



Application Cases and Solutions in Hoisting Industry





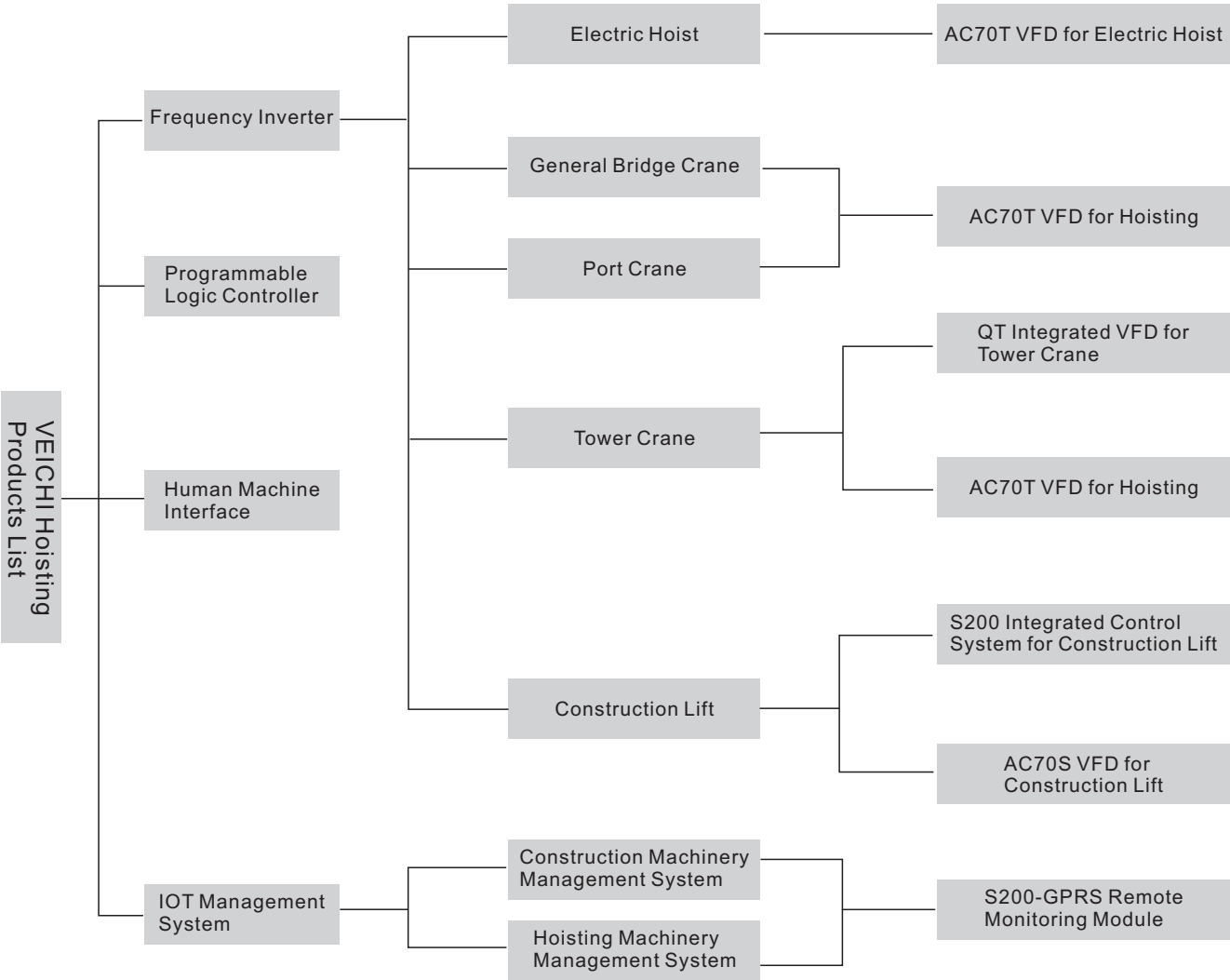
Shenzhen Veichi Electric Co., Ltd. is a high-tech enterprise which is professionally engaged in the development, manufacturing and marketing of industrial automation control products, and committed to becoming a global leading provider of industrial automation control products and system solutions.

The company owns powerful R&D team, relatively perfect production system, independent intellectual property and manufacturing bases in Shenzhen and Suzhou. To improve our R&D strength, we keep on introducing advanced overseas technology and broadening our partnerships with first-class universities and research institutions.

The main products of Veichi Electric include a variety of Variable Frequency Drive (VFD), Servo Drive System, Photovoltaic Inverter, PLC, HMI, Automation Equipment, etc, which are widely used in industries such as oil & gas, chemical industry, ceramic, crane & hoist, metallurgy, electrical cable and wire, plastic, print and package, textile, metal work and cable, coal mining and municipal engineering. Suitable solutions and products are always ready to meet the demands and improve comprehensive competitiveness of users.

With the spirit of "Innovation is the lifeblood of Veichi", we're committed to becoming one of the leading providers of electric drives, industrial control and green energy products. Veichi has set up more than 40 branch offices in China and dozens of partners in Asia, Europe and Africa. Veichi has been named Chinese Electric Industry's Top Ten National Brands, Chinese Electric Industry Top Ten Satisfying Brands and Top Ten National Brands of Inverter Industry. Veichi products have become the first choice of many enterprises.

VEICHI Hoisting Products List



Variable Frequency Inverter for Hoisting

AC70T VFD for Hoisting

Product Overview

AC70T VFD for hoisting: it's specially designed for application in hoisting industry with features of complete functions, good protection effect (resistance to salt-spray corrosion) and excellent performance, ensuring hoisting machinery's safety, reliability and high efficiency, applicable to the drives of lifting, pitching, cart, car, slewing and luffing mechanisms for industrial machines such as port machinery, marine machinery, construction machinery, mining machinery, hoisting machinery, gantry crane, electric hoist, bridge crane and winch.

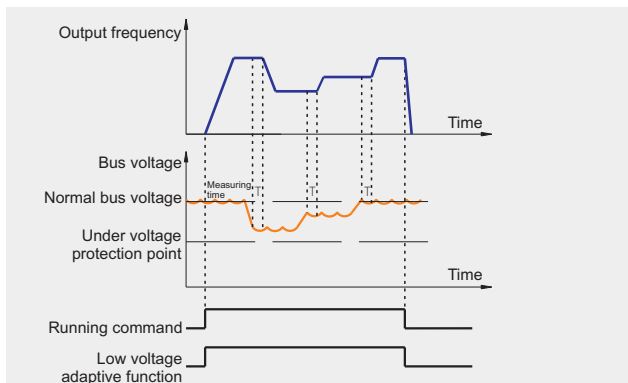


Technical Specifications

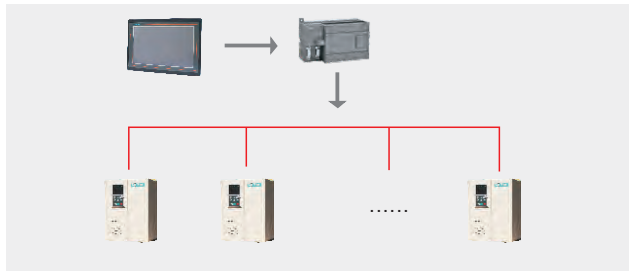
Items		Specifications
Power input	Voltage, frequency	Three phase 380V 50/60Hz Three phase 220V 50/60Hz
	Allowable fluctuations	Voltage: 320V ~ 440V; voltage unbalance rate: < 3%; Frequency: ±5% rate: as IEC61800-2 required
Output	Output voltage	Output under rated condition: 3 phase, 0 ~ input voltage, inaccuracy< 5%
	Output frequency range	0~120Hz
	Output frequency accuracy	Max frequency±0.5%
	Overload capacity	150% rated current/60s, 180% rated current/10s, 200% rated current/0.5s
Main control performance	Motor control mode	Vector control without PG, vector control with PG, V/F control
	Carrier frequency	0.6 ~ 15.0kHz, random carrier modulation
	Speed range	Vector control without PG, rated load1:100 Vector control with PG, rated load 1:1000
	Steady speed accuracy	Vector control without PG ≤1% of rated synchronized speed Vector control with PG, ≤0.02% of rated synchronized speed
	Starting torque	Flux vector control without PG: 180% of rated torque at 0.5Hz Flux vector control with PG: 200% of rated torque at 0Hz
Product basic functions	DC braking capacity	Starting frequency: 0.00 ~ 50.00Hz Braking time: 0.0 ~ 60.0s Braking current: 0.0 ~ 150.0% rated current
	Rated output voltage	Rely on power supply voltage compensate function, while motor rated voltage is 100%, set it at the range of 50-100% (output cannot exceed input voltage)
	Frequency set channel	Keyboard digital setting/Keyboard digital potentiometer/Communication given/Multi channel terminal selection
	Operation command channel	Operation panel given/External terminal given/Communication given
	External input/ output signal	8 logical inputs/1 high speed pulse input/2 analog inputs/2 analog outputs/2 relay outputs/1 collector output /1 RS485 communication interface
Protective function		Over-voltage/under-voltage/current limit/over-current/overload/overheat/over-voltage stall
Surroundings	Installation site	Indoor, altitude not more than 1000m , no corrosive gas and direct sunlight
	Temperature 、 humidity	-10 ~ +40℃ 20% ~ 95%RH (non-condensation)
	Vibration	< 0.5g below 20Hz
	Storage temperature	-25~+60℃
	Protection grade	IP25
	Cooling mode	Forced air cooling

Product Features

1. Low voltage adaptive function: when the input voltage has instability or instant reduction, to avoid slide-hook, the frequency inverter will make automatic diagnosis to output as rated torque.

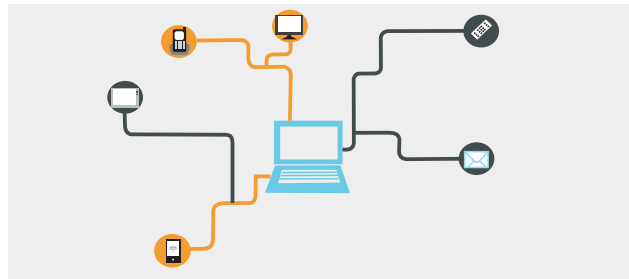


3. Supporting three communication protocols: it supports Profibus-DP, Modbus and CANopen, easy to achieve communication links between inverters, PLC and HMI.



5. Zero-speed torque retention function: when the brake is off, the motor outputs enough torque to keep the load stationary, preventing the brake from falling due to the long mechanical delay.

7. IOT extended port: it realizes IOT satellite positioning and remote monitoring, which will be easy to set up intelligent information management system.



8. Zero servo hovering function (under closed loop mode): Keep the brake open and the lifting mechanism hovering in the air at zero-speed.

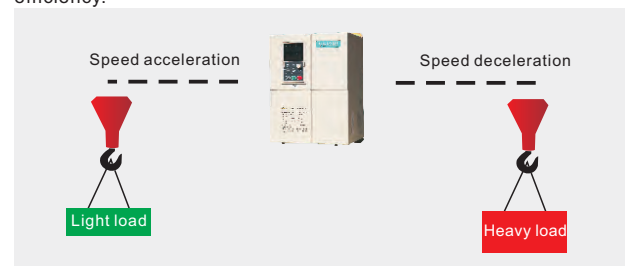
10. Specially designed built-in control functions for synchronous lifting, cart correction, car synchronization, grabbing control, anti-sway control, tower crane, construction lift and so on.

11. Control of the motor fan: immediate output while running, delayed output while stopping.

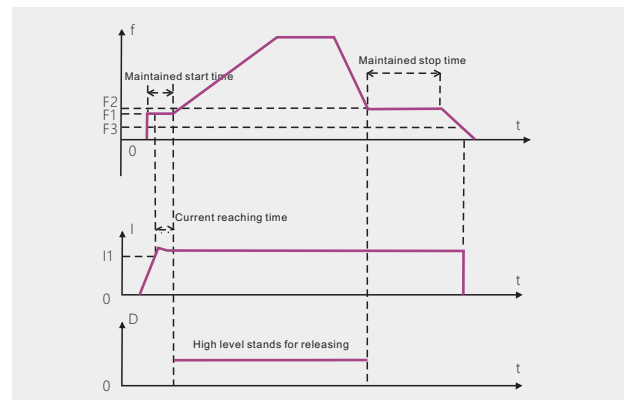
2. Stall protection function: during operation, if the detected actual speed exceeds 115% of rated speed, the frequency inverter will immediately issue a braking signal to achieve emergency brake (valid under closed-loop mode).



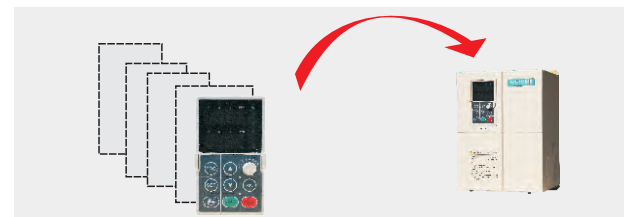
4. High speed at light load function: according to the weight carried by construction lift, it can automatically increase the speed when light load or empty hook happens to effectively improve its working efficiency.



6. Special logic control for braking: it ensures a safe and reliable system through the brake's releasing frequency and current, brake's releasing and closed time, achieving the special logic control.

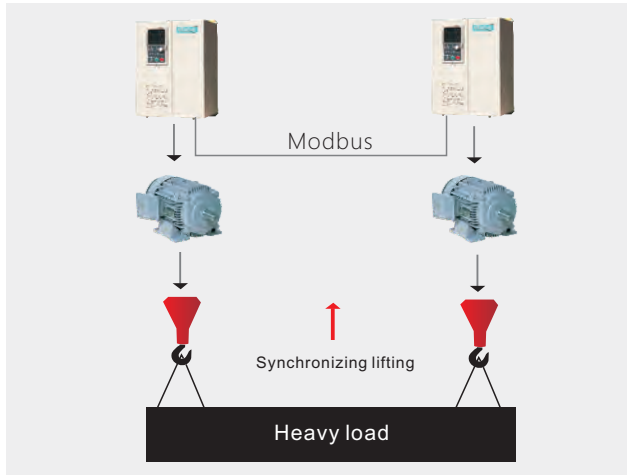


9. Copying function parameters: after debugging, the parameters on frequency inverter can be copied to other applications through keyboard to simplify debugging work.

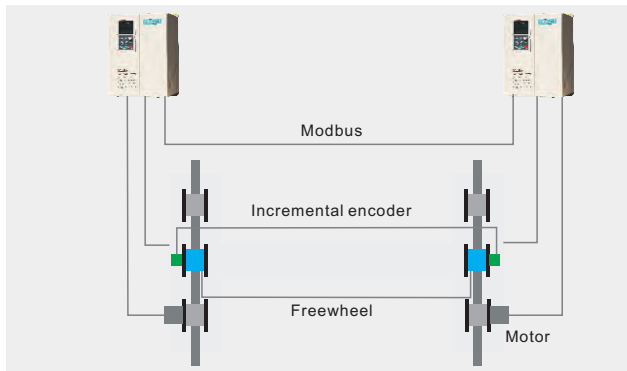


Hoisting Control System (Lifting)

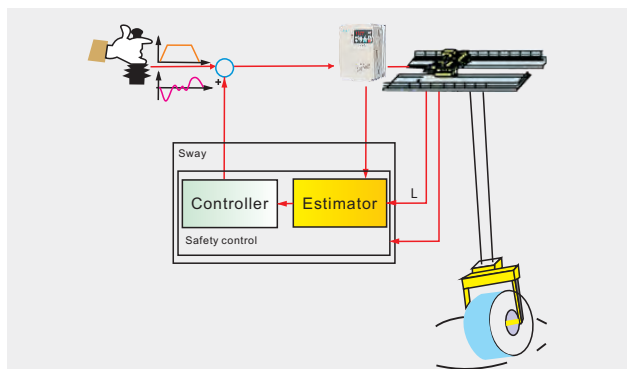
1. Synchronous control of the master-slave speed: for safety reasons, it can ensure the lifting mechanism's Synchronizing movement when the double lifting mechanisms are simultaneously lifting a heavy object.



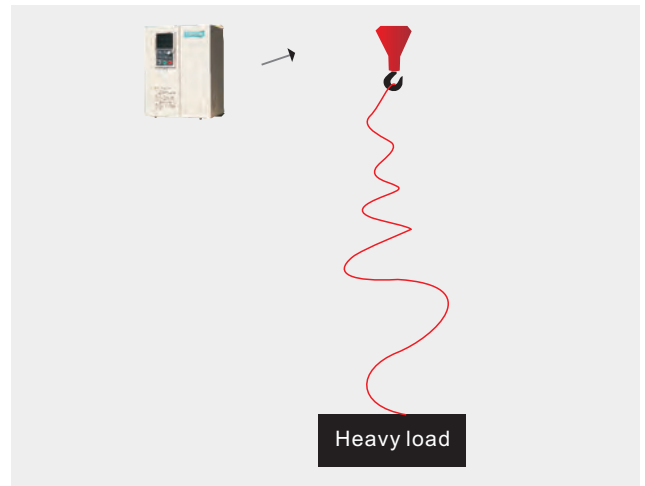
3. Real-time correction function (under closed-loop mode): suitable for large-span applications, master-slave lift adopts real-time position correction to achieve synchronous cart control (applicable to traveling mechanism of bridge crane and gantry crane).



8. Electronic anti-sway function: it can reduce the load's amplitude to improve working efficiency by adjusting the car speed and time control on acceleration and deceleration to realize less sway and non-motion in steady speed or stop state.



2. Functions of detecting loose rope: on occasions of loose rope, it can prevent unsafe operation from false action caused by high speed at light load function.



4. Torque verification function: to avoid load sliding, the frequency inverter would firstly detect if the motor's torque output is within normal range before releasing brake.

5. Torque retaining function: during braking process, the motor continues to output enough torque to keep the load stationary instead of sliding.

6. Full torque monitoring function: monitoring torque during operating, if detects abnormal action, the output will be blocked to achieve emergency park.

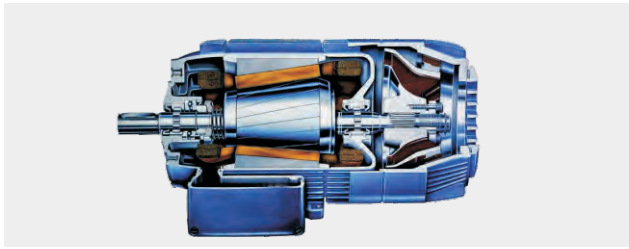
7. Anti slide-hook protection : under the standby state in closed loop mode, the frequency inverter can immediately activate this function if detecting the motor rotation, locking on zero speed output and providing the greatest safety for system operation.

Slewing Control System (Tower Crane)

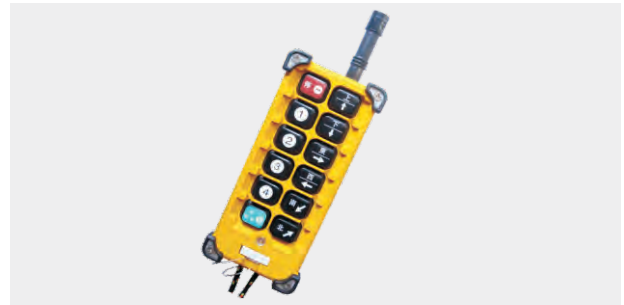
1. Soft torque control with soft but just jog, fast reaction and steady large-arm without rebound.
2. Application of marco in slewing control mode on eddy current motor, imitated common motor torque and hydraulic coupler.
3. Suitable for multi type motor control: ① rigid connection of eddy current motor. ② soft connection of hydraulic coupler. ③ rigid connection of torque motor.
4. Low speed operation, stable gear shift, steady large-arm and no pause phenomenon.

Special Control System of Electric Hoist

1. Control of electric hoist: special macro application for conical motor



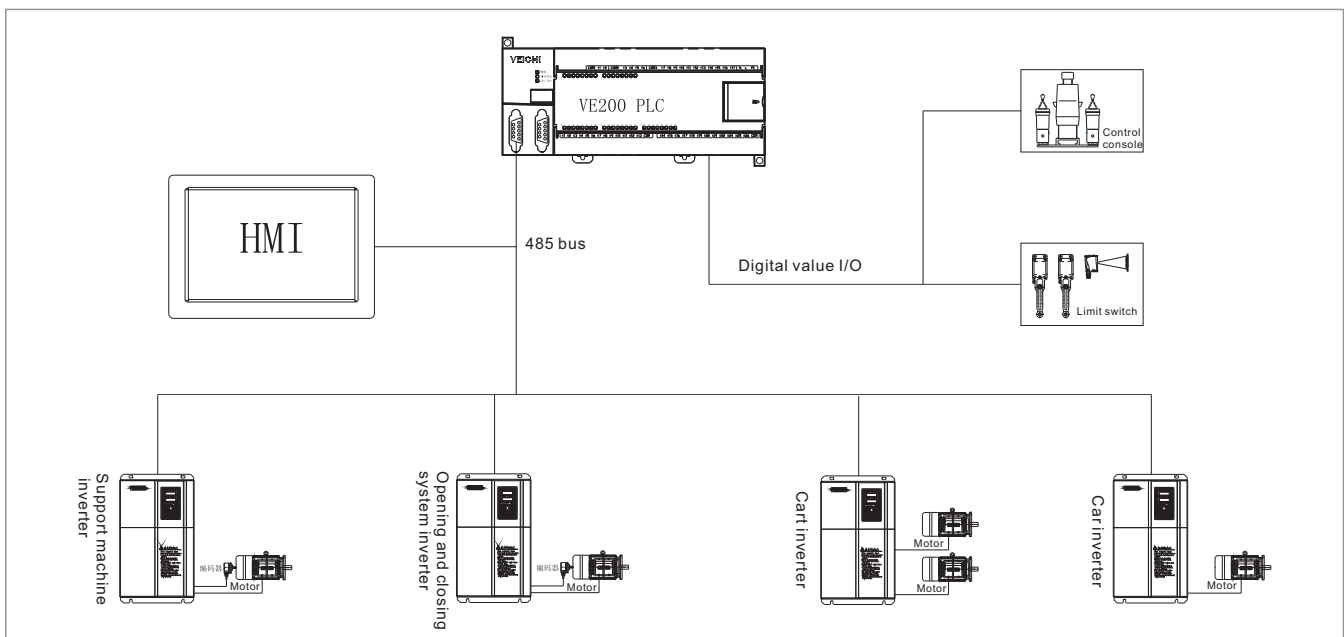
2. Extension port of remote control device is easy to expand the external remote control.



3. Specially designed two or three-in-one control device can be customized.

Grab Machine Control System

1. Automatically control of opening and closing grab : it features real-time position measurement and can automatically calculate the best speed curve during the opening and closing process, which can make quick and accurate control on the grabbing operation to effectively reduce driver's labor intensity.
2. Slowly lifting rope while opening and closing grab: according to the relaxation of wire rope, the support machine lifts slowly to tighten the rope and then increases the running speed, preventing damages of the loose rope from the excessive impact caused by rapid lift or being trapped by the grab machine.
3. Detecting loose rope: it can detect the loose rope and ensure the relaxation of support rope during the lifting process, preventing damages to the wire rope.
4. Digging control: during the closing brake operation, support machine will get down with it to make the grab automatically sink and ensure the maximum grabbing amount.
5. Intelligent closed-loop control: it calculates the position data by frequency inverter and then reports back to PLC for handling to achieve the best position control on opening and closing grab.
6. Torque balance (distribution): it can distribute torque when the load is rising, ensuring the grab's force balance and tight closure.



Integrated Control System for Construction Lift

VFD for Construction Lift

S200 Series Integrated Control System for Construction Lift

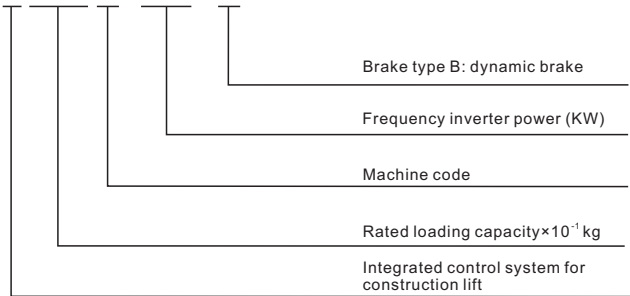
Product Overview

S200 Series integrated control system for construction lift is the initiative products in industry. It is specially developed on the practical application requirements of construction lifting electronic system and is integrated with VFD, logic control units, load lifting limiter and brake power supply, providing a high performance and complete solutions for customers with its safety, stability, comfortableness and efficiency.



Naming Rules

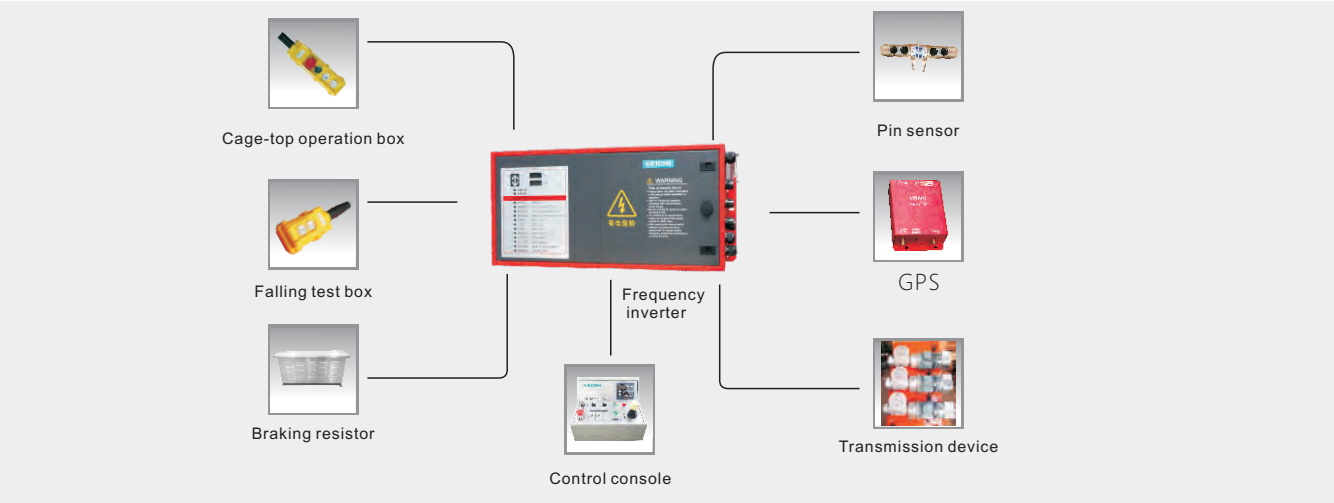
S200C-037-B



Product Specifications

Model	Suitable motor Power	Rated input voltage	Rated output current (A)	Remarks
S200C/E-037-B	37KW	Three-phase 380V	75	11KW*3
S200C/E-045-B	45KW		90	13KW*3
S200E-055-B	55KW		120	15KW*3
S200E-075-B	75KW		150	18.5KW*3

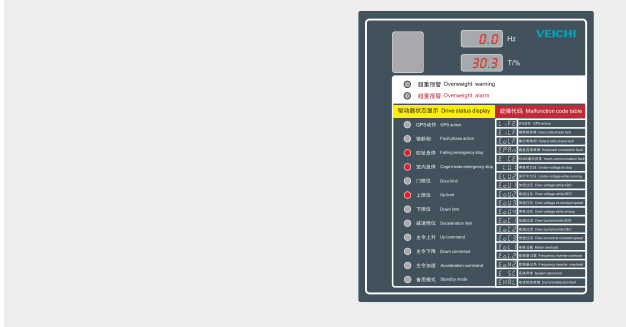
System Structure



Product Features

1. Intelligent status display

LED status indicator and clear signals are available to indicate all input and output parameters, status and etc. The intuitive design makes installation, maintenance and troubleshooting very easy and convenient for your engineers.



4. Built-in with clock chip

It has been configured with a clock chip which makes it available to set authorization time. This makes the system management convenient and easy.

6. Voice Module (extension)

Limit, emergency stop and fault information can be pronounced in real-time, bringing great convenience to the servicemen in checking and maintaining equipment.

7. Extensible (power/variable frequency switch) standby mode port

It's convenient for connecting power frequency control circuit to achieve operation under double modes, ensuring 24 hours of non-stop work.

8. Protective function

In addition to the inverter's basic protective functions, it's designed with new functions like braking resistor and brake power short circuit.

9. Adopting special logic brake control

It adopts special logical brake control technology that brake will be set to open status only when starting frequency and starting current have arrived at the same time. It effectively ensures the safety and reliability of the construction lift system.

2. Built-in load lifting limiter

It has been built in with a load lifting limiter for overload protection purpose, so you do not need to purchase it additionally. The user panel can display weight both in KG or percentage which is in conformity with the safety specifications.

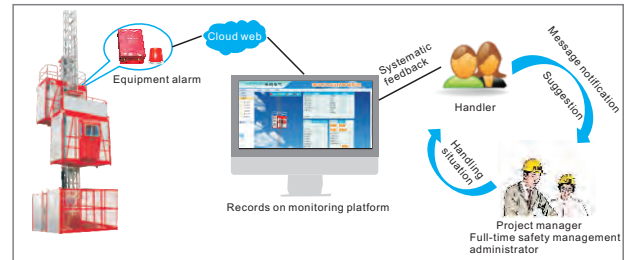


3. Full torque verification function

When detects the abnormal torque output, it can immediately block output to achieve emergency stop, which greatly increases the safety and reliability of machinery equipment.

5. Remote monitoring module (extension)

It can provide clients a wider range of value-added services by realizing functions such as remote positioning of mechanical equipment, on-line monitoring and remote fault diagnosis.



10. Great start-stop comfortableness

The specially designed S-curve for acceleration and deceleration can increase the start-stop comfortableness to achieve zero speed braking, steady start-stop, low impact and less gear abrasion, improving the durability of disc brakes.

S200D Integrated Control System for Power/Variable Frequency Inverter

Product Overview

S200D fully integrates control functions of power frequency and variable frequency to ensure the equipment's continuous and non-stop operation.

Product Features

1. VEICHI S200D is an integrated construction lifting control system that has all the functions of Veichi S200C. Besides, S200D has been added power frequency and variable frequency switch function.

2. Power frequency mode: it solves the frustration of construction lift (under power frequency) while stopping and increases the passenger's comfortableness. At same time, the starting current is reduced.



S200K Integrated Control System for Construction Lift

Product Overview

S200K that is specially designed for no cab construction lift integrates with control console, variable frequency braking unit, logic control unit and load lifting limiter, featuring complete functions, good appearance and rational construction, suitable for output.



Product Features

1. It can extend automatic landing system and remote monitoring module.
2. With the combination of construction lift and control console, the auto or manual mode can be arbitrarily combined.
3. Floor status display: when passengers press buttons of their target floors, the floor paging system will intelligently sort the numbers and orderly stop.
4. Humanization design: we can set multi-floor parameters and choose either auto or manual mode (manual mode first) without entering the menu. The intelligent floor control can be achieved by combining buttons.

Critical Technical Features

High Speed at Light Load Function :

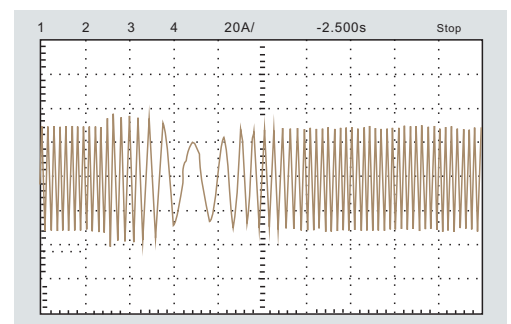
When in the light load or empty status, it can effectively increase the construction lift's working efficiency by automatic frequency increase with the calculation of built-in load measurement mode.

Low Voltage Adaptive Function

V/F ratio can be adjusted on the input voltage to output enough torque, ensuring the safety and reliability of hoisting mechanism.

Zero-speed Torque Retention Function

With this function, it does not require the brake action to support during the process of switching direction (upward/downward) at zero speed.



Adopting Special Logic Brake Control

It adopts special logical brake control technology that brake will be set to open status only when the starting frequency and starting current have arrived at the same time. It effectively ensures the safety and reliability of the construction elevator system.

Run Steadily with Low Frequency and Large Torque

S200K adopts latest speed sensorless magnetic flow vector control technique that has very quick dynamic response. The advanced current limiting technology ensures steady operation during starting, rising and dropping process without trip when load fluctuates frequently.

Unique S-curve Design in Acceleration and Deceleration

This function solves the overshoot phenomena during the upward brake-releasing moment. After the brake has been fully released, the variable frequency drive will run accelerately according to the S-curve. When reaching the given speed, the VFD will run decelerately until the stop according to the S-curve.

AC70S VFD for Construction Lift (Specially for Transformed Lift)

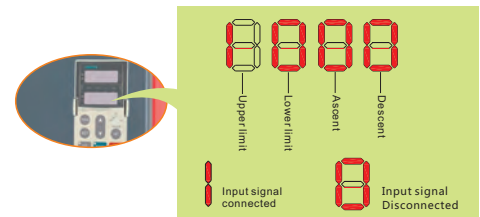
Product Overview

The drive with position calling function is specially designed for old lifts that integrates frequency inverter, braking module and status indicator, easy to maintain on-site equipments and minimize the inverter's reconstruction costs.



Product Features

1. High safety and reliability.
2. Excellent Performance: it has Zero-speed torque retention function. Do not brake when forward/reverse with zero speed, reducing the wear of brake. During the frequent operation, it has zero dead-zone compensation function, no vibration and downside phenomenon. It's suitable for working with worm gear speed reducer, gear reducer and so forth.
3. High cost performance: compared with other whole set VFD, it can maintain the same performance with cheaper price.
4. Humanization design: if on right connection, it can operate normally without changing the VFD parameters.
5. Simple transformation and precise landing: no need to change the driver's console or increase the deceleration limiting device, client can conveniently transform the system and achieve precise landing at any speed.
6. Easy installation: the transformation can be easily completed by installing drive and braking resistor.
7. Easy maintenance: it is easy in maintenance that it can display the status of upper and lower limit, the input signal of rise and fall.
8. Comfortableness: it's comfortable when the elevator is starting and stopping as there is no overshoot when upward and no weightlessness when download.
9. Prolong the service life of construction elevator: AC70S has the advantages of steady operation, no impact, reduced mechanical structure and wearing parts. Besides, it can prolong the service time of motor and disc brake. In result, the lifespan of construction elevator will be effectively improved.
10. Short-circuit protection of braking resistor: AC70S is designed with braking resistor short-circuit protection function in comparison with the traditional type.
11. Short-circuit protection of braking resistor: AC70S is designed with braking resistor short-circuit protection function in comparison with the traditional type.
12. Wide application range: AC70S is suitable for any construction lift in transmission mechanism, such as worm gear reducer and gear reducer.



Integrated Driver for Tower Crane

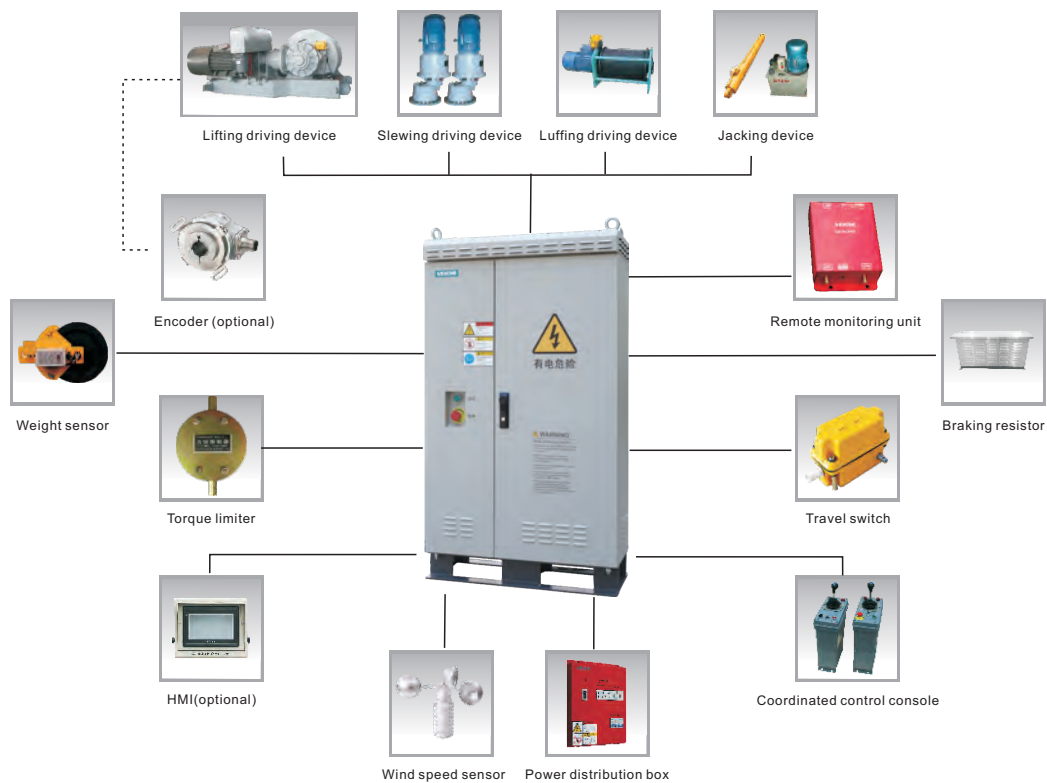
QT Integrated Drive for Tower Crane

Product Overview

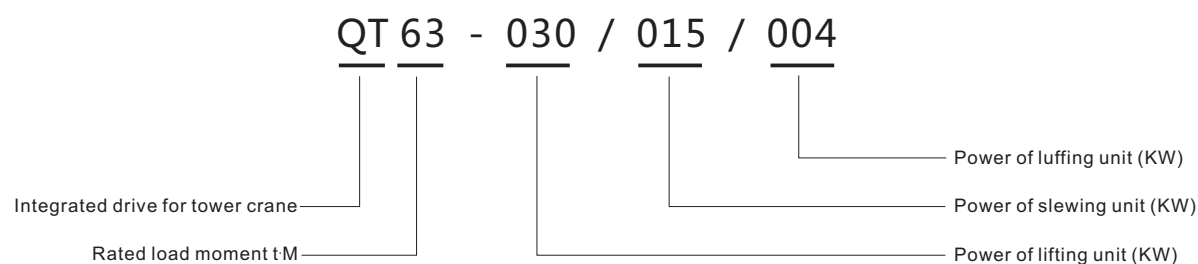
Integrated drive for tower crane is the pioneering product in industry. It is a mid-to-high end type that's specially designed for requirements of the tower crane electronic control system. This has integrated the VFD control units, PLC logic control units and black box monitoring units, proving customers a tower crane solution together with high performance and completeness. Featuring characteristic such as intelligence, light weight, energy saving, safety and reliability. The integrated tower crane must be the future developing trend.



Structure Components



Model Explanation

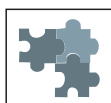


Specifications

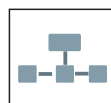
Specifications		Adaptive motor power	Rated Voltage	Rated current	Specifications		Adaptive motor power	Rated Voltage	Rated current
QT63-030/015/004	Lifting	24KW	Three phase 380V	60A	QT160-055/018/7R5	Lifting	45KW	Three phase 380V	110A
	Slewing	5.5KW*2		32A		Slewing	11KW		38A
	Luffing	4KW		10A		Luffing	7.5KW		17A
QT80-037/015/004	Lifting	30KW	Three phase 380V	75A	QT250-075/022/011	Lifting	55KW/63KW	Three phase 380V	150A
	Slewing	5.5KW*2		32A		Slewing	7.5KW*2		45A
	Luffing	4KW		10A		Luffing	11KW		25A
QT100-045/015/5R5	Lifting	37KW	Three phase 380V	90A	QT315-090/022/011	Lifting	75KW	Three phase 380V	180A
	Slewing	5.5KW*2		32A		Slewing	7.5KW*2		45A
	Luffing	5.5KW		13A		Luffing	5.5KW/7.5KW		25A

Product Features

General Features



Modular design: the lifting, slewing and luffing control modules operate independently without interference.



High-performance PLC logic control units: it is equipped with the three mechanisms' logic operating function and immediate data processing ability.



Convenient overhaul: LED indicators and printed identifications for various commands, limits, emergency stops and safety feedback signals.



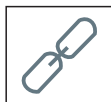
Extending IOT remote control module: it can achieve mechanism equipment's functions as remote position, real-time monitor and remote fault diagnosis, providing clients a wide range of added services.



Built-in clock chips can set the pre-authorization time which is convenient for customer's management.



The optional extension unit of intelligent targeted lifting can increase the working efficiency.



Complete protection functions: it includes multi-functional protections for overload, over-torque, limit, over-flow, over-voltage, under-voltage, default phase and short circuit.



Waterproof design: protection grade reaches IP54.

Features of Control Unit

Lifting Control Unit

1. It adopts open loop vector control, closed loop vector control and V/F control mode.
2. It is capable of running for a long time, braking at zero speed and running smoothly without shaking. By using QT series, it extends the service life of tower crane's components such as transmission mechanism, steel wire rope and more parts. Meanwhile, it effectively improves the safety of tower crane.
3. The low voltage adaptive function can constantly output torque even in low voltage.
4. The function of high speed at light load improves working efficiency.
5. Developed with dedicated brake logic timing control and dual redundant brake control, it is more safe and reliable.
6. Anti slid-hook subsidiary protection and stall protection.
7. Full torque monitoring function: it has torque monitoring function during operation. When detects abnormal action, the output will be blocked to achieve emergency park.
8. Zero servo hovering function (under closed loop mode) .



Luffing Control Unit

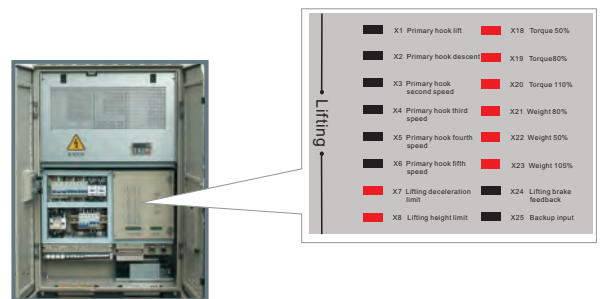
Inset with anti-sway function that makes easy hook and improves working efficiency.

Slewing Control Unit

1. Soft torque control with soft but just jog, fast reaction and steady large-arm without rebound.
2. Macro application in slewing control: eddy current motor control mode, imitated common motor torque control mode and hydraulic coupler control model.
3. Suitable for multi-type motor control: 1) rigid connection of eddy current motor. 2) soft connection of hydraulic coupler. 3) rigid connection of torque motor.
4. The built-in vortex controller adopts PWM pulse width modulation which can adjust the output voltage in real time according to the running frequency. Comparing with conventional eddy current voltage regulator module, it is of more outstanding performance.
5. It makes the gear convert stably and fluently without pause phenomenon.

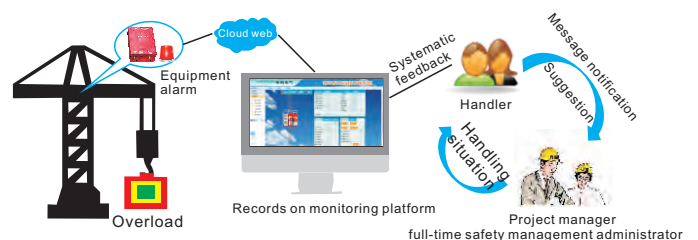
PLC logic Control Unit

1. Multiple input and output interfaces: 39 digital values, 4 RS485 communication interfaces, 10 analog values, 1 black box interface, 8 electrode outputs, 1 eddy current output, 2 braking outputs.
2. The safety can be better guaranteed due to the dual interlock of logic software and hardware in brake circuits.
3. There are clear indicators for various limiters and master signals, which make great convenience for installation and maintenance while reducing equipment maintenance costs.



Remote Monitoring Module (Extension)

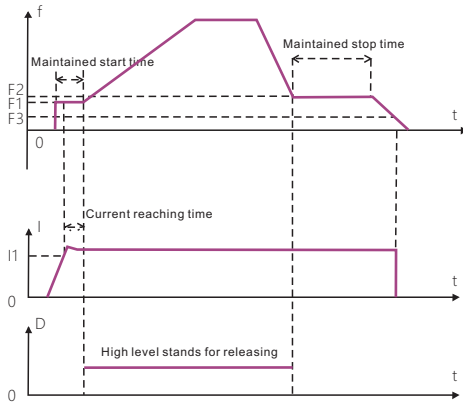
It can provide customers a wider range of value-added services by realizing functions such as remote positioning of mechanical equipment, on-line monitoring and remote fault diagnosis. It has the function to monitor if the tower crane is overload or has illegal over torque operation. After recording the alarming messages, it gives project manager the real-time feedback, preventing tower crane accidents.



Typical Function

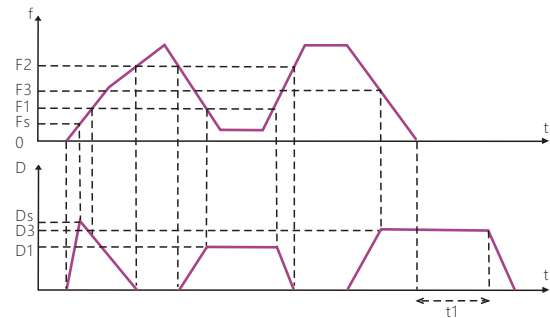
Special Logic Brake Control (Lifting)

This function ensures a safe and reliable system through the brake-releasing frequency and current, brake's releasing and closed time to achieve the control for special brake.



Soft Torque Control (Slewing)

Soft torque control with soft but just jog, fast reaction and steady large-arm without rebound.



Anti-sway Function (Luffing)

Inverter's frequency as well as the acceleration and deceleration time can be dynamically adjusted to restrict the sway. When materials reach the set speed, there will be small sway or in still status.

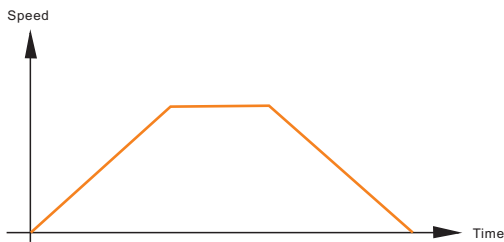


Figure without anti-sway function

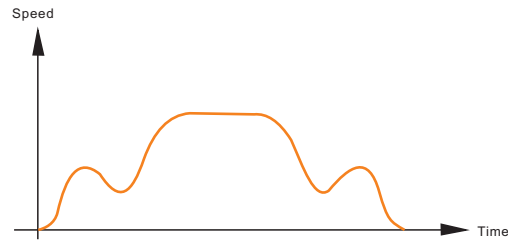
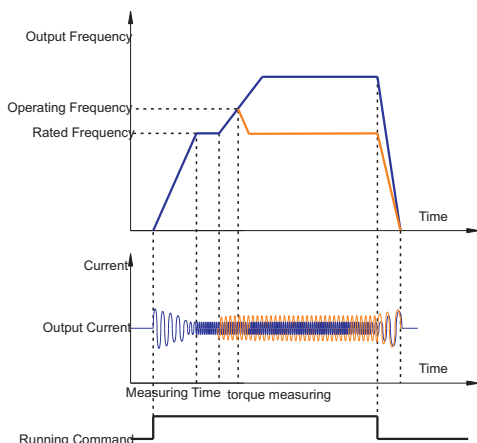


Figure with anti-sway function

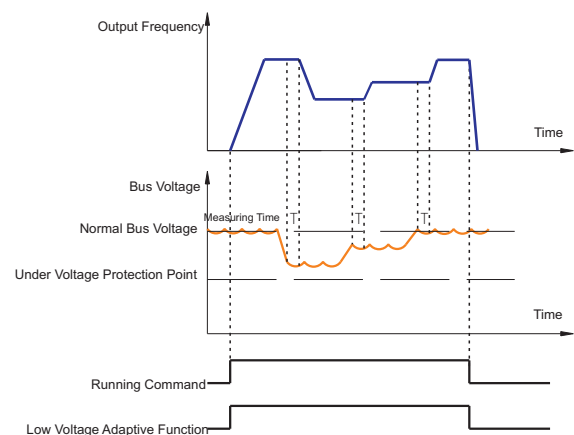
High speed at light load function (lifting)

In light load or empty hook status, it can automatically increase the frequency (in constant power area) and effectively improve the hoisting machinery's working efficiency.



Low Voltage Adaptive Function (Lifting)

V/F ratio can be adjusted on the input voltage to output enough torque, ensuring the safety and reliability of hoisting mechanism.



Comparison Between Traditional Electronic System and Integrated Drive for Tower Crane

Power frequency tower crane

VS

Variable frequency tower crane

Physical design

It's controlled by contactors with complex circuits and unreliable contacts. The large volume brings inconvenience for installation and maintenance.

The modular design can simplify the controlled circuit which provides more convenient installation and maintenance for its rational structure, high reliability as well the intelligent and lightweight design.

Performance

1. The adopt of soft connection in hydraulic coupler leads to jog difficulty and positioning difficulty so that the user can only make parking location by frequently operating reverse gear. If operating in wrong way, the tower body will be twisted and even break the output shaft, owning poor safety performance.

2. The rigid connection of torque motor allows stall torque in short time, and the strong current may cause serious motor heating. In result, the cost is very high.

3. Change pole or string serial-resistance is used to change speed while lifting, resulting in big step action and mechanical shock. Besides, the serious wear of brake may affect the wrapped wireropes.

1. The rigid connection is used for ordinary eddy current asynchronous motor and planetary reducer, while the soft torque control mode is adopted to ensure the steady operation. This solution owns good performance and low cost at the same time.

2. The lifting system uses variable frequency stepless speed regulation that can achieve soft start and stop by releasing and braking at zero-speed. As the brake wear is reduced, the whole mechanism performance is improved and its service life is prolonged.

System cost

1. The lifting mechanism is driven by winding rotor motors (serial resistance speed control) or three-speed motors which are costly, for the cables used for motor connection is three times of the variable frequency tower crane.

2. The slewing mechanism adopts either wound rotor motor or torque motor in a high price.

1. The lifting system is driven by ordinary asynchronous machine, which can reduce the cost and save the use of connection cables.

2. The slewing mechanism is at low cost so that can save hydraulic couplers.

Maintenance cost

When the lifting, slewing and luffing mechanism adopt change pole or serial resistance to control speed, it must rely on contactor to switch gears that will arouse big mechanical shocks in high-speed running and braking. The frequently operating and parking by reversing gear surely increases the maintaining workload as the reversible contactors and speed governing contactors are easy to burn out.

Variable frequency stepless speed regulation is adopted in the lifting, slewing and luffing mechanism, which can not only save the use of reversible contactor and speed governing contactor but also can reduce the fault rates and maintenance costs.

Safety

The slide-hook accident easily occurs if the brake is no longer in force for mechanical reasons.

1. When the brake is no longer in force for mechanical reasons, the stall protection and zero servo hovering function will provide double protections to lower loads, preventing slide-hook accidents (under closed loop mode).

2. The braking circuit's double loop redundant design is safe and reliable.

Working efficiency

Low working efficiency in rated frequency.

By its high speed at light load function, the lifting mechanism has the automatic overlocking to improve the working efficiency.

The three mechanisms can operate at any speed in a certain range.

Advantages of the Traditional Tower Crane After Adopting the Integrated Drive System

1. The safety performance is improved. When the brake is no longer in force for mechanical reasons, the stall protection and zero servo hovering function will provide double protections to prevent slide-hook accidents (under closed loop model).
2. After using the soft torque control, the slewing mechanism operates smoothly and has no need to park by frequently reversing gear. It can directly return to zero from high gear, greatly improving working efficiency.
3. Its anti misoperation and anti rough handling functions can realize the interlock control of software and hardware to make operations safer and more reliable.
4. The working strength of installation and debugging is reduced. As various commands and limits are set with status indicators, the overhaul is very convenient.
5. The soft start and stop, releasing and braking nearly at zero-speed, can prolong its service life and save the use of reversible contactors and speed governing contactors to reduce the maintenance cost.
6. To effectively increase the working efficiency, it can enter the high speed at light load mode and automatically overlock when the light load or empty-hook happens.
7. The voltage of the network will not be blocked due to insufficient motor output. The allowable voltage fluctuation $\pm 20\%$ reduces the impact on electric equipments in working site.
8. The cost of a complete electronic control system is generally equivalent to the power frequency tower crane. And the saved cost of motors, cables and contactors are equivalent to the cost of frequency inverter and resistance box.



Motor Configuration of the Tower Crane

Model	Tower crane mechanism	Motor model	Motor power
QT63	Lifting motor	YZ160L-6	24KW
	Slewing motor	YTW132M1-6	5.5KW*2
	Luffing motor	YZE112M3-4	4KW
QT80	Lifting motor	YZ160L-6	30KW
	Slewing motor	YTW132M1-6	5.5KW*2
	Luffing motor	YZE112M3-4	4KW
QT100	Lifting motor	YZ225M-4	37KW
	Slewing motor	YTW132-6	5.5KW*2
	Luffing motor	YZE132M-4	5.5KW

Remote Management System of Construction Machinery

Adopting centralized remote monitoring management: it can solve problems in machinery maintenance by realizing cross- regional remote maintenance management and can always master the machinery operation, which can reduce the maintenance cost.

Remote Monitoring Module

Product Overview

The remote monitoring module is based on cellular mobile communication technology to connect the on-site RS485 bus data with the remote server and receive commands from the server. It is the bridge to on-site RS485 bus data, and also the critical element to build large remote industry intelligent management system.



Technical Features



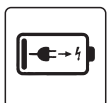
It adopts Quectel industrial grade GPRS module, reliable TCP/IP protocol, featuring functions of built-in error-correction and encryption scheme.



Remote fault diagnosis: available to monitor various limits, commands and emergency stops, it can set VFD parameters and upload data to the service platform. Besides, the provided added-value services can facilitate convenient after-sales maintenance and reduce operating costs.



It Supports remote mobile managements, fault notifications and expiration reminders. The server can send warm prompts to clients when the fault occurs or rent is due.



When the equipment is power off, the built-in 1000mAh lithium battery can support precise positioning.



Dual positioning of GPS satellite and mobile base station is adopted to ensure the accurate positioning. Even in case of obstruction, it also has precise positioning to prevent it from inference.



It can prevent the malicious destruction to protect client's rights. Besides, this equipment supports functions of locking, deblocking and real-time message notifications for equipment fault.

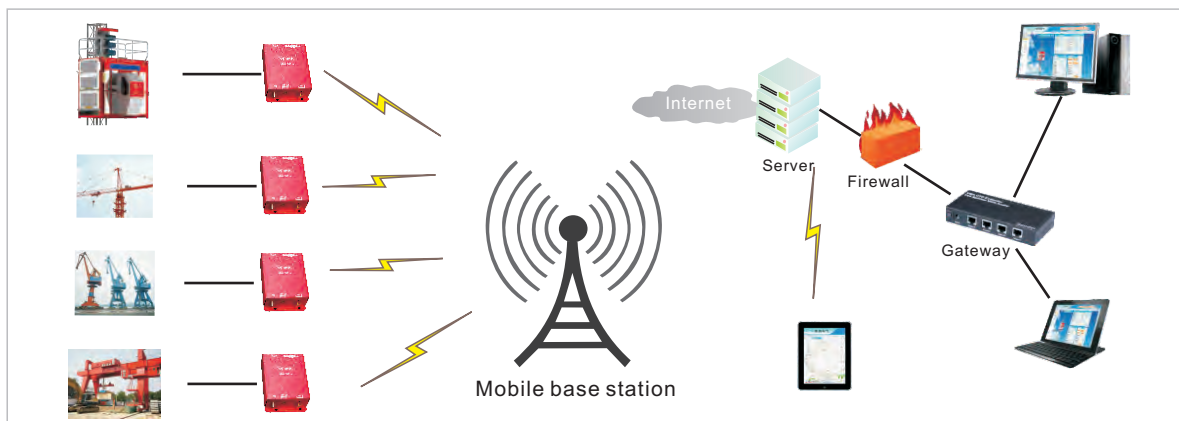


Make data exchange between the logic controller and equipment by using GPRS real-time data communication. Through the PC and mobile APP to access information related to the equipment, it's easy to grasp the equipment's operation in first time.



Its powerful management platform and superior management interface can help you to easily realize the remote control, remote sign and remote measurement.

Data Transmission Scheme



Remote Management System for Construction Machinery

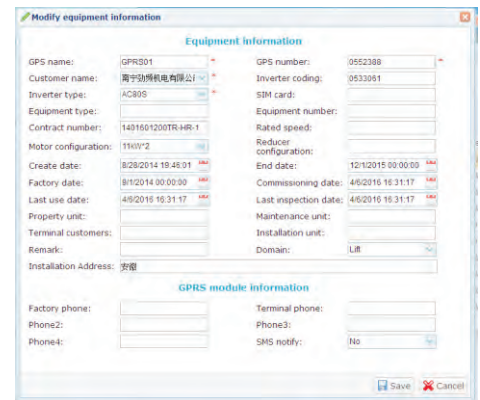
Adopting centralized remote monitoring management: it can solve problems in machinery maintenance by realizing cross-regional remote maintenance management and always master the machinery operation, which reduces the maintenance costs.



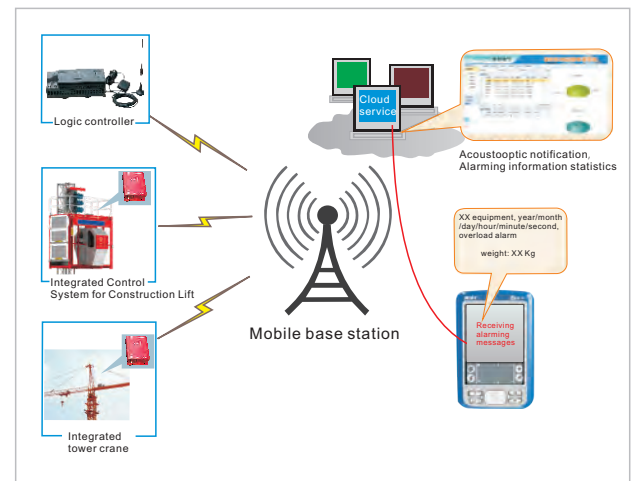
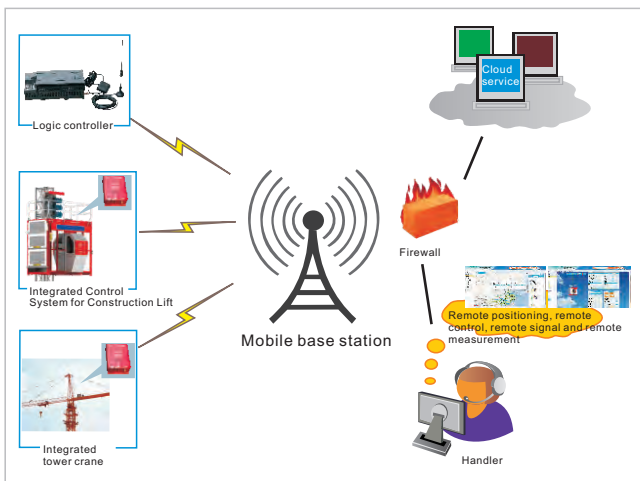
Real-time monitoring-- it monitors operation of the equipment online to get the relevant fault information.



Precise Positioning—— dual positioning of GPS satellite and mobile base station



Equipment information management——it can accurately enter equipment information and set up a complete equipment files.



Application Cases of Cranes

Application Cases of Construction Lift

Integrated drive for tower crane is the pioneering product in industry, featuring intelligence, light weight, and modularization. The tailored structure design overturns the traditional electronic control mode, providing clients a complete electronic system solutions. It has been quickly recognized and accepted, being the pioneer in construction machinery industry.



Application Cases of Tower Crane

The successful applications of the integrated tower crane drive stand for its intelligent developing trend in the future. The whole system adopts modular design and have advantages of good performance, rational construction, high cost performance and convenient operation. Up to now, it has been widely used by nationwide construction machinery companies.



AC80T tower crane frequency inverter: having advantages of complete function, good performance and simple control circuit that increase the tower crane's safety and reliability and now is widely used nationwide.



Application Cases of Hoist

AC80T frequency inverter has many advantages in the hoisting application, such as the zero-speed braking which has no wear for the brake, and the function of large torque at low frequency can make a stable movement without sway at any low speed. It's because of these obvious features and advantages that this inverter has been widely used in hoisting machinery and plays an important role in machinery's safe operation.



Application Cases of Electric Hoist

Frequency inverter for electric hoist: features like small volume, large torque at low frequency, quick response for jog, good performance, easy control and convenient maintenance are the obvious application advantages in the speed control of electric hoist.



Domestic Marketing Services Network



International Sales Network



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