ARICO

High performance,vector common inverter

Q-9000 series

220V grade 0.4~110KW(1.2~160KVA)
440V grade 0.4~300KW(1.4~460KVA)

Features of the product

High performance and capacity

High impulse voltage

Low interference

Low noise

World specification

Corresponding to the main on-site network

Complying with the main specifications in the world

Apply for local voltage all over the world

Applications

Solid energy saving control

Perfect countermeasures of power higher harmonic resonance

Control performance

The content of current vector control

- At rated low rev of 1/100, there is a big starting torque
- High torque at 1/100 low rev (without PG)
- The rev in controlled within 1:100 (it is 1:1000 with PG)

Large scale precise rev control

- Within 1/100 low and high rev, when the load is changed, it also features of high precise running.
- With light or heavy load, the rev can still be kept stable (without PG)
- Rev accuracy ±0.2%/0~100% load(it is ±0.02%with PG)

Precise torque control

- With its precise torque control capacity, it can control really the torque with 150% torque limit.
- When load changes quickly, it can respond quickly as well.

Applications

Printing machines

Industrial laundry equipments

Transporting and conveying equipments

Air-conditioning equipments

Textile equipments

Machine tools

Fans or water bumps

Public facilities

Food industry

Papermaking machines

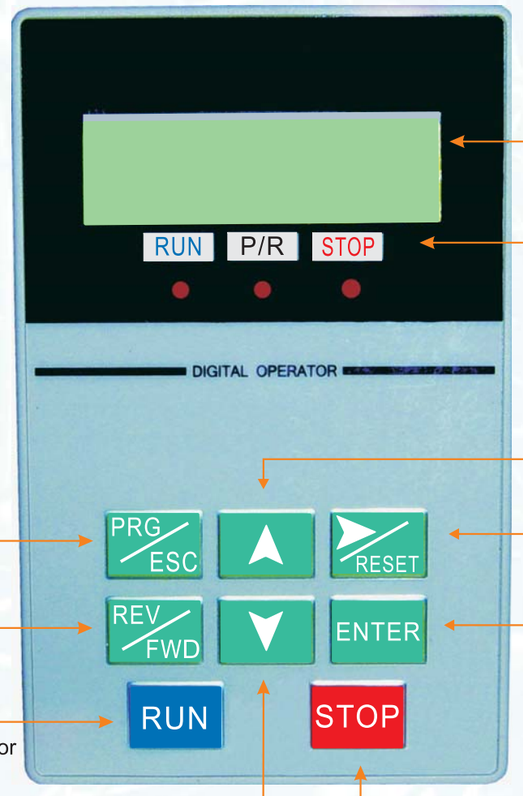
Medical apparatus

Plastic injecting machines

Dyeing equipments

Elevators

Digital controller (operator)



Displaying frequency, current, voltage, power, the set parameter values and abnormal contents

LED for indicating the running status and mode

PRG/ESC
Programming mode/ returning to the mode before pressing the button

Increasing button

Shift/reset button
Select the numbers of the set value that will be changed. The selected number flashes to reset

REV/FWD
Switching between REV and FWD

RUN
Press RUN, the red indicator of RUN is on

Decreasing button

Enter button
It is for selecting mode, group, function, and parameter name. Press this button again after setting a data, then it is entered.

Stop button
Press stop button, the red indicator of Stop is on

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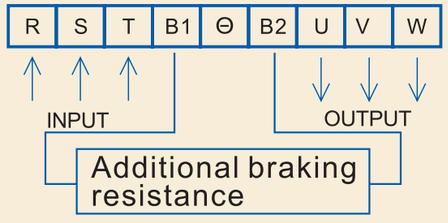
Description on the functions of the main loop terminal blocks

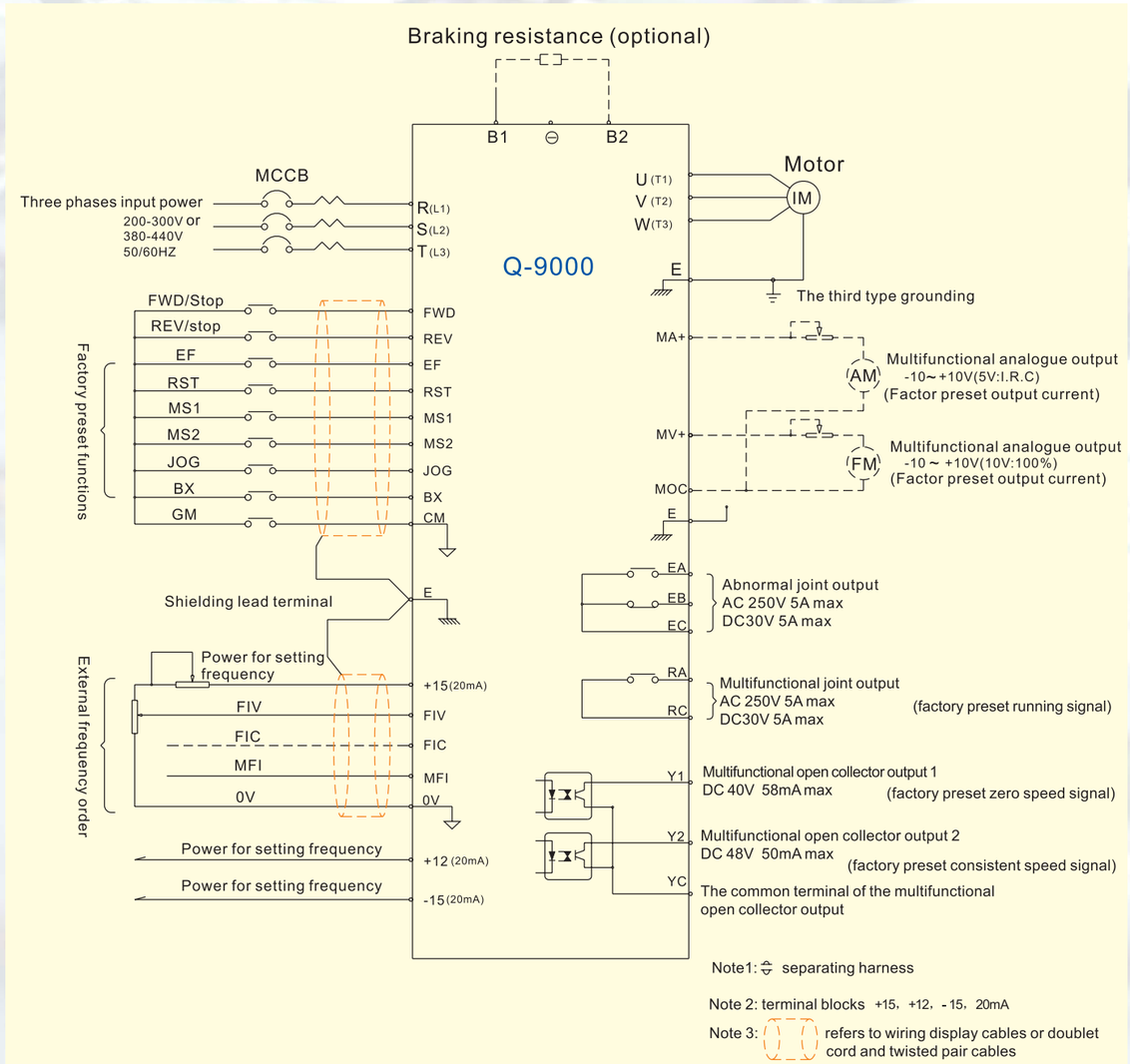
The functions of the main loop terminal blocks

Terminals	Functions
R	Power input terminal of the main loop
S	
T	
B1	Resistance joint of braking (DC+ positive voltage)
Θ	DC power of the main loop (DC- negative voltage)
B2	Resistance joint of braking
U	The output terminal of the inverter
V	
W	



Taking 15HP and 20 HP as an example

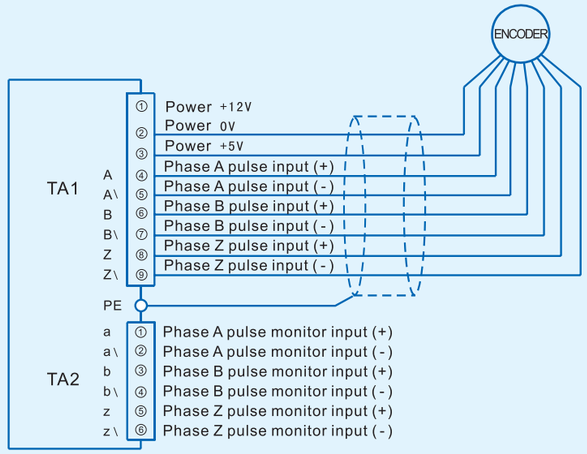
Terminal Wiring diagram



CM	E	FIV	FIC	+15	MF1	0V	Y1	Y2	YC	-15	EA	EB	EC
FWD	REV	EF	RST	MS1	MS2	JOG	BX	MV+	MOC	MA+	RA	RC	

Wiring diagram

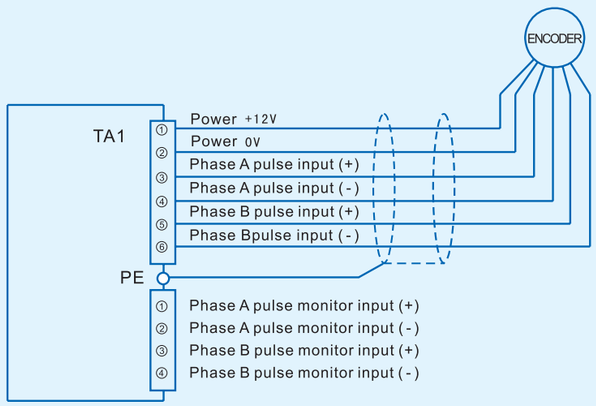
Q9000-A



Remark:

a. Only shield twist pair cable is used as signal cable.
b. Max length of PG is 100m.
c. The turning direction of PG may be selected by parameter 61-02and the factory preset value is the phase advancer during the motor is running forward.

Q9000-B



Remark:

a. Only shield twist pair cable is used as signal cable.
b. Max length of PG is 100m.
c. The turning direction of PG may be selected by parameter 61-05 and the factory preset value is the phase advancer during the motor is running forward.

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standard specification

The standard specification of the 440V grade

Series			Q-9000																	
Model		HP	3HP	5HP	7.5HP	10HP	15HP	20HP	25HP	30HP	40HP	50HP	60HP	75HP	100HP	150HP	200HP	250HP	300HP	400HP
Rated output	Motor Capacity	KW	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	110	160	185	220	300
	Rated Capacity	KVA	4.7	6.1	11	14	21	26	31	37	50	61	73	98	130	170	230	260	340	460
	Rated Current	A	6.2	8	14	18	27	34	41	48	65	80	96	128	165	224	302	340	450	605
	Output voltage	V	Three phases: 380/415/440/460(corresponding to the input power)																	
	Max output frequency		The corresponding set parameters may be 400HZ																	
Power	Voltage、frequency		Three phases 380~460V, 50HZ/60HZ																	
	Allowable voltage fluctuation		+10%~-15%																	
	Allowable frequency fluctuation		±5%																	
Control features	Control mode		PWM dynamic current torque vector control, V/F control and PG control etc.																	
	Accuracy of rev control		± 0.2%									【±0.02% with PG】								
	Range of rev control		1:100									【1：1000 with PG】								
	Rev response		10Hz									【30Hz with PG】								
	Starting torque		150%0.5Hz ~200%/0.5Hz									【200%/ 0Hz with PG】								
	Torque response		20Hz, 50ms									【40Hz,25ms with PG】								
	Accuracy of torque		±5%																	
	Torque limit		With 4 control mode parameter settings																	
	Range of frequency control		0.01～400 Hz																	
	Accuracy of frequency		Digital signal order: ±0.01%(-10℃～+40℃)， analogue order: ±0.1%(25℃±10℃)																	
	Analytic of the frequency setting		Digital signal order: ±0.01Hz(100Hz max)，analogue order: ±0.03Hz/60Hz(12bit)																	
	Analytic of the frequency output		0.001Hz																	
	Signal of the frequency setting		Analogue signal DC-10～+10V(20KΩ)，4～20Ma(250Ω)																	
	Braking torque		±20%(it can be up to 150% with additional brake controller)																	
	Acceleration and deceleration time		0.01～6000.0 s(the times of acceleration and deceleration are set respectively; 4s controlling time option mode)																	
	Overload		The rated torque current is 150%/1s; 200%/0.5s																	
	Serial communi-cation port		RS-485																	
	Run/stop setting		Controller, RS-485, loop controlling terminal (the frequency and parameter access may be set directly by computer)																	
	Auxiliary control function		Parameter saving operator, RS-485, torque control, rev control, PID control, multiple section control, coupled control, etc.																	
Protection functions	Instantaneous over current		When the rated output current is about 200%, motor stops free running.																	
	Overload protection to motor		Electronic thermal relay protection																	
	Fuse breaking		Motor stops free running.																	
	Compensation to instantaneous power off		The RUN option mode will be reset after 2 seconds of disconnecting and then it runs again.																	
	Overload		The rated output current is about 150%/60s, 200%/0.5s; motor stops free running.																	
	Over voltage		When the voltage of main loop is over DC 410, motor stops free running.																	
	Low voltage		When the voltage of main loop is under DC 190, motor stops free running.																	
	Over heated radiator		Thermocouple temperature switch protection																	
	Stall prevention		Preventing stall during acceleration, deceleration and running.																	
	Grounding error		Protected by electronic loop																	
	Charging protection		It shows when the DC voltage of the main loop is over 50V.																	
Environment	Ambient temperature		-10°C～+50°C																	
	Ambient humidity		90% RH max (at no dewing)																	
	Vibration		1G under 20Hz (0.2G above 20Hz)																	
	Application		Indoor (free from erosive air, oil spray or dust)																	
	Preserving temperature		-20°C~+65°C																	
	Application environment		Under 1000 meter elevation																	

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The standard specification of the 220V grade

Series			Q-9000												
Model		HP	3HP	5HP	7.5HP	10HP	15HP	20HP	25HP	30HP	40HP	50HP	60HP	75HP	100HP	150HP
Rated output	Motor Capacity	KW	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	110
	Rated Capacity	KVA	4.2	6.7	9.5	13	19	24	30	37	50	61	70	85	110	160
	Rated Current	A	11	17.5	25	33	49	64	80	96	130	160	183	224	300	450
	Output voltage	V	Three phases: 200/220/230/240V(corresponding to the input power)													
	Max output frequency		The corresponding set parameters may be 400HZ													
Power	Voltage、frequency		Three phases 200~240V, 50HZ/60HZ													
	Allowable voltage fluctuation		+10%~-15%													
	Allowable frequency fluctuation		±5%													
Control features	Control mode		PWM dynamic current torque vector control, V/F control and PG control etc.													
	Accuracy of rev control		±0.2%								【±0.02% with PG】					
	Range of rev control		1:100								【1：1000 with PG】					
	Rev response		10Hz								【30Hz with PG】					
	Starting torque		150%0.5Hz ~200%/0.5Hz								【200%/ 0Hz with PG】					
	Torque response		20Hz, 50ms								【40Hz,25ms with PG】					
	Accuracy of torque		±5%													
	Torque limit		With 4 control mode parameter settings													
	Range of frequency control		0.01～400 Hz													
	Accuracy of frequency		Digital signal order: ±0.01%(-10℃～+40℃)， analogue order: ±0.1%(25℃±10℃)													
	Analytic of the frequency setting		Digital signal order: ±0.01Hz(100Hz max)，analogue order: ±0.03Hz/60Hz(12bit)													
	Analytic of the frequency output		0.001Hz													
	Signal of the frequency setting		Analogue signal DC-10～+10V(20KΩ)，4～20Ma(250Ω)													
	Braking torque		±20%(it can be up to 150% with additional brake controller)													
	Acceleration and deceleration time		0.01～6000.0 s(the times of acceleration and deceleration are set respectively; 4s controlling time option mode)													
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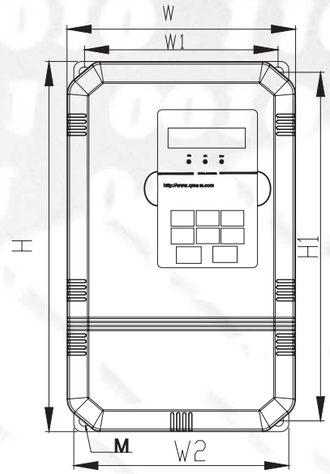
Environment	Ambient temperature		-10°C～+50°C													
	Ambient humidity		90% RH max (at no dewing)													
	Vibration		1G under 20Hz (0.2G above 20Hz)													
	Application		Indoor (free from erosive air, oil spray or dust)													
	Preserving temperature		-20°C~+65°C													
	Application environment		Under 1000 meter elevation													

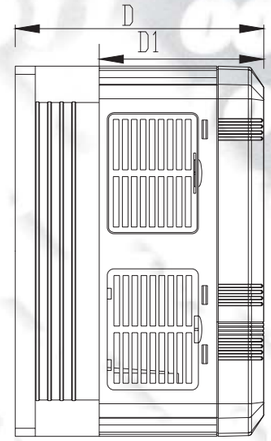
Descriptions on the functions of terminal loop

The functions of the terminal block of the control loop (factory preset)

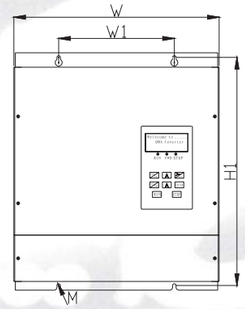
Sort	No.	Description	Functional of the terminal		Signal level
Input signal for running			Close→Forward, Start→Stop		DC 24V, 8mA optical coupling insulation
	REV	REV/Stop	Close→REV, Start→Stop	The terminal EF-BX is multifunctional, please read T1-01~T1-06	
	EF	Exterior abnormal input	Close→EF, Start→Stop		
	RST	Abnormal reset	Close→reset		
	MS1	Auxiliary switching of the main speed	Close→auxiliary frequency order		
	MS2	Multiple end speed order 2	Close→Multiple end speed order 2 is effective		
	JOG	JOG order	Close→jogging		
	BX	Exterior running stopped	Close→transducer stops outputting		
	CM	Common terminals	Inputting signal when the terminal FWD-BX is short		
Inputting Analogue signal	+15	Rev order power+15	Rev order setting power terminal, +15V power		+15V, 20MA
	-15	Rev order power-15	Rev order setting power terminal, -15V power		-15V, 20MA
	+12	Rev order power+12	Rev order setting power terminal, +12V power		+12V, 20MA
	FIV	Order of the main rev frequency	0-10V/100a% frequency -10~+10V/-100%~+100% frequency 4-20mA/100% frequency		0-10V, (20K) -10-+10V(20K) 4-20mA, (20K)
	FIC				
	MFI	Order of the auxiliary frequency	0-10V/100% frequency -10~+10V/-100%~+100% frequency	Auxiliary analogue input T3-01-03	0~10V, (20) 0-20mA, (250)
	0V	Common terminal	Rev order common terminal of the terminal FIV, FIC, MFI		
	E	Shield twist cable terminal	Connecting the shied sleeve of the separating twist cable		
Output signal for running	RA	Signal Output during running (5 A joints)	Terminal conducting during running	Multifunctional signal output T2-01-03	Joint capacity: AC 250V, 5A, DC 30V 5A
	RC				
	Y1	Stall finding	The min frequency is under 51-09, it is at low level		Open collector output 48V 50mA max
	Y2	Rev reaching finding	When frequency is set under ±1%, it is a low level		
	YC	The common terminal of Y1 and Y2			
	EA	Abnormal output signal EA-EC, A joint EA-EC, B joint	When it is abnormal, terminals EA-EC is closed and the terminals EB-EC is open		Grounding capacity: AC 250V 5A DC 30V 5A
	EB				
	EC				
Outputting Analogue signal	MV+	Cymometer output	0-10V/100% frequency (0-10V/100% current may be set)	Multifunctional analogue output 1(T4-01, T4-02)	0~+10V Max 5% 20mA max
	MOC	Common terminal			
	MA+	Monitoring output current	5V/transducer rated current	Multifunctional analogue output 2(T4-04, T4-06)	

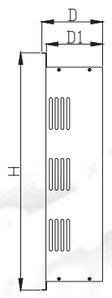
Size of the products





Descriptions			H	H1	W	W1	W2	D	D1	M
AC220V	Q9000-A/B-0222(L3HP)	Q9000-A/B-0322(L5HP)	275	259	170	144	160	185	122	M4
AC440V	Q9000-A/B-0244(H3HP)	Q9000-A/B-0344(H5HP)								
AC220V	Q9000-A/B-0522(L7.5HP)	Q9000-A/B-0722(L10HP)	330	314	230	206	222	226	141	M8
	Q9000-A/B-1122(L15HP)									
AC440V	Q9000-A/B-0544(H7.5HP)	Q9000-A/B-0744(H10HP)								
	Q9000-A/B-1144(H15HP)	Q9000-A/B-1544(H20HP)								
AC220V	Q9000-A/B-1522(L20HP)	Q9000-A/B-1822(L25HP)	465	450	275	249	265	272	247	M8
	Q9000-A/B-2222(L30HP)	Q9000-A/B-3022(L40HP)								
AC440V	Q9000-A/B-1844(H25HP)	Q9000-A/B-2244(H30HP)								
	Q9000-A/B-3044(H40HP)									





Descriptions			H	H1	W	W1	D	D1	M
AC220V	Q9000-A/B-0222(L3HP)	Q9000-A/B-0322(L5HP)	389	374	310	160	105	97	M5
AC440V	Q9000-A/B-0244(H3HP)	Q9000-A/B-0344(H5HP)							
AC220V	Q9000-A/B-0522(L7.5HP)	Q9000-A/B-0722(L10HP)	410	394	350	200	105	97	M5
	Q9000-A/B-1122(L15HP)								
AC440V	Q9000-A/B-0544(H7.5HP)	Q9000-A/B-0744(H10HP)							
	Q9000-A/B-1144(H15HP)	Q9000-A/B-1544(H20HP)							
AC220V	Q9000-A/B-1522(L20HP)		585	565	360	200	134	126	M8
AC440V	Q9000-A/B-1844(H25HP)	Q9000-A/B-2244(H30HP)							

The size of A/B models of the product is same but the internal PCBs are different.

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