

NISTRO

GH310
Crane
AC Drive



GH310 Crane AC Drive

Drawing from extensive industry expertise, the GH310 series stands out for its exceptional torque management, braking control timing, and speed/torque monitoring.

It also excels in power optimization, positional processing, and intelligent deceleration mechanisms.

These advanced features are meticulously designed to guarantee the utmost safety, reliability, and efficiency of cranes of harbors, ships, marine engineering projects, and mining.



Power range

220V/380V/660V: 0.75kW-1120kW

High performance and quality on rigid requirements
high power density for better user experience

Low voltage protection for quick stop to avoid
hook slippage

Basic features

Software with built-in functions for cart rectification,
sync hoisting, precise positioning, grab adjustment,
anti-swing, and tower control.

Precise positioning for optimal efficiency in the
designated position without creeping

Application

Rubber tyre gantry cranes, rail-mounted cranes, gantry cranes, general cranes, tower cranes etc.

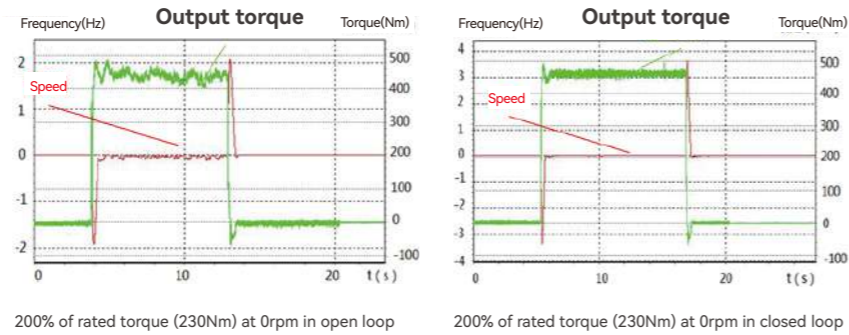


Reliability

Low frequency and large torque

It can realize 200% of the rated torque output at 0.0Hz, and stable operation with load at the ultra-low speed under 0.01Hz. High torque output for starting ensures smooth ascending/descending process without sliding.

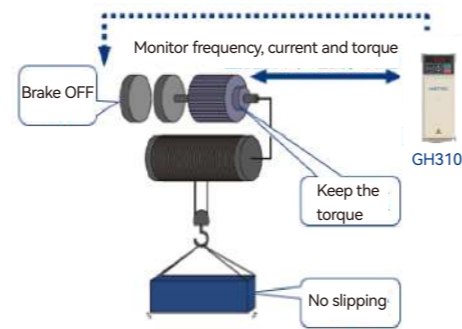
Stable torque output in torque control mode with linearity tolerance within 3% or lower.



(A 45kW drive for a 37kW motor with a rated torque of 230NM)

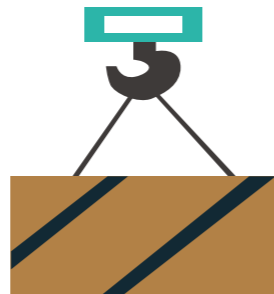
Brake release/apply logic control

The brake will act only when the two conditions of release/apply frequency and release/apply torque are satisfied at the same time to ensure smooth lifting and stopping without slipping.



Steel wire rope protection

Speed is automatically lowered to tighten the wire rope slowly when goods are raised at high speed and the rope is slack, so as to prevent overstretching of the wire rope and to prolong its service life.



Anti Snag

When a sudden increase in load torque is detected during the hoisting process (hanging by a foreign object or being held by an obstacle), an alarm is issued and operation is stopped.



Sync control

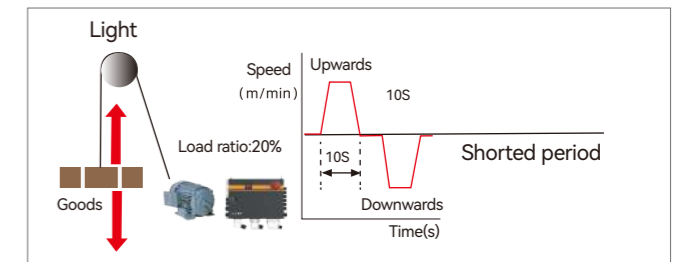
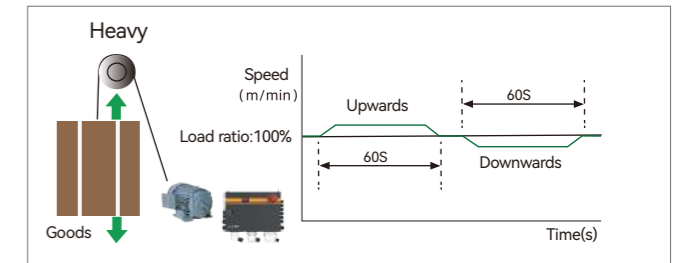
Master-slave sync control function: when the dual hoisting mechanism lifts one object at the same time, this function can ensure that it is lifted synchronously to ensure safety.



Efficiency

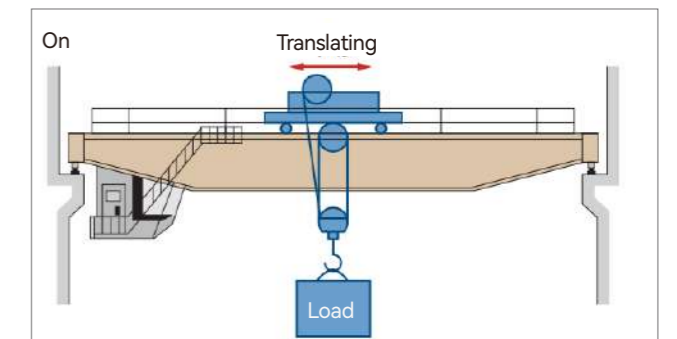
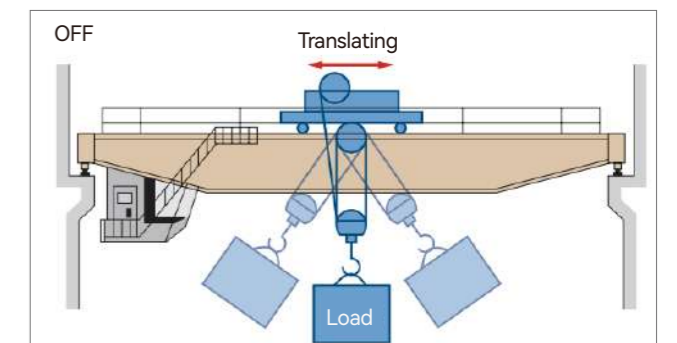
Fast under light duty and slow under heavy duty

Built-in constant power control algorithm (speed change with load) automatically matches the best running speed according to the current lifting weight, 1-2 times up of the working efficiency.



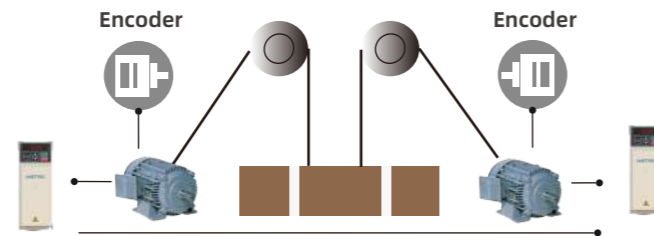
Anti Swing

Open/closed loop anti-swing control algorithm with simple debugging and good adaptability reduces hook swaying caused by inertial shock from the cart and trolley and goods swing during translation.



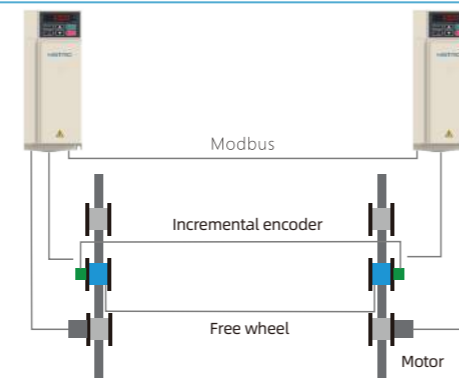
Sync control

Master-slave sync control function: when the dual hoisting mechanism lifts one object at the same time, this function can ensure that it is lifted synchronously to ensure safety.



Real-time correction

Real-time position correction is adopted for master and slave for traveling mechanisms with large spans to realize synchronization control.



Anti Swing (Slewing)

Low-speed slewing is smooth without "stuttering" for quick positioning.



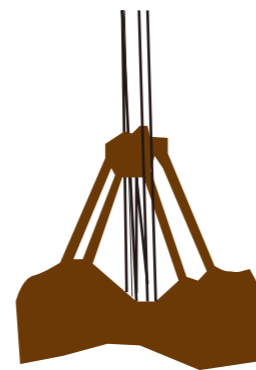
Quick stop with reverse gear (Slewing)

Quick stop can be realized by the reverse gear during slewing without boom shake and rebound.(for slewing mechanism of tower cranes).

Grab sync control

GH310 AC drives automatically control the grab with a single closing command, the system will close the grab automatically, then adjust tension of the supporting rope and the clamping rope until they are balanced.

Similarly, the clamping of the grab only needs a command, and the system automatically completes it. Its status is determined by the absolute rope difference between the clamping and the supporting ropes, and the deceleration zone is automatically set up to prevent the sudden impact.



Adaptability

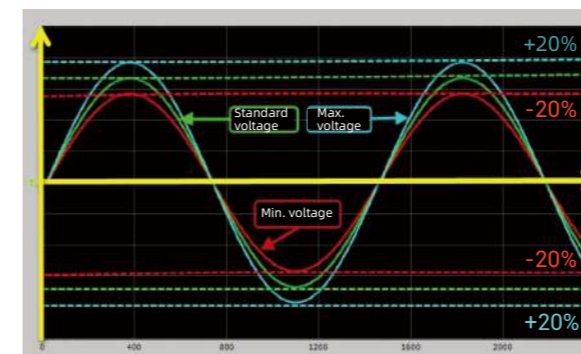
New structure



Wide tooth surface for heat dissipation and high air speed to avoid derating under high temperature for full power operation.

Wide voltage

The allowable fluctuation range of input voltage is $\pm 20\%$ of the standard rated voltage to avoid its influence effectively and at the same time, the output is still qualified under harsh grids.



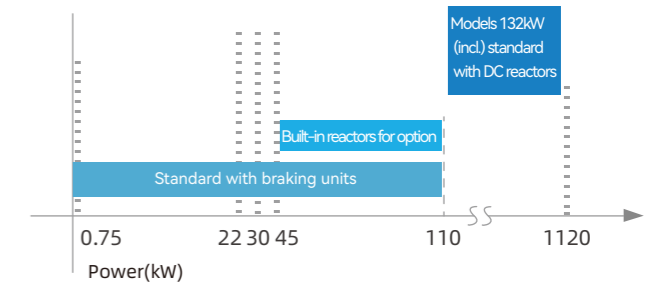
Superior overload capacity

150% of the rated current for 1 minute, 180% for 10 seconds, and 200% for 3s.

Speed change with voltage

The drive reduces the operating frequency when the supply voltage decreases to keep working.

Braking unit and reactor



- 0.75kW~110kW standard with braking units
- 45kW~110kW optional for built-in reactors
- 132kW (incl.) standard with DC reactors

Protection

It realizes all-round protection for the drives and peripheral devices including short-circuit protection to ground, internal buffer relay protection, fan protection, external 24V DC short-circuit protection, motor overload protection and more.

System error	Input phase loss	Stall	Overcurrent during acceleration	Output phase loss
Load protection 1	Overvoltage during acceleration	Fault Type	Overheat	PID feedback fault
Undervoltage during operation	Current detection fault		Excessive speed deviation	Motor overload

Multiple PG boards

GH310 series supports several encoder interfaces of collector signal, differential signal, and resolver signal for closed-loop vector control.

Expansion

Various expansions

A variety of expansion interfaces are available for customization.

GH310 control board retains two SPI high-speed channels for the external expansions, and its type and parameters are automatically recognized.

Function expansions

Type	Requirement
IO	Optional for high-speed pulse and relay
Speed tracking	Optional (software tracking by default)
PG	Optional for different encoders
Simple logic board	Optional
RT Resolver	Optional
GPRS	Optional

IO expansion

Type	Terminal	Description
IO	X6/X7/X8/X10	PLC/COM
High-speed pulse input	X10	0-100kHz
DO	Expansion port Y2	DC24V/50mA
RO	Expansion relay TA2/TB2/TC2	3A/240VAC
Temp. detection	PK+/PK-	PT100/PT1000/KTY84, motor temp. detection
Public	COM/PLC2	Public port for external appliances
Change-over switch	S7	Polarity of input terminals

Logic board expansion

Drive can perform simple logic instead of PLC with the widely used MELSEC programmable controller program development environment integrated with general and comprehensive function blocks.

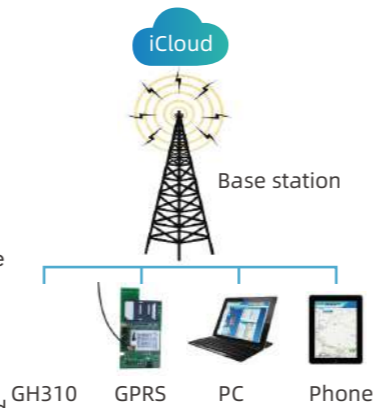


NISTRO IoT

Intelligent terminations feature high positioning accuracy, small size and easy installation.

GPRS and GSM dual-mode communications ensures stable operation and reliable performance.

And online monitoring, and remote fault diagnosis are realized through the remote monitoring module, offering customers with a wider range of value-added services.



Communication expansion

Type	
Modbus-RTU	
PROFIBUS-DP	
CANopen	
PROFINET	

Naming Rules

GH310 - T 3 - 011 B

Series Name
GH310

Voltage Type

T: Three phase
S: Single phase

Voltage Level

2: 220V 3: 380V
6: 660V 11: 1140V

Accessory Type

B: Brake
L: DC reactor
D: Cabinet product

Motor power(kW)

7R5: 7.5
011: 11
132: 132

Drive Output Current

Voltage	220V	380V	660V
Power(kW)	Rated Output Current (A)		
0.75	4	3	-
1.5	7	4	-
2.2	10	6	-
4	16	10	-
5.5	20	13	-
7.5	30	17	-
11	42	25	-
15	55	32	-
18.5	70	38	-
22	80	45	28
30	110	60	35
37	130	75	45
45	160	90	52
55	200	110	63
75	260	150	86
90	320	180	98
110	380	210	121
132	420	250	150

Voltage	220V	380V	660V
Power(kW)	Rated Output Current (A)		
160	550	310	175
185	600	340	198
200	660	380	218
220	720	415	235
250	-	470	270
280	-	510	330
315	-	600	345
355	-	670	380
400	-	750	430
450	-	810	466
500	-	860	540
560	-	990	600
630	-	1200	690
710	-	1340	760
800	-	1500	860
900	-	1620	932
1000	-	1720	1080
1120	-	1980	1200