	270	300	340	450	600
	Max. Output Voltage	3-Phase, 380/400/415/440/460 V (Proportional to input voltage)																					
	Rated Output Frequency	Up to 400 Hz available																					
Power Supply	Rated input Voltage and Frquency	3-Phase 380/400/415/460 50/60 Hz																					
	Allowable Voltage Fluctuation	+10% ~ -15%																					
	Allowable Frquency Fluctuation	±5%																					

220V CLASS

Inverter Model		JNTGBG BA/BB □□□□ JK---													
		0001	0002	0003	0005	7R50	0010	0015	0020	0025	0030	0040	0050	0060	0075	0100
Max. Applicable Motor Output Hp (kw)*1		1 (0.75)	2 (1.5)	3 (2.2)	5 (3.7)	7.5 (5.5)	10 (7.5)	15 (11)	20 (15)	25 (18.5)	30 (22)	40 (30)	50 (37)	60 (45)	75 (55)	100 (75)
Output Characteristics	Inverter Capacity (KVA)	2.1	2.7	4.1	6.9	10.3	13.7	20.6	27.4	34	41	54	68	78	96	128
	Rated Output Current(A)	4.8	6.4	9.6	16	24	32	48	64	80	96	130	160	183	224	300
	Max. Output Voltage	3-Phase, 200/208/220/230 V (Proportional to input voltage)														
	Rated Output Frequency	Up to 400 Hz available														
Power Supply	Rated input Voltage and Frquency	3-Phase 200/208/220V 50/60 Hz														
	Allowable Voltage Fluctuation	+10% ~ -15%														
	Allowable Frquency Fluctuation	±5%														

*1. Based on 4 pole motor.

MODEL DESIGNATION



7200GA CHARACTERISTICS

Control Characteristics	Control Method	Sine wave PWM
	Frequency Control Range	0.1 to 400Hz
	Frequency Accuracy	Digital command: 0.01% (+14 to 104 °F / -10 to 40 °C) Analog command: 0.1% (77 ± 18 °F / 25 ± 10 °C)
	Frequency setting Resolution	Digital operator reference: 0.01Hz Analog reference: 0.06Hz/60Hz
	Output Frequency Resolution	0.01Hz(1/30000)
	Overload Capacity	150% rated output current for one minute
	Frequency setting Signal	0 to 10 VDC (20KΩ), 4~20mA (250Ω), 0~±10 (option)
	Accel/Decel time	0.1 to 6000 sec (Accel/Decel time setting separately)
	Braking Torque	Approx. 20%
	No. of. V-f patterns (Total of 16)	4: For general purpose. 4: For high starting torque. 1: For adjustable pattern. 4: For fans and pumps. 3: For machine tools.
Protective Functions	Motor Overload Protection	Electric thermal overload relay
	Instantaneous Overcurrent	Motor coasts to stop at approx. 200% rated current.
	Fuse Blown Protection	Motor coasts to stop at blown fuse.
	Overload	Motor coasts to stop after 1minute at 150% rated output current.
	Overvoltage (440V input)	Motor coasts to stop if converter output voltage exceeds 800VDC.
	Overvoltage (220V input)	Motor coasts to stop if converter output voltage exceeds 400VDC.
	Undervoltage (440V input)	Motor coasts to stop if converter output voltage drops to 420VDC or below.
	Undervoltage (220V input)	Motor coasts to stop if converter output voltage drops to 210VDC or below.
	Momentary Power Break*1	Motor coasts to stop as momentary power break lasting over than 15ms. (time-setting made before shipment)
	Fin Overheat	Termostat
	Stall Prevention	Stall prevention at acceleration/deceleration and constant speed operation.
	Ground Fault	Provided by electronic circuit.
	Power Charge Indication	Charge lamp stays ON until bus voltage drops below 50V.
Environmental Conditions	Location	Indoor (Protected from corrosive gases and dust)
	Ambient Temperature	+14 to 104 °F (-10 to +40 °C) (not frozen)
	Storage Temperature*2	-4 to 140 °F (-20 to +60 °C)
	Humidity	90% RH (non condensing)
	Vibration	1G at 10 to 20Hz, up to 0.2G at 20 to 50Hz.
Communication Function		RS-485 (SC-C optional card)
Noise Interference Suppression		EN 50081-2 (1994)With Specified noise filter.
Noise Immunity		Pr EN50082-2

- 1. For 3 HP or smaller, motor may keep its speed as power break less than 1 second. (Model equipped with additional capacitor may last running up to 2 seconds)
- 2. High ambient temperature during storage may damage the main circuit capacitors.

TERMINAL FUNCTIONS

MAIN CIRCUIT

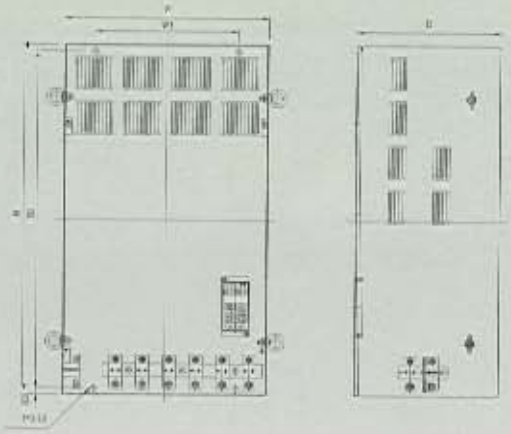
<table>
<tr><th>VOLTAGE</th><th colspan="4">220V CLASS</th><th colspan="4">440V CLASS</th></tr>
<tr><th>Rating / Terminal</th><th>1~10HP</th><th>15~20HP</th><th>25~30HP</th><th>40~100HP</th><th>1~10HP</th><th>15~20HP</th><th>25~60HP</th><th>75~400HP</th></tr>
<tr><td>R (L1)
S (L2)
T (L3)</td><td colspan="8">Circuit input power supply</td></tr>
<tr><td>U (T1)
V (T2)
W (T3)</td><td colspan="8">Inverter output</td></tr>
<tr><td>B1/⊕</td><td rowspan="2">• B1/⊕,B2: braking resistor
• B1/⊕,⊖: DC power supply</td><td rowspan="2">• B1/⊕,B2: braking resistor
• B1/⊕,⊖2: optional DCL
• B1/⊖,⊖: DC power supply</td><td rowspan="2">—</td><td rowspan="2">—</td><td rowspan="2">• B1/⊕,B2: braking resistor
• B1/⊕,⊖: DC power supply</td><td rowspan="2">• B1/⊕,B2: braking resistor
• B1/⊕,⊕2: optional DCL
• B1/⊕,⊖: DC power supply</td><td rowspan="2">—</td><td rowspan="2">—</td></tr>
<tr><td>B2</td></tr>
<tr><td>⊖</td><td rowspan="2">—</td><td rowspan="3">—</td><td rowspan="3">• ⊕1, ⊖: DC power supply or Braking Unit
• ⊕2, ⊖3: DCL</td><td rowspan="3">• ⊖, ⊖: DC power supply or Braking Unit</td><td rowspan="3">—</td><td rowspan="3">• ⊕1, ⊖: DC power supply or Braking Unit
• ⊕2, ⊕3: DCL</td><td rowspan="3">• ⊕, ⊖: DC power supply or Braking Unit</td></tr>
<tr><td>⊕1, ⊕
⊕2</td></tr>
<tr><td>⊕3</td><td>—</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>s
r
S400</td><td colspan="2">—</td><td>—</td><td>• r - s : cooling fan power supply</td><td>—</td><td>—</td><td>• r - s400: cooling fan power supply</td></tr>
<tr><td>E, ⏚</td><td colspan="8">Grounding</td></tr>
</table>

CONTROL CIRCUIT

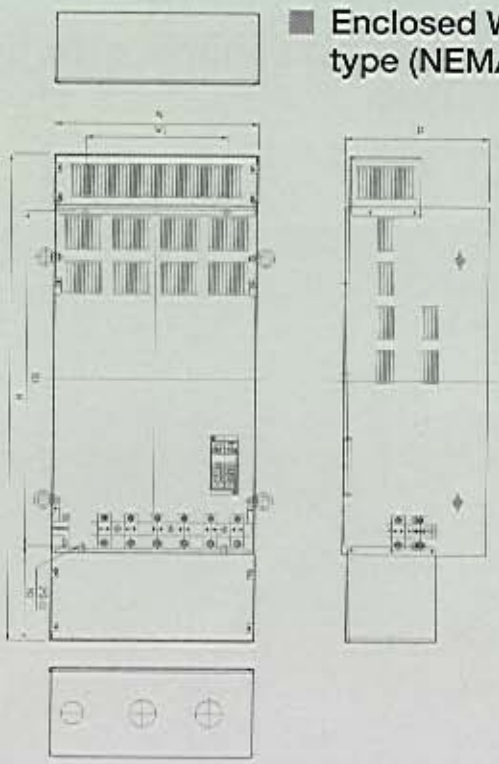
TERminal	Functions	
1	Forward operation-stop signal	
2	Reverse operation-stop signal	
3	External fault input	
4	Fault reset	
5	Multifunction contact input: the following signals available to select. Forward/reverse select, run mode select, multispeed select, inching frequency select, accel/decel time select, external fault, external coasting stop, hold command, inverter overheat prediction, DB command, aux. input effective, speed search, energy-saving operation.	
6		
7		
8		
9	Multifunction contact output: one of the following signals available to output. During running output, zero speed, synchronized speed, arbitrary synchonized speed, arbitrary synchronized speed, frequency detection, overtorque, undervoltage, run mode, coasting stop, braking resistor overheat, alarm, fault.	
10		
11	Sequence control input common terminal.	
12	Connection to shield sheath of signal lead.	
13	Master speed voltage reference (0 to 10V).	
14	Master speed current reference (4 to 20mA).	
15	+15V	
16	Aux. analog command: one of the following signals available to select. Frequency command, frequency gain, frequency bias, overtorque detection level, voltage bias, accel/decel rate, DB current.	
17	Common terminal for control circuit (0V).	
18	Fault contact output a (Closed at fault).	
19	Fault contact output b (Open at fault).	
20	Fault contact output common.	
21	Multifunction analog monitor(+).	Output current or output frequency is selectable.
22	Multifunction analog monitor(-).	
23	Multifunction PHC output 1.	The same as terminals 9 and 10
24	Multifunction PHC output 2.	
25	Multifunction PHC output common.	

DIMENSIONS

Open Chassis type (IP00)



Enclosed Wall-mounted type (NEMA-1)(IP20)



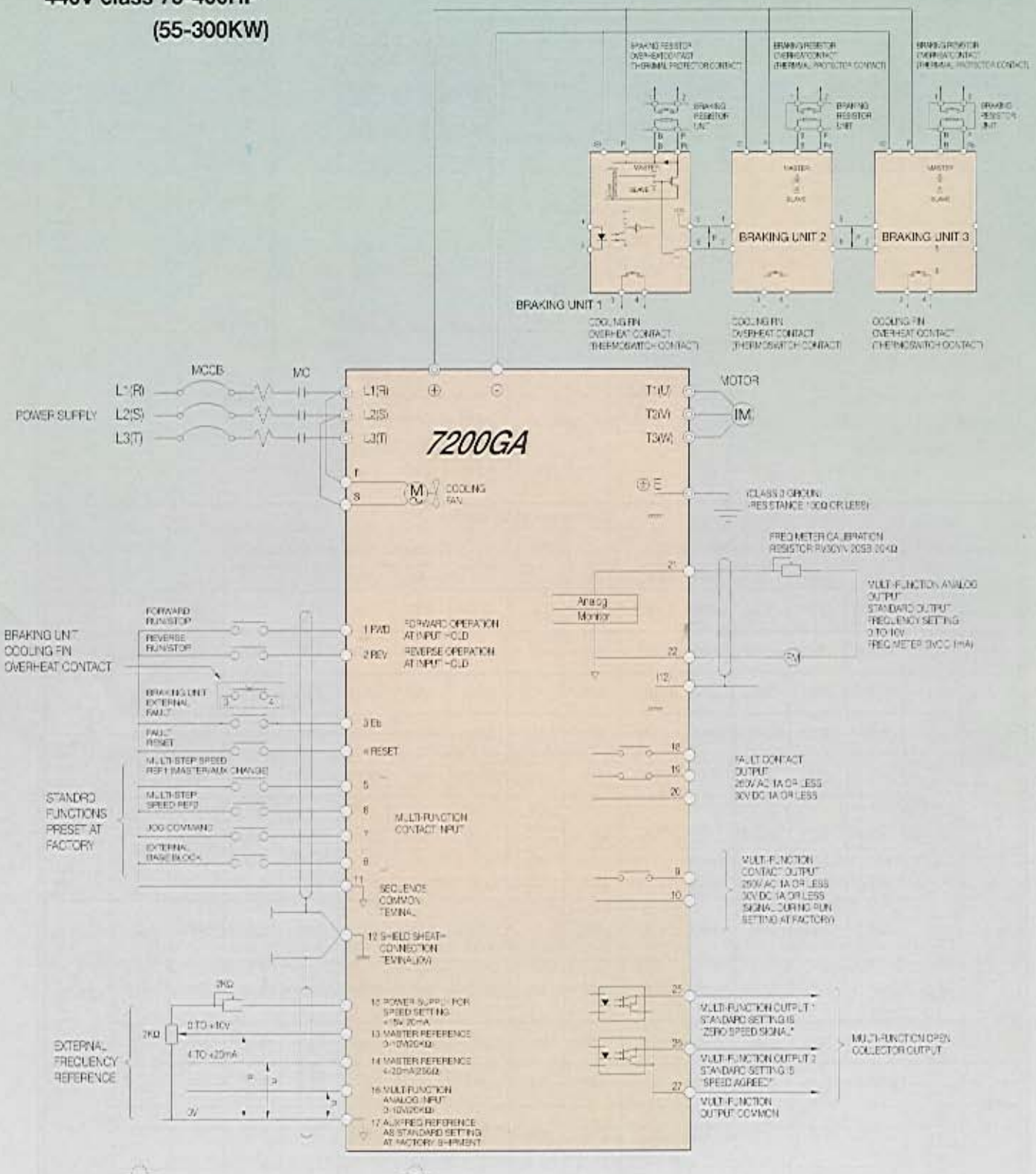
voltage	Motor output HP	Dimension in mm														DCL
		Open Chassis Type (IP00)						Mass (kg)	Enclosed Type (NEMA1)(IP20)						Mass (kg)	
		W	H	D	W1	H1	d		W	H	D	W1	H1	d		
220V	1	204.5	304	130	180	285	M6	4	205	305	130	180	285	M6	4	Option
	2															
	3	204.5	304	165	180	285	M6	7	205	305	165	180	285	M6	7	
	5															
	7.5	204.5	354	200	180	335	M6	10	205	355	200	180	335	M6	10	
	10															
	15	265	360	245	245	340	M6	12	265	360	245	245	340	M6	12	
	20															
	25	283.5	525	307	220	505	M8	30	291.5	745	307	220	505	M8	33	Built-in
	30															
	40	459	790	324.6	320	760	M10	75	462	1105	324.6	320	760	M10	81	
	50							76							82	
	60							79							85	
	75							79							88	
	100	599	1000	381.6	460	960	M12	120	602	1305	381.6	460	960	M12	130	
440V	1	204.5	354	165	180	335	M6	7	205	355	165	180	335	M6	7	Option
	2															
	3															
	5	204.5	354	200	180	335	M6	10	205	355	200	180	335	M6	10	
	7.5															
	10															
	15	265	360	245	245	340	M6	12	265	360	245	245	340	M6	12	
	20															
	25	283.5	525	307	220	505	M8	32	291.5	745	307	220	505	M8	35	Built-in
	30															
	40	344	630	324.5	250	610	M8	46	352	945	324.50	250	610	M8	50	
	50															
	60															
	75	459	790	324.6	320	760	M10	80	462	1105	324.6	320	760	M10	86	
	100							81							87	
	125							85							92	
	150	599	1000	381.6	460	960	M12	120	602	1305	381.6	460	960	M12	130	
	175							120							130	
	215							130							140	
	250	—						—	—						—	—
	300															
	400															

INTERCONNECTION

For Models JNTG BG BA0075AZ---to 0400AZ---

440V class 75-400HP

(55-300KW)



Notes: 1. ⏚ indicates shielded leads and ⏚ twisted-pair shielded leads.

2.External terminal ⑬ of + 15V has maximum output current capacity of 20mA.

3.Either external terminal ⑬ or ⑭ can be used.

4.Terminal symbols: ◎ shows main circuit; ○ shows control circuit.

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