Guide the Drive Innovation

Intellectualize the Future of Industry

Become a Top-Ranking Supplier of Industrial Automation Products and Solutions

GUIDE

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Stock Code: 301633

HF681N Series Multidrive

COMPANY PROFILE

Wuhan Guide Technology Co., Ltd.

Wuhan Guide Technology Co., Ltd. (Stock name: Guide Technology; **Stock code: 301633**) is a nationally accredited "Little Giant" enterprise. It is primarily recognized and supported by the Ministry of Industry and Information Technology with its specialized, professional and innovative high-tech features. It has three subsidiaries: Wuhan Guide Intelligent Technology Co., Ltd., Wuhan Guide Software Information Technology Co., Ltd., and Wuhan Guide Drive Science and Technology Co., Ltd. as well as branches in Shenzhen, Hainan and Shanghai.

GUIDE focuses on the field of industrial automation and informatization. There are three segments of our business: automatic drive products, intelligent control systems, and smart port management system software. GUIDE is committed to the localization of core drive components for various mechanical equipment, the automation of industrial equipment operation procedures, and the digitalization and informatization of enterprise management.

Guide Technology is engaged in the research and development, production, sales, and related technical services of industrial automation products such as VFDs, inverters, regenerative rectifier units, and industry-dedicated drives. Guide Intelligent provides solutions for the intelligent and unmanned operation of lifting and transportation equipment in fields such as ports, cement, metallurgy, railways, and warehousing. Guide Software is devoted to the development and service of software products such as production operation management systems, asset management systems, and integrated control systems. GUIDE has a nationwide sales and service network, and its products and services are widely used in industries such as ports, shield machinery, petroleum, construction machinery, ships, petroleum, cement, metallurgy, overhead cranes, railways, logistics, textiles, mining, chemical engineering, thermoelectricity generation.

GUIDE is recognized as an "Outstanding High-tech Enterprise in Wuhan". It has been successively honored as one of the "Top 10 Intelligent and Informatized Enterprises in the Chinese Cement Industry", one of the "Chinese Top 100 Innovative Construction Enterprises", and an "Advanced Demonstration Enterprise for Port Science and Technology Innovation". The VFD products have won the "Top 3 of China Communications and Transportation Association Science and Technology Progress Award". Its intelligent control system products have garnered the "Champion of China Port Association Science and Technology Award".

GUIDE will uphold the business philosophy of "Quality and Service" continuously, implement our core values of "Achieving Customers, Benefiting Employees, Rewarding Shareholders and Contributing to Society", and develop firmly towards the mission of "Guide the Drive Innovation, Intellectualize the Future of Industry" to realize the vision of "Become a top-ranking supplier of industrial automation products and solutions".

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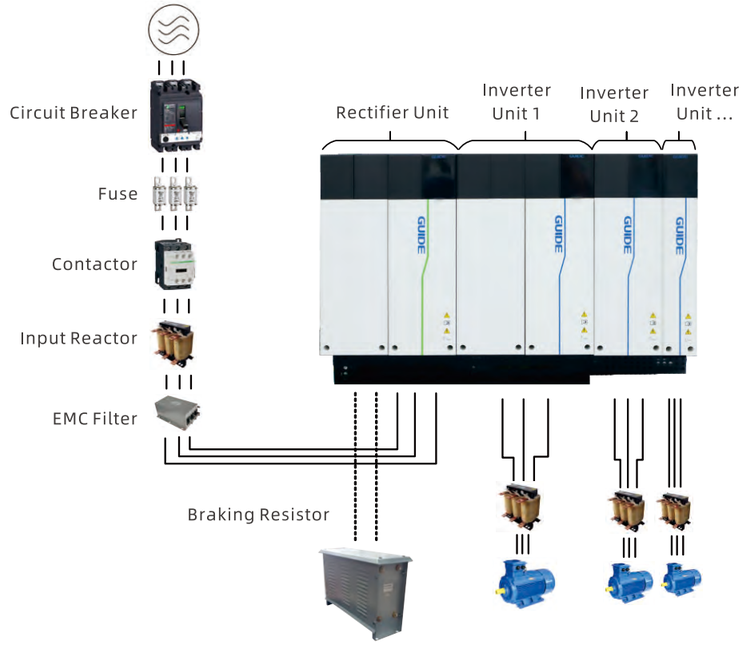
HF681N Series Multidrive

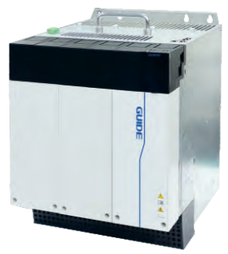
Product Introduction

The HF681N series products are high-performance book-sized multi-drive. It is a common DC bus drive system composed of independent rectifier units and inverter units. The power range can be configured according to application requirements. One rectifier unit can supply power to multiple inverter units, control different motors simultaneously and realize multi-point drive.



Product Overview

Appearance				
	Rectifier Unit			
Power	22 kW	45 kW	110 kW	160 kW
Dimensions (W x D x H) mm	100 x 340 x 400	100 x 340 x 400	200 x 340 x 400	300 x 340 x 400

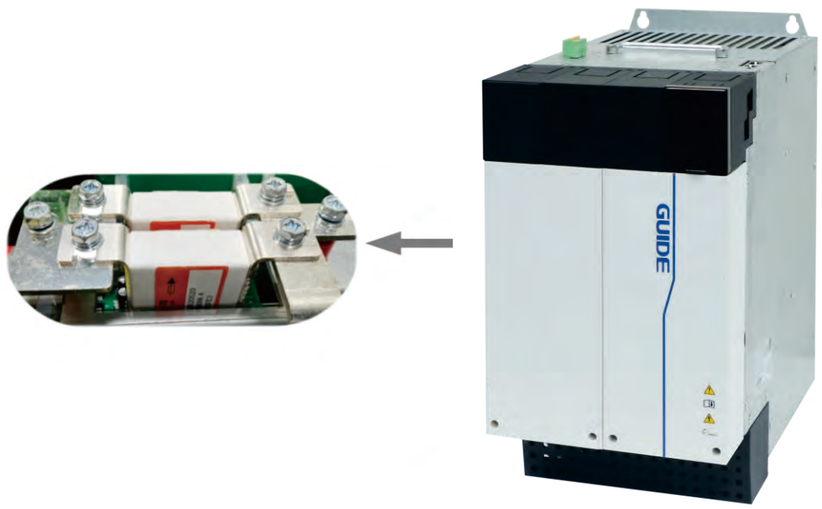
Appearance				
	Inverter Unit			
Power	1.5-7.5 kW	11-37 kW	45-75 kW	90-110 kW
Dimensions (W x D x H) mm	50 x 340 x 400	100 x 340 x 400	200 x 340 x 400	300 x 340 x 400

Product Highlights

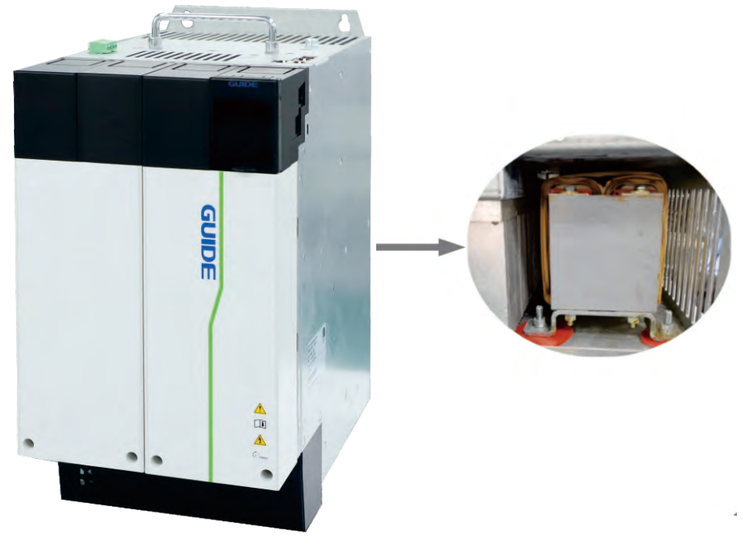
- The product features book-sized design with equal height and depth, adopting a side-by-side compact installation layout to maximize cabinet space utilization. This configuration optimizes the space efficiency by over 20% in a control cabinet.

- The rectifier unit is equipped with a built-in braking unit. In multidrive systems, a centralized braking design is employed, requiring only one set of braking resistors in the rectifier unit, which saves cabinet space and reduces overall system cost.

- The built-in DC fuses are integrated in inverter units within the 75 kW and below, which prevent fault propagation from individual units to the entire system. It significantly enhances system stability while saving cabinet space and reducing overall system costs.

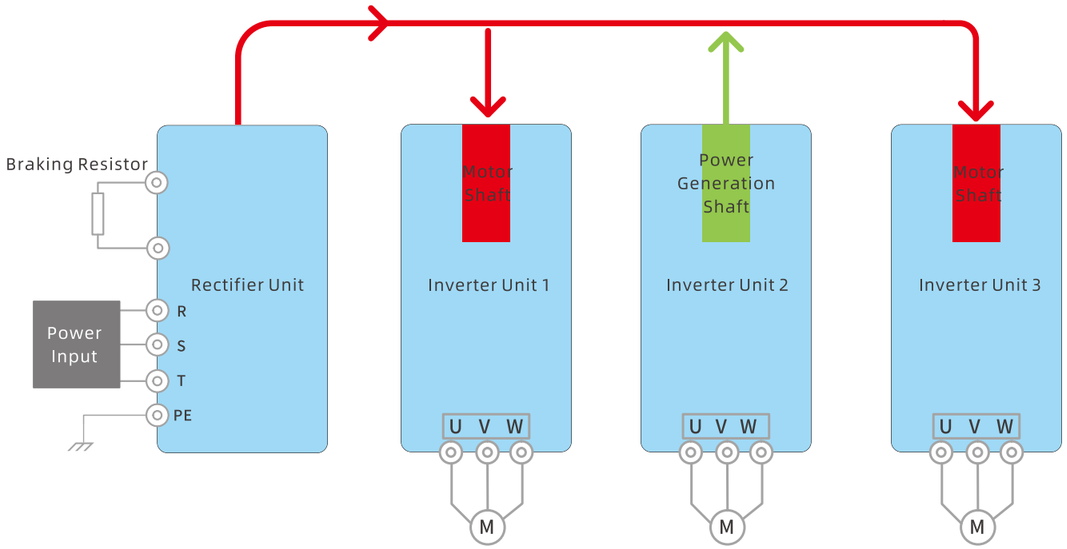


- The rectifier unit is equipped with a built-in DC reactor, which effectively improves the input power factor, enhances overall system efficiency and thermal stability, and mitigates the impact of high harmonics from the input supply on the VFD. This design also saves cabinet space by eliminating the need for an external DC reactor, while reduces total costs.



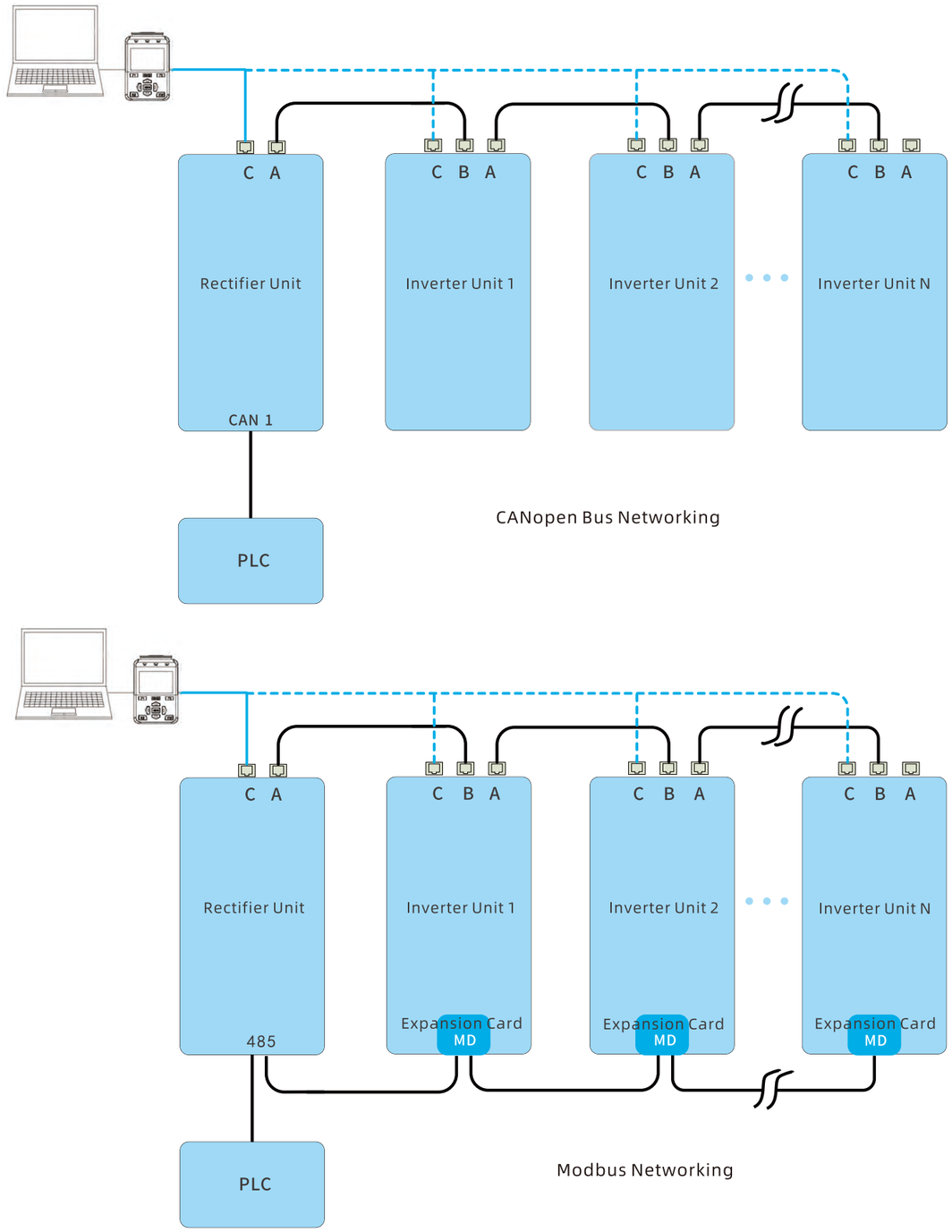
- Each module unit features a mini DC busbar, enabling rapid connection and integration of components within minimal space.

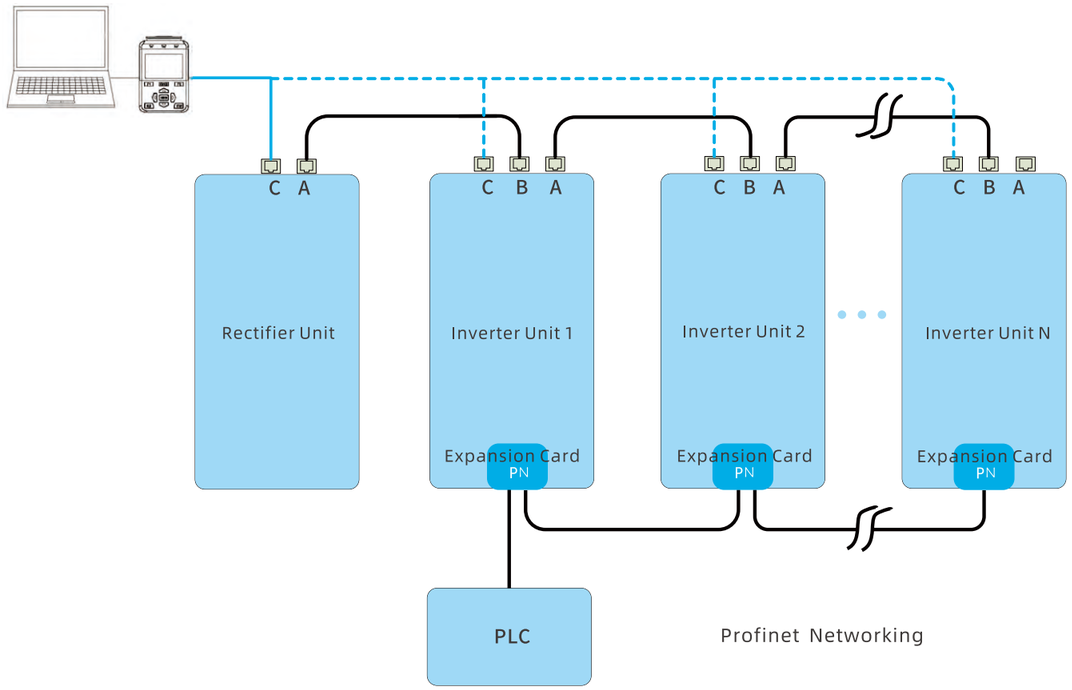
- The energy can flow among inverter units with common DC bus. The energy from an inverter unit operating in power generation mode can be transmitted via the DC bus to another inverter unit in the motor-operating mode, and increase the energy regeneration efficiency.



- The rectifier unit is equipped with a built-in logic control card, featuring up to 43 DI (Digital Input) and 30 DO (Digital Output) to meet various application.

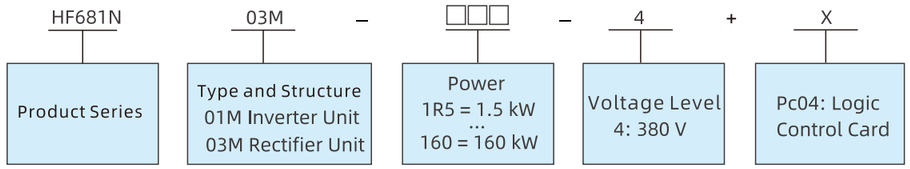
- It supports multiple communication protocols, facilitating data interaction between external controllers and VFD system. The rectifier unit comes standard with RS485 and CAN communication interfaces, supporting Modbus and CANopen communication protocols.





- Supports a wide range of expansion cards, offering flexible and scalable functionality.

Customized Model



Model and Power of Rectifier Unit

Model	Rated Power (kW)	Input Current (A)	Rated DC Circuit Current (A)	Type
HF681N01M-22-4	22	49	56	K2
HF681N01M-45-4	45	89	109	
HF681N01M-110-4	110	196	245	K3
HF681N01M-160-4	160	292	358	K4

Model and Power of Inverter Unit

Model	Input Current DC (A)	Output Current AC (A)	Rated Power (kW)	Type
HF681N03M-1R5-4	4	4	1.5	M1
HF681N03M-2R2-4	6	5.7	2.2	
HF681N03M-3R7-4	11	10.2	3.7	
HF681N03M-5R5-4	16	15	5.5	
HF681N03M-7R5-4	19	18	7.5	
HF681N03M-011-4	25	24	11	M2
HF681N03M-015-4	34	32	15	
HF681N03M-018-4	41	38	18.5	
HF681N03M-022-4	51	47	22	
HF681N03M-030-4	71	65	30	
HF681N03M-037-4	82	75	37	
HF681N03M-045-4	104	94	45	M3
HF681N03M-055-4	127	115	55	
HF681N03M-075-4	171	155	75	
HF681N03M-090-4	210	188	90	M4
HF681N03M-110-4	240	215	110	

Optional Accessories

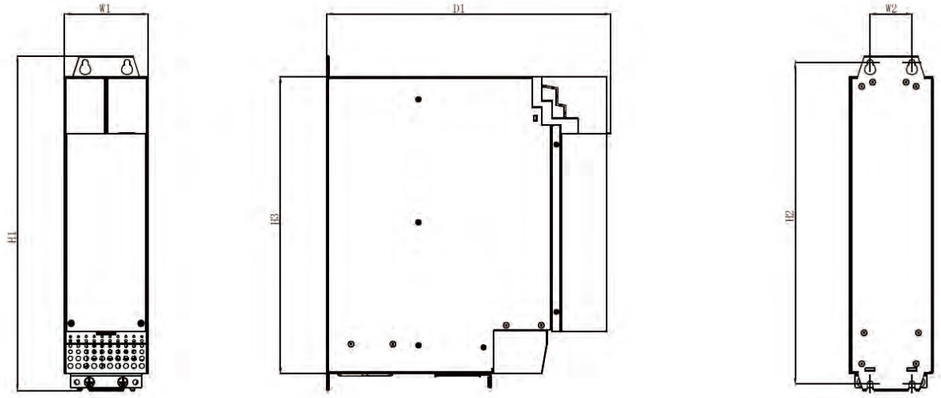
Name	Model	Note
PG Encoder Card	GDHF681N4PG01A1	PG Card is an adaptor between encoder and VFDs
PN Communication Card	GDHF681N4PN02A1	Support PROFINET protocols
MODBUS-RTU Communication Card	GDHF681N4MB01A1	Support MODBUS protocols
IO Expansion Card	GDHF681N4IO01A1	Expansion DI and DO interfaces

Technical Parameters

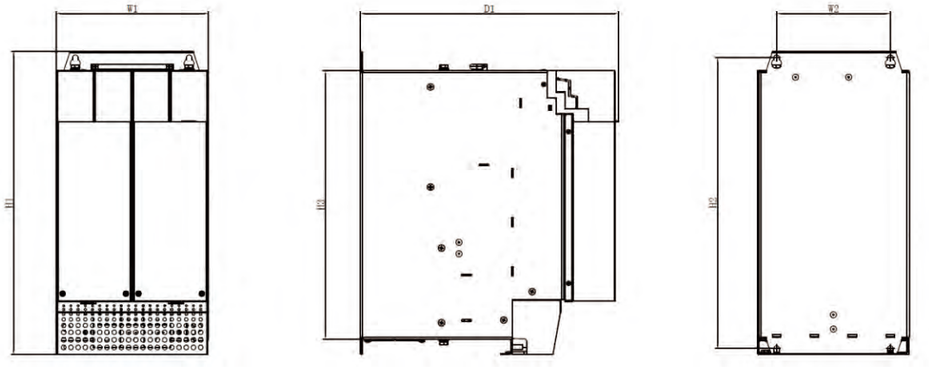
Item		Description
Input	Input Voltage	Three-phase 380 V-480 V
	Rated frequency	50/60 Hz
	Allowable voltage fluctuation	-15% to +10%
	Allowable frequency fluctuation	The allowable range of frequency variation is fLN ±2% (±4% for an independent power supply). Frequency variation rate: ≤2% fLN/s.
Output	Output voltage range	0 V-Input voltage
	Asymmetry of output voltage	Under normal operating conditions, within the entire range of output frequency adjustment, and under symmetrical load conditions for each phase, the asymmetry of the output three-phase voltage should not exceed 1%.
	Output frequency range	0-300 Hz
Control characteristics	Operation command mode	Panel control, terminal control, communication control.
	Carrier frequency	1 kHz-10 kHz, adjustable according to temperature and load characteristics.
	Frequency resolution	Digital setting: 0.01 Hz, analog setting: maximum frequency ×0.1%
	Control mode	Closed-loop vector control (VC), open-loop vector control (SVC), and V/F control.
	V/F control	Linear type, multi-point type, quadratic type.
	Torque control	With PG torque control/without PG torque control.
	Maximum speed	300 Hz, dependent on the electrical and mechanical characteristics of the motor
	Starting torque	0 Hz/200% (VC and SVC), 0.8 Hz/150% (V/F)
	Speed range	1:500 (SVC), 1:1000 (VC)
	Speed accuracy	±0.02% rated speed (VC), ±0.2% rated speed (SVC), ±0.5% rated speed (V/F).
	Overload capacity	150% of the rated output current, with an overload allowed for 1 minute every 5 minutes.

Item		Description
Control Characteristics	Torque compensation	Automatic torque compensation function.
	Acceleration and deceleration mode	Linear mode, customized multi-point curve mode
	Automatic voltage regulation	Automatically maintain a constant output voltage when the power grid is fluctuated.
	DC braking mode	DC braking during startup and DC braking during shutdown.
	Built-in process PID	Easily realize a closed-loop control system for process variables (pressure, temperature, flow rate, etc.).
	Special functions	Free functional modules for user-programmable applications: logic function module, mathematical function module, timer module, PID module, etc. Motion control: multi-curve acceleration/deceleration function, timer controlled operation/stop control, etc. Crane functions: power optimization, and the function of opening and closing the crane's brake.
Input/ output terminal	Input terminal	The rectifier unit is configured with 43 DI interfaces. The inverter unit is configured with 8 DI, 2 AI and 2 STO interfaces.
	Output terminal	The rectifier unit is configured with 30 DO interfaces. The inverter unit is configured with 5 DO and 2 AO interfaces.
HMI	Operation panel LED	Relevant parameters can be set, and various parameters such as output frequency, output voltage, and output current can be displayed on the panel, as well as the operating state, fault state, and parameter setting state. Display content: function, data, unit.
Protection function		Overcurrent protection, overvoltage protection, undervoltage protection, overheat protection, overload protection, etc.
Place of use		Not exposed to direct sunlight, dust-free, and non corrosive environment.
Environment	Altitude	For locations below 1000 meters, no derating is required. For locations with an altitude exceeding 1000 meters, please reduce the rated power and rated output current by 1% for every additional 100 meters. For locations with an altitude exceeding 3000 meters, please consult the manufacturer for guidance.
	Ambient temperature	-10 ℃ to +40 ℃ . If the ambient temperature exceeds 40 ℃, derating is required. The derating is 1% for every 1 ℃ increasing. If the ambient temperature exceeds 50 ℃, it is necessary to consult the manufacturer for guidance. When the ambient temperature falls below -10 ℃, it is necessary to additionally install auxiliary heating equipment.
	Humidity	Less than 95% RH, no condensation
	Storage	Storage temperature: -20 ℃ to +60 ℃. Meanwhile, due to the characteristics of electrolytic capacitors, if the storage duration exceeds six months, the VFD needs to be powered on for 10-30 minutes every six months to charge the electrolytic capacitors.
Other	Efficiency	> 98%
	Option accessories	The control board of the inverter unit is equipped with 2 slots， which can accommodate communication cards, IO expansion cards, and PG cards.
	Other interfaces	External panel interface, CANopen interface
	Ingress protection	Ip20
	Cooling method	Forced air cooling
	Pollution degree	2
	Noise	≤80 db

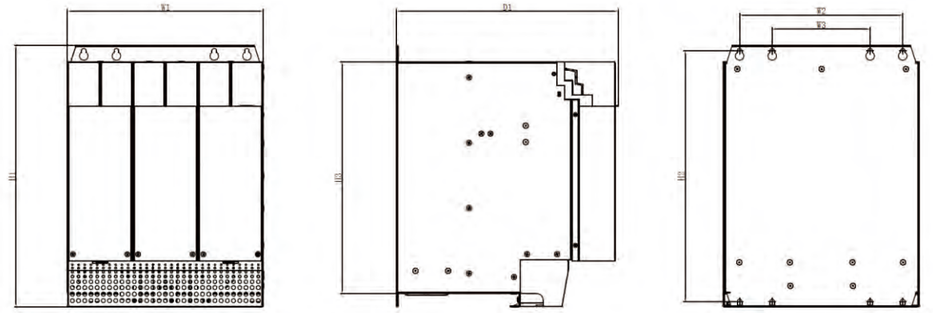
Installation Dimensions



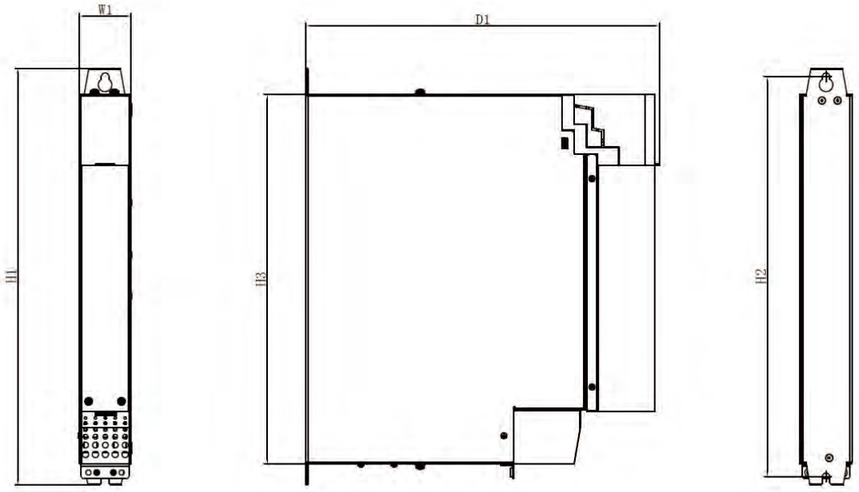
Rectifier Unit Model	Dimensions (mm)				Mounting Hole Positions (mm)			Mounting Hole Diameter (mm)	Weight (kg)
	H1	H3	W1	D1	H2	W2	/		
HF681N01M-22-4	400	355	100	340	384	50	/	7	9.5
HF681N01M-45-4	400	355	100	340	384	50	/	7	9.5



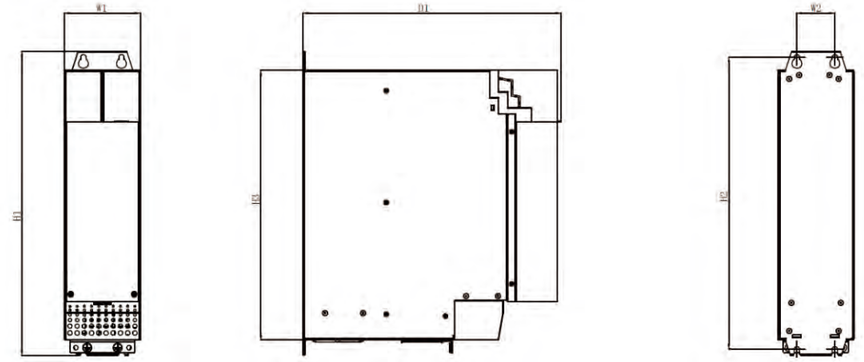
Rectifier Unit Model	Dimensions (mm)				Mounting Hole Positions (mm)			Mounting Hole Diameter (mm)	Weight (kg)
	H1	H3	W1	D1	H2	W2	/		
HF681N01M-110-4	400	355	200	340	384	150	/	7	22



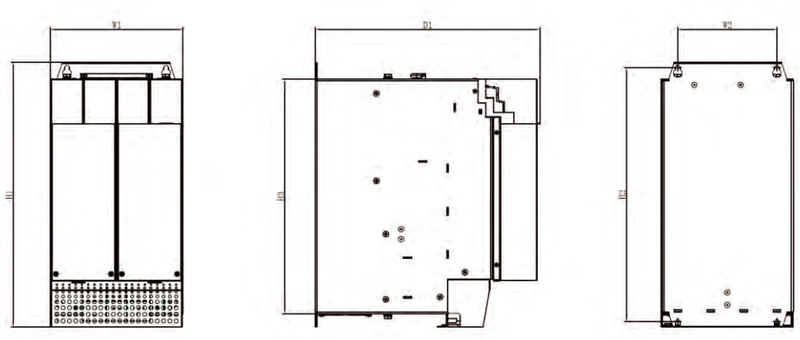
Rectifier Unit Model	Dimensions (mm)				Mounting Hole Positions (mm)			Mounting Hole Diameter (mm)	Weight (kg)
	H1	H3	W1	D1	H2	W2	W3		
HF681N01M-160-4	400	355	300	340	384	250	150	7	36



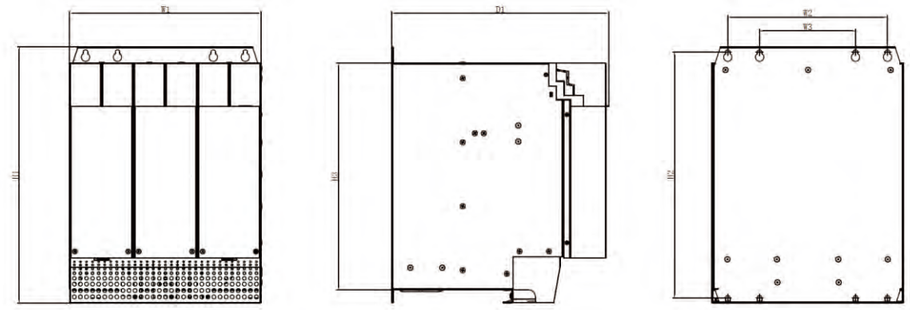
Inverter Unit Model	Dimensions (mm)				Mounting Hole Positions (mm)			Mounting Hole Diameter (mm)	Weight (kg)
	H1	H3	W1	D1	H2	/	/		
HF681N03M-1R5-4	400	355	50	340	384	/	/	7	5.8
HF681N03M-2R2-4	400	355	50	340	384	/	/	7	5.8
HF681N03M-3R7-4	400	355	50	340	384	/	/	7	5.8
HF681N03M-5R5-4	400	355	50	340	384	/	/	7	5.8
HF681N03M-7R5-4	400	355	50	340	384	/	/	7	5.8



Inverter Unit Model	Dimensions (mm)				Mounting Hole Positions (mm)			Mounting Hole Diameter (mm)	Weight (kg)
	H1	H3	W1	D1	H2	W2	/		
HF681N03M-011-4	400	355	100	340	384	50	/	7	9
HF681N03M-015-4	400	355	100	340	384	50	/	7	9
HF681N03M-018-4	400	355	100	340	384	50	/	7	9
HF681N03M-022-4	400	355	100	340	384	50	/	7	9
HF681N03M-030-4	400	355	100	340	384	50	/	7	9
HF681N03M-037-4	400	355	100	340	384	50	/	7	9

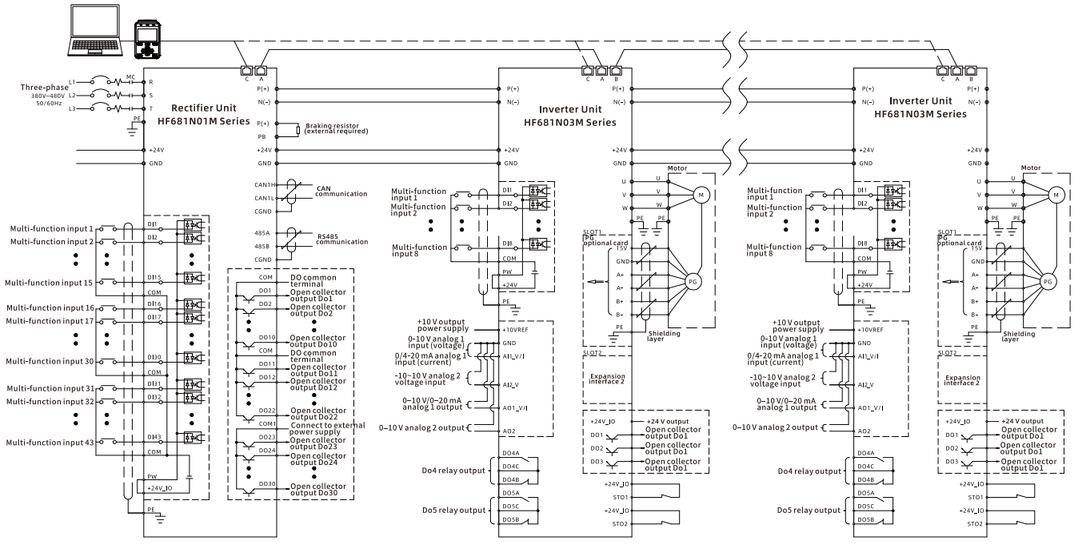


Inverter Unit Model	Dimensions (mm)				Mounting Hole Positions (mm)			Mounting Hole Diameter (mm)	Weight (kg)
	H1	H3	W1	D1	H2	W2	/		
HF681N03M-045-4	400	355	200	340	384	150	/	7	17
HF681N03M-055-4	400	355	200	340	384	150	/	7	17
HF681N03M-075-4	400	355	200	340	384	150	/	7	17

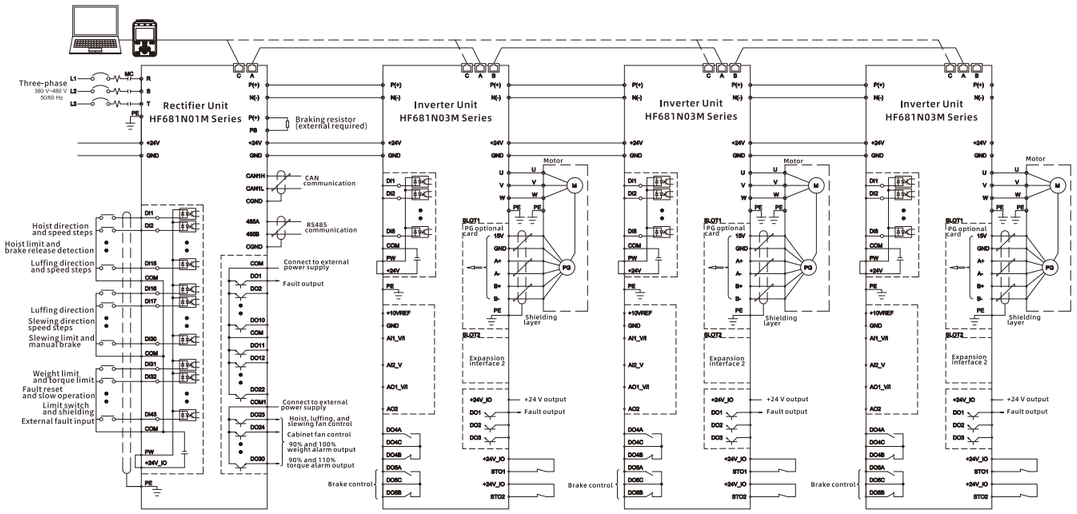


Inverter Unit Model	Dimensions (mm)				Mounting Hole Positions (mm)			Mounting Hole Diameter (mm)	Weight (kg)
	H1	H3	W1	D1	H2	W2	W3		
HF681N03M-090-4	400	355	300	340	384	250	150	7	31
HF681N03M-110-4	400	355	300	340	384	250	150	7	31

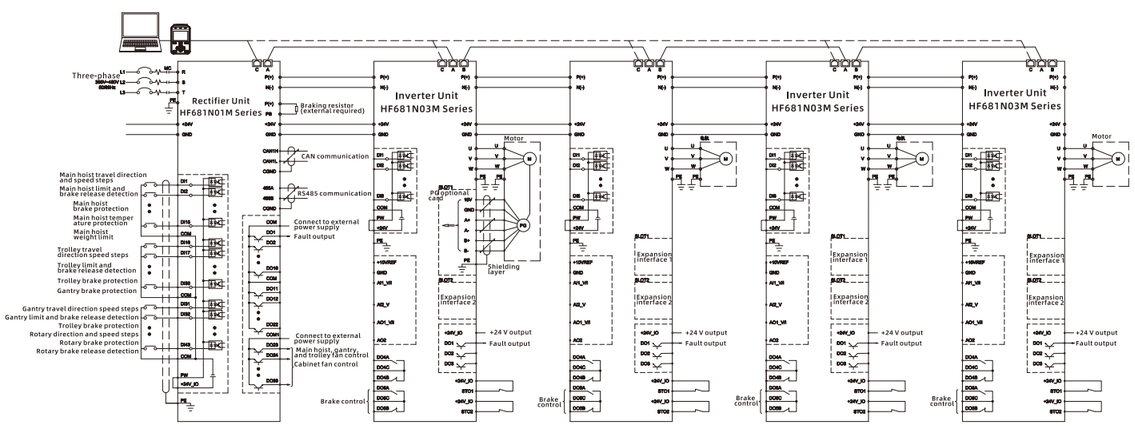
Wiring Diagram



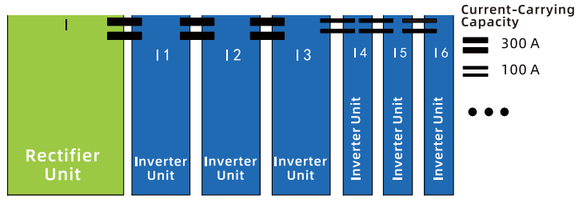
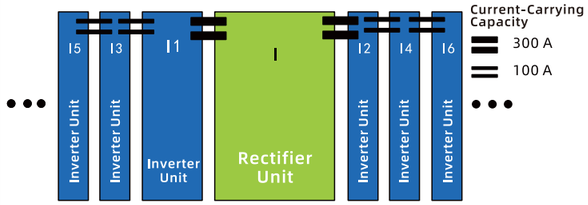
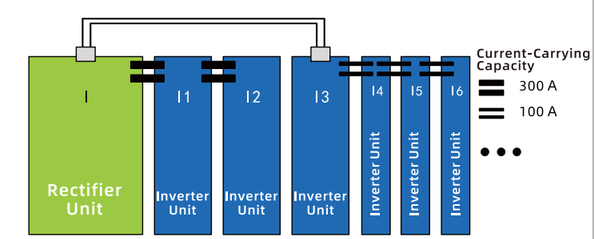
Typical Tower Crane Wiring Diagram



Typical Overhead Crane Wiring Diagram



HF681N Series Product Installation Method

Combination Method	Parallel Connection Diagram	Requirements
Single-Row Arrangement (Rectifier on the Left Side)		I≥0.8* (I1+I2+I3+I4+I5+I6+...) I1+I2+I3+I4+I5+I6+...≤300A I4+I5+I6+...≤100A
Single-Row Arrangement (Rectifier in the Center)		I≥0.8* (I1+I2+I3+I4+I5+I6+...) I2+I4+I6+...≤300 A I1+I3+I5+...≤300 A I4+I6+...≤100 A I3+I5+...≤100 A
Single-Row Arrangement (External Busbar Extension)	(optional, single rated at 100 A; multiple can be connected in parallel) 	I≥0.8* (I1+I2+I3+I4+I5+I6+...) I3+I4+I5+I6+...≤ (100*n) A (N refers to the number of connectors in parallel) I1+I2≤300 A I4+I5+I6+...≤100 A

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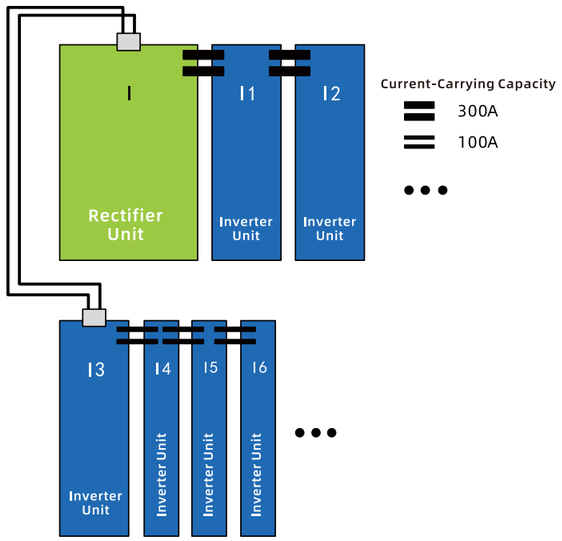
HF681N Series Product Installation Method

Combination Method	Parallel Connection Diagram	Requirements
Single-Row Arrangement (External Busbar Extension)	(optional, single rated at 100 A; multiple can be connected in parallel) 	I≥0.8*（I1+I2+I3+I4+I5+I6+...） I3+I4+I5+I6+...≤（100*n）A （N refers to the number of connectors in parallel） I1+I2≤300A I4+I5+I6+...≤100A

NOTE