

ALPHA6900 Series Special AC Drive for Crane



Feature

ALPHA 6910V/6920V/6930 series special AC drive integrates the motor driving and lifting logic control. It is devised with professional lifting mechanism and safety logic for wide application range, including sequential coordination and hook-slip prevention functions. Moreover, the original PLC is removed to reduce the potential faults.

It adopts integration design, which eliminates external brake or external brake power as well as the external transmitter in load sensor. The high integration simplifies the system wiring and installation and features accurate control, high safety and reliability with impact less start/brake and stable running.

Furthermore, we offer both construction-elevator dedicated integration scheme and linkage console. The linkage console comprises the wireless-call group control system, floor-selection automatic leveling system, mechanical operation system, and the load-sensor transmitting system. We can provide our venerable customers with perfect solutions.

Technical Characteristics

- PG close-loop vector control
- Large start torque; rapid dynamic torque response
- Vector control running current under load is averagely 10% lower than that of V/F mode.
- Safety protections including over-voltage, under-voltage, over-current, overload, and anti-stalling
- Overload prediction alarm and speeding under light load; give alarm when the load is higher than set range; allow speeding within specific range when the load is lower than a setup value
- Step-less speed regulating; stable running with impactless start/brake
- Soft start/stop decreases wear of gear, rack, and brake, extending parts lifetime
- Hoisting industry:
 - Fast adjusting the lifting and landing speed according to the load change even without weight sensor; avoid hook-slip and stalling
 - Allow over-speed running under hook clearance state; Rated frequency is 50Hz, while it can reach 100Hz at over-speed running

- Wind speed surpassing prevention; detect wind speed surpassing signal and give command to stop running
- Examination of torque at brake-release and brake-contracting; strict timing sequence of up-travel, down-travel, stoppage, brake-release and brake-contracting
- Construction crane:
 - Load limit function; Stop running when the load is over the defined value to make sure the mechanical system safety
 - Integrated leveling function; After the floor is selected, the floor leveling is automatically carried out to save positioning time.
 - Wireless call group control; Sequence the calling floors to avoid their interference with each other
 - Wide screen LCD display; blue background light adjustable; clear display of white characters; monitoring parameters can be selected
 - Special large keys suitable for workers is comfortable and with fast response.
 - Extension wire of keyboard can directly connected to control table, which is convenient for parameter setting and self-learning of floor height and loads.
 - One-stop service providing systematic digital control solution for crane, including crane dedicated inverter drive, wireless calling device, LCD displayer, floor selection device, load sensor, and speed sensor, etc.

Industry Applications

ALPHA6900 series special AC drive is often found within the hoisting industry. It can be applied in the tower cranes, port machinery, and more.

Specification

Technical Specifications of ALPHA6900

Item	Specification
Power Range	380V \pm 20% three phases : from 5.5 to 55kW
Rated Input Voltage and Frequency	Three phases: 380~440V 50/60Hz

Allowable Input Voltage Range	220V three phases: 176 ~ 264V, Frequency fluctuation of less than $\pm 5\%$ 380V three phases : from 304 to 456V, Voltage unbalance rate of less than 3%, Frequency fluctuation of below $\pm 5\%$
Rated Output Voltage	From 0 to rated input voltage
Max. Overload Current	G model: 150% for one minute, 180% for 20 seconds
Control Method	V/F control , Open loop current vector control, Close loop vector control
Frequency Range	0.00~400.00Hz (35R5GB/37R5GB and above)
Frequency Accuracy	Digital command $\pm 0.01\%$ (from -10°C to $+40^{\circ}\text{C}$) Simulation command $\pm 0.01\%$ ($25^{\circ}\text{C} \pm 10^{\circ}\text{C}$)
Preset Frequency Resolution	Digital command 0.01Hz Simulation command 1/1000 of the maximum frequency
Output Frequency Resolution	0.01Hz
Preset Frequency Signal	From 0 to 10V, from 0 to 20mA
Acceleration-Deceleration Time	From 0.1 to 3600 seconds (The acceleration and deceleration time can be preset separately.)
Braking Torque	The additional braking resistance reaches up to 125%.
Voltage-Frequency Characteristics	Four kinds of fixed V/F characteristics are selectable. Any V/F characteristic can be preset. The V/F control with PG is available.
Protective Functions	Over-voltage, under-voltage, current limit, over-current, overload, electronic thermal relay, overheating, over-voltage stall, load short circuit, grounding, under-voltage protection, input phase loss, output phase loss, short circuit to ground, interphase short circuit, motor overload protection, etc
Ambient Temperature	From -10°C to $+40^{\circ}\text{C}$
Humidity	From 5 to 95% RH (No condensation)
Storage Temperature	From -40°C to $+70^{\circ}\text{C}$
Service Place	Indoor (without any corrosive gas)
Installation Site	The altitude is at most 1,000m. There is not any dust, corrosive gas, or direct solar radiation.

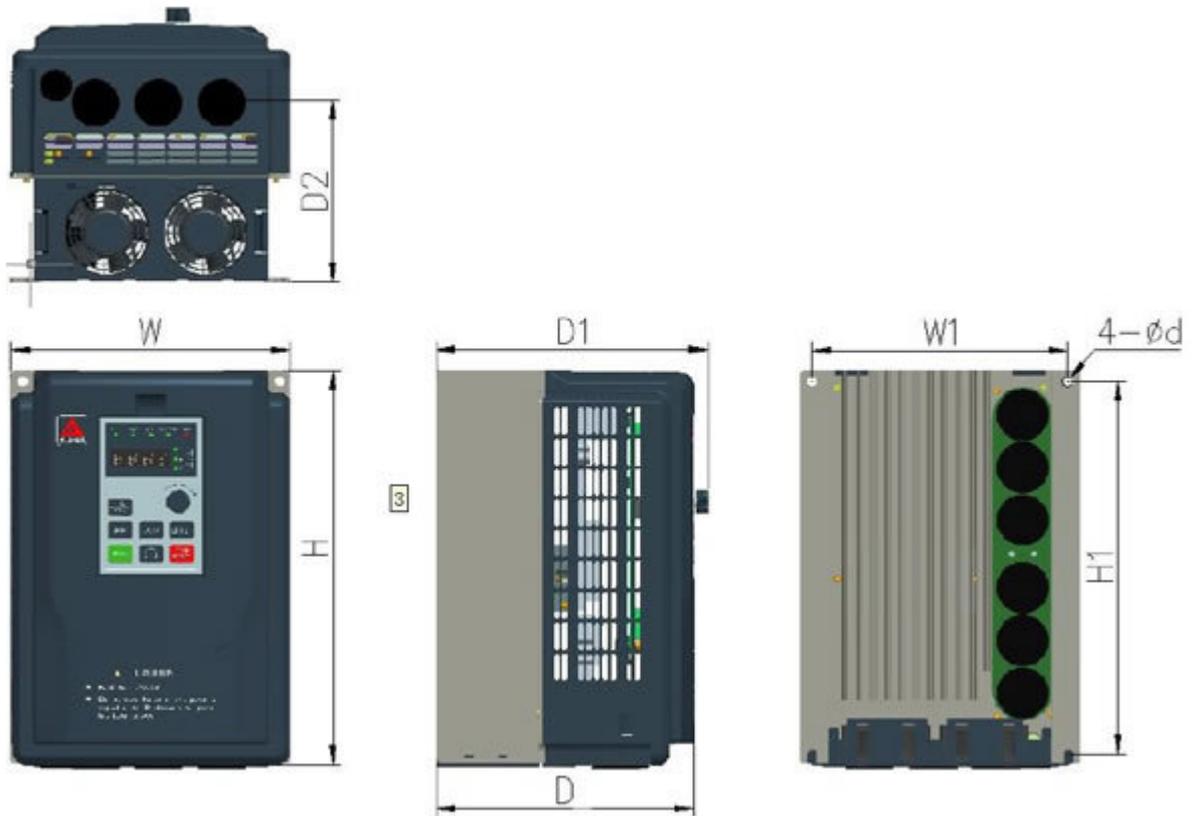
Vibration	Less than 5.9m/s ² (0.6g)
Protection Rating	IP20
Cooling Method	Natural cooling or forced air cooling

Selection Guide

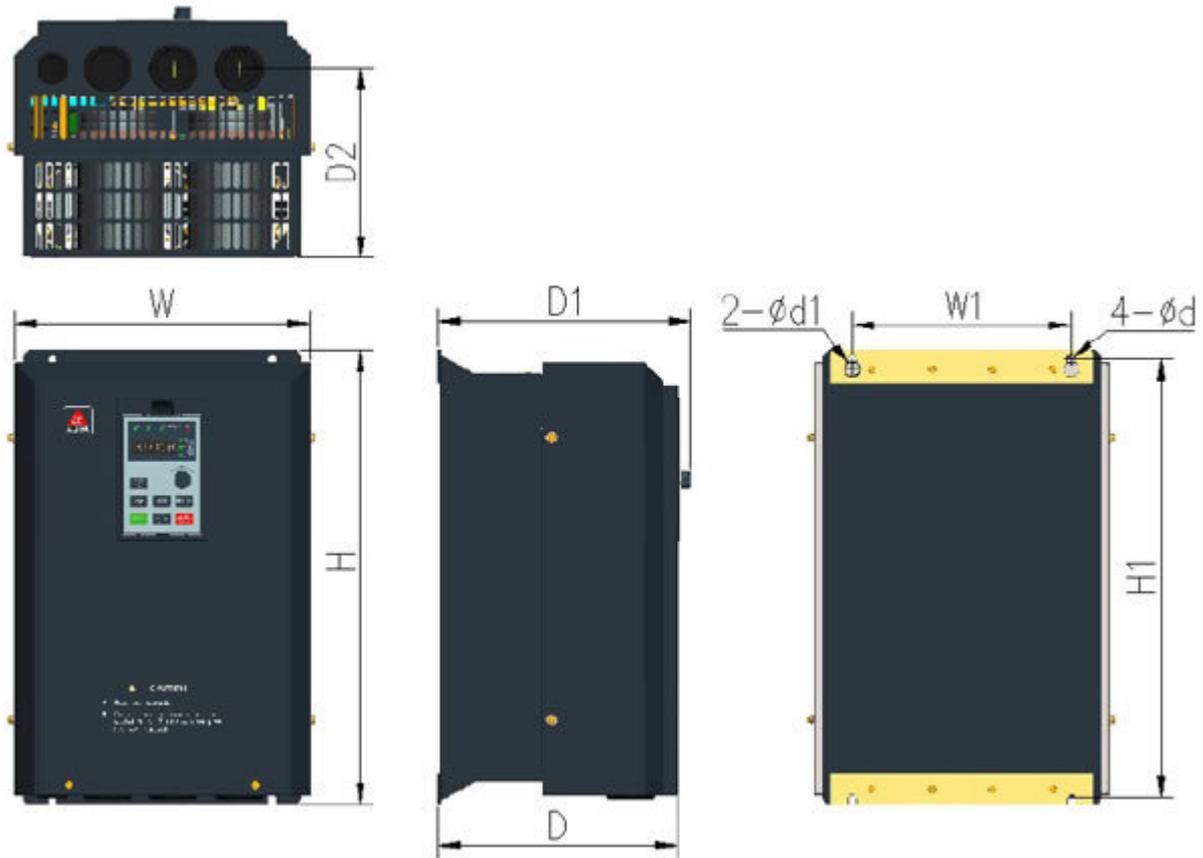
ALPHA6900V Selection Table

Voltage Classes	Model (Close Loop Vector Control)	Motor Power (kW)	Rated Current (A)
380V Three Phases	35R5GB	5.5	13.0
	37R5GB	7.5	17
	3011GB	11	25
	3015GB	15	32
	3018G	18.5	37
	3022G	22	45
	3030G	30	60
	3037G	37	75
	3045G	45	90
	3055G	55	110

Overall Dimension of ALPHA6900 Series Special AC Drive for Crane



Model	H	H1	W	W1	D	D1	D2	d
35R5GB	270	255	190	175	176	186	122	7
37R5GB								



Model	H	H1	W	W1	D	D1	D2	d	d 1
3011GB	373	360	235	200	176	188	125	7	12
3015GB									
3018G	420	405	270	200	218	230	175	7	14
3022G									
3030G	503	488	311	200	230	242	180	7	14
3037G									
3045G	590	570	351	200	254	266	192	10	20
3055G									