Version Number: RCP2403

Changsha SUNYE Electrical Co., Ltd.

No. 669, Xinsheng Road, High-tech Zone, Changsha City, China.

0731-89932666

0731-89932688

400-0755-731

www. cssunye.com

Statement:
Our company warmly welcomes and appreciates any suggestions or corrections you may have regarding our manual. Due to product updates, iterations, and changes in standards, the product characteristics, images, or data in the manual are only legally binding after being officially stamped and confirmed by our company

CM800 Series Open-loop Vector Control Inverter

Innovation

Strength

Technology

Simplified Design, High Cost-effectiveness Choice

CM800Series Open-loop Vector Control Inverter

Table of Contents

CM800
Open-loop Vector Control Inverter

Product Information

Typical Case

CONTENTS

General Vector Control Inverter

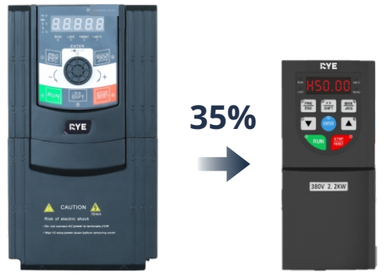
CM800 Power Range: Single-phase 220V: 0.4kW ~ 4kW Three-phase 380V: 0.75kW~75kW

The CM800 Series is a newly developed compact inverter with a small size and large functionality, featuring fast torque response, high speed stability, and a wide speed control range. It can be widely applied in various automated machinery and equipment scenarios, including glass, food packaging, pharmaceutical centrifuges, automated production lines, electronic devices, logistics equipment, ceramic equipment, and textile machinery.

Elegant Design, Easy to Use

Volume Reduced by 35%

The power density of CM800 has been significantly improved, with the volume reduced by 35% compared to the previous generation of products, making CM800 flexible for installation in various confined spaces.



Dual Keyboard Display

Both local and remote keyboards display simultaneously and are automatically recognized.

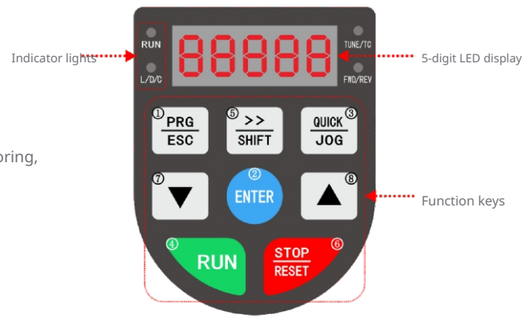
Humanized design of the control panel

High adaptability

Default parameters meet mainstream usage scenarios

Complete control panel functions

Function parameter modification, operation status monitoring, operation control (start, stop)



All-round Protection

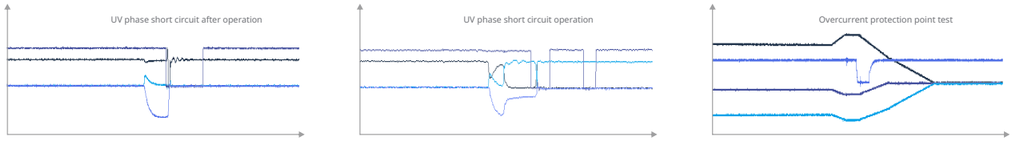
Rapid Response Intelligent Protection

Short-circuit protection is immediately activated, and after the fault is cleared, the inverter resumes normal operation without any component damage.

Upper and Lower Bridge Arms **Vce<1050V** | Response Time **<10us**

Repeated protection

Even in the face of frequent overload, overcurrent, and other extreme challenges, the CM800 protection mechanism ensures stable operation without component damage.

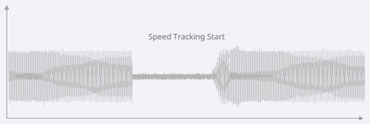


Excellent Overcurrent Suppression Capability

When a sudden heavy load occurs, it can achieve excavator function, reducing the impact of large current surges on the inverter and motor, while achieving maximum fault-free operation.

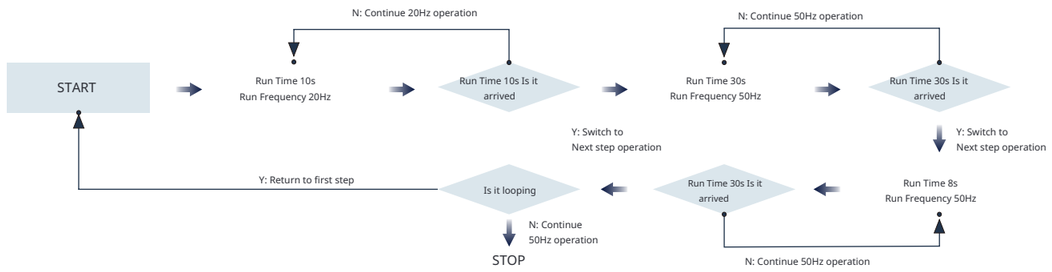
Software Speed Tracking

Smooth and Impact-free Start, can automatically identify the direction of rotation.



Built-in SimplePLCFunction

Can complete up to 16 segments of timed and fixed-speed cyclic operation.



Reliable hardware and software

Optimized low-frequency overload software design

Deeply exploring and efficiently utilizing the potential overload capability of IGBTs, through intelligent control strategies, significantly enhancing the overall operational stability and reliability of the product. Extend the service life of equipment and enhance its adaptability under complex operating conditions.

Long-life and high-redundancy design

Comprehensive monitoring of temperature rise in key components and PCB boards, optimized configuration, long design life, and high-redundancy thermal design.

Comprehensive protection functions

Equipped with power-on motor short-circuit protection, input and output phase loss protection, overcurrent protection, overvoltage protection, undervoltage protection, overheat protection, and overload protection.

Test systemguarantee

100% Dielectric Withstand Test

100% factory withstand voltage safety test, fully ensuring product safety.

Full power aging test

Simulating high load, long-term operation, and other extreme conditions to ensure the product remains stable and durable in actual use.

Overall temperature rise testing

Adopt strict cyclic overload specifications for verification and testing to ensure reliable long-term operation under extreme load conditions.

Cyclic overload test

Cyclic overload: At an ambient temperature of 40°C, operate at 1.5 times the rated current for 1 minute, followed by 1 times the rated current for 4 minutes, then 1.5 times the rated current for 1 minute, repeating this cycle continuously, with each cycle lasting 5 minutes, until the system reaches thermal equilibrium, ensuring the entire unit remains within the thermal design safety range. Even under overload conditions exceeding 1 times the limit, it can still operate safely and stably.

ICT and FCT dual test coverage exceeds 95%

From components to overall functionality, comprehensive verification ensures every detail is precise and error-free, creating unparalleled excellence to provide a solid backing for your industrial applications.

Naming Rules

CM800 S -4T 2R2 B

Inverter Series

Applicable Motor Type
E: Induction Motor
S: Synchronous Motor
(All below 9.0kW support both synchronous and induction motors)

Voltage Level
3S: Single-phase 220V
4T: Three-phase 380V

Product Name
E: None
B: Built-in Braking Unit
(All below 9.0kW support both synchronous and induction motors)

Power Rating (kW)
R75 .....0.75
075 75

CM800 Inverter Model and Technical Data

Inverter Model	Input Voltage (V)	Input Current (A)	Output Current (A)	Motor Rating (kW)
CM800-3SR4B	Single-phase 220V Range: -15%～20%	5.4	2.3	0.4
CM800-3SR75B		8.2	4.0	0.75
CM800-3S1R5B		14.0	7.0	1.5
CM800-3S2R2B		23.0	9.6	2.2
CM800-3S4R0B		32.0	17.0	4.0
CM800-4TR75B	Three-phase 380V Range: -15%～20%	3.4	2.1	0.75
CM800-4T1R5B		5.0	3.8	1.5
CM800-4T2R2B		5.8	5.1	2.2
CM800-4T4R0B		10.5	9.0	4.0
CM800-4T5R5B		14.6	13.0	5.5
CM800-4T7R5B		20.5	17.0	7.5
CM800-4T9R0B		22.0	20.0	9.0
CM800-4T011B		26.0	25.0	11.0
CM800-4T015B		35.0	32.0	15.0
CM800-4T018B		38.5	37.0	18.5
CM800-4T022B		46.5	45.0	22.0
CM800-4T030B		69.8	60	30.0
CM800-4T037B CM800-4T037		85.7	75	37.0
CM800-4T045B CM800-4T045		102.	90	45.0
CM800-4T055B CM800-4T055		7125.	110	55.0
CM800-4T075B CM800-4T075		2170.0	152	75.0

Technical Specifications

Project		Specification
Main Control Performance	Maximum Frequency	Vector Control: 0~600Hz VF Control: 0~1200Hz
	Carrier Frequency	0.5kHz~16kHz; can be automatically adjusted according to load characteristics.
	Input Frequency Resolution	Digital Setting: 0.01Hz Analog Setting: Maximum Frequency × 0.1
	Control Method	Open-loop Vector Control (SVC), V/F Control
	Starting Torque	G Series: 0.5Hz/180% (Open-loop Vector Control)
	Speed Range	1:200 (Open-loop Vector Control)
	Speed Stability (Speed Control Accuracy)	Open-loop Vector Control: ≤±0.5% (Rated Synchronous Speed)
	Speed Control Stability	Open-loop Vector Control: ≤±0.3% (Rated Synchronous Speed)
	Torque Response	≤40ms (Open-loop Vector Control)
	Overload Capacity	150% Rated Current for 60 Seconds; 180% Rated Current for 5 Seconds
	Torque Boost	Automatic Torque Boost; Manual Torque Boost 0.1%~30.0%
	V/F Curve	Three Methods: Linear; Multi-point; Square V/F Curve
	Acceleration/Deceleration Curve	Linear or S-Curve Acceleration/Deceleration; Four Acceleration/Deceleration Times; Acceleration/Deceleration Time Range 0.0s~3000.0s
	DC Braking	DC Braking Frequency: 0.0Hz~Maximum Frequency, Braking Time: 0.0~36.0 Seconds, Braking Action Current Value: 0.0%~100.0%
	Jog Control	Jogging frequency range: 0.00Hz~50.00Hz; Jogging acceleration and deceleration time 0.0s~3000.0s
	Simple PLC, Multi-Speed Operation	Up to 16-speed operation can be achieved through built-in PLC or control terminals
	Built-in PID	Can conveniently implement process control closed-loop control systems
	Automatic Voltage Regulation (AVR)	When the grid voltage changes, it can automatically maintain a constant output voltage
	Torque Limiting and Control	"Excavator" characteristic, automatically limits torque during operation to prevent frequent overcurrent tripping; Closed-loop vector mode can achieve torque control
Customized Functions	Power-On Peripheral Safety Self-Check	Can perform safety checks on peripheral devices upon power-up, such as grounding and short-circuit testing
	Common DC Bus Function	Can achieve the function of multiple inverters sharing a common DC bus
	JOG Key	Programmable keys: Forward/Reverse operation and Jog operation function selection
	Textile Swing Frequency Control	Multiple triangular wave frequency control functions
	Rapid Current Limiting Function	Built-in fast current limiting algorithm, reducing the probability of overcurrent alarms and enhancing the overall interference resistance of the machine
	Timed Control	Timed control function: Settable time range 0h~65535h
	Standardized Keyboard Extension Cable	Customers can extend the keyboard using standard network cables.
Operation	Operation Command Channel	Three channels: Operation panel setting, control terminal setting, and serial communication port setting. Can be switched through multiple methods
	Frequency Source	There are 10 frequency sources: digital setting, analog voltage setting, analog current setting, pulse setting, serial port setting. Switching can be done in multiple ways
	Auxiliary Frequency Source	10 auxiliary frequency sources. Flexible implementation of auxiliary frequency fine-tuning, frequency synthesis
	Terminal Configuration	Standard configuration includes 5 digital input terminals, 5 DI digital input terminals, 1 Y terminal (single-polarity output), 1 AI analog input terminal, 1 AO analog output terminal, 1 relay output terminal; one 485 interface; AI1 can be used as a DI terminal, compatible with active PNP or NPN input methods.
Display and Keyboard Operation	LED Display	Display parameters
	LCD Display	Optional, operation content prompts in Chinese/English
	LCD Parameter Copy	Using LCD to achieve quick parameter replication
	Key Locking and Function Selection	Partial or full key lockout, define the scope of some keys to prevent accidental operation

Project		Specification
Protection and Optional Accessories	Protection Functions	Power-on motor short circuit detection, input and output phase loss protection*, overcurrent protection, overvoltage protection, undervoltage protection, overheat protection, overload protection, etc.
	Optional Accessories	LCD operation panel, braking components, etc.
Environment	Place of Use	Indoor, not exposed to direct sunlight, free from dust, corrosive gases, flammable gases, oil mist, water vapor, dripping water, or salt, etc.
	Altitude	Below 1000 meters
	Ambient Temperature	－10°C to +50°C (For environmental temperatures between 40°C to 50°C, please use at reduced capacity)
	Humidity	Less than 95% RH, no condensation
	Vibration	Less than 5.9^{2}m/s (0.6g)
	Storage Temperature	-20°C to +60°C
	Pollution Degree	2
Product Standards	Product Safety Standards	IEC61800-5-1:2007
	Product EMC Standards	IEC61800-3:2005

CM800 Inverter Dimensions and Installation Hole Positions (mm)

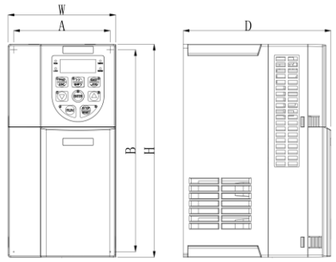


Figure 1. Schematic Diagram of Dimensions and Installation for Plastic Enclosures of 22KW and Below

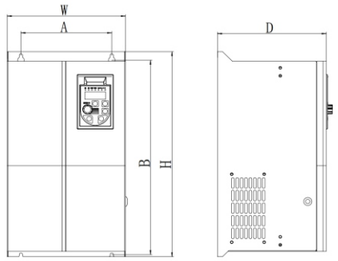


Figure 2. Schematic Diagram of 30~75kW Sheet Metal Enclosure and Installation Dimensions

Driver Model	Installation Holes		Wall Mounting Hole Dimensions			Installation Hole Diameter
	A(mm)	B(mm)	H(mm)	W(mm)	D(mm)	(mm)
CM800-3SR4B	65	158	167	75	121	ϕ4.5
CM800-3SR75B						
CM800-3S1R5B						
CM800-3S2R2B	82	168	178	93	143.5	ϕ5
CM800-3S4ROB	96	201	212	107	147	ϕ5.5
CM800-4TR75B	65	158	167	75	121	ϕ4.5
CM800-4T1R5B						
CM800-4T2R2B						
CM800-4T4ROB	82	168	178	93	143.5	ϕ5.5
CM800-4T5R5B						
CM800-4T7R5B	96	201	212	107	147	ϕ6
CM800-4T9ROB						
CM800-4T011B	130	260.5	270	150	183	ϕ6
CM800-4T015B						
CM800-4T018B	166	312	324	189	191	ϕ6
CM800-4T022B						
CM800-4T030B	165	363	383	215	197.5	ϕ6
CM800-4T037B CM800-4T037	200	426	449	260	207	ϕ7
CM800-4T045B CM800-4T045						
CM800-4T055B CM800-4T055	245	517	550	310	260	ϕ10
CM800-4T075B CM800-4T075						

External Keyboard with Tray Installation Dimensions (mm)

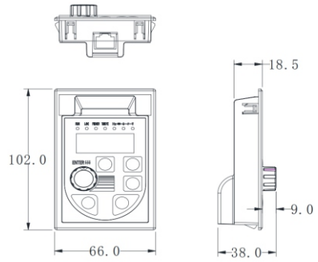


Figure 3. External Keyboard with Tray Installation Dimensions

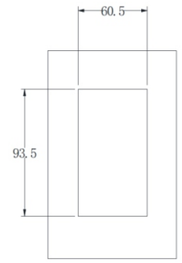


Figure 4. External Keyboard with Tray Installation Cutout Dimensions

CM800 Inverter Optional Accessories

For detailed functions and usage instructions of optional accessories, refer to the relevant accessory manuals. If you require any of the following optional accessories, please specify when placing your order.

Name	Model	Function	Remarks
External LED Operation Panel	CM800-LED	External LED Display and Operation Keyboard	RJ45 Interface
Extension Cable	CM-CAB	Standard 8-core network cable, can connect to CM800-LED	Available in 1 meter, 3 meters, 5 meters, 10 meters 4 specifications

For additional function module expansions (such as I/O cards, PG cards, communication bus cards, etc.), please select the CM530H-PLUS series inverter and specify the required function module card when ordering.

Wiring Method

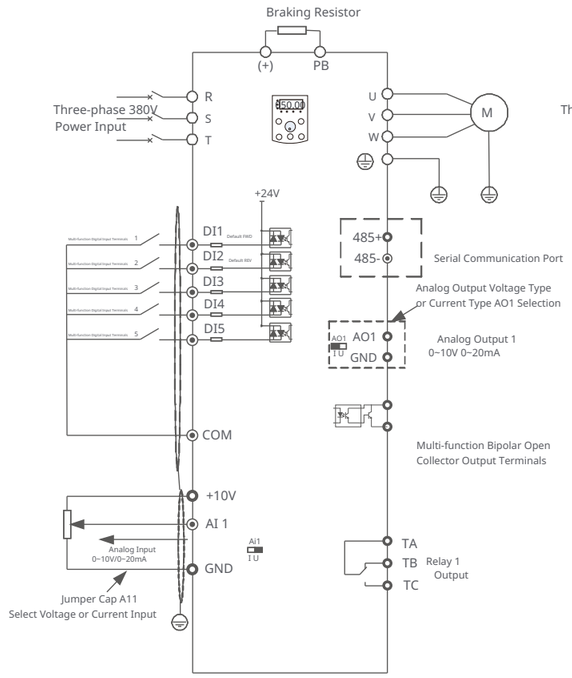


Fig. 5. Three-phase (380V) Inverter9.0kW

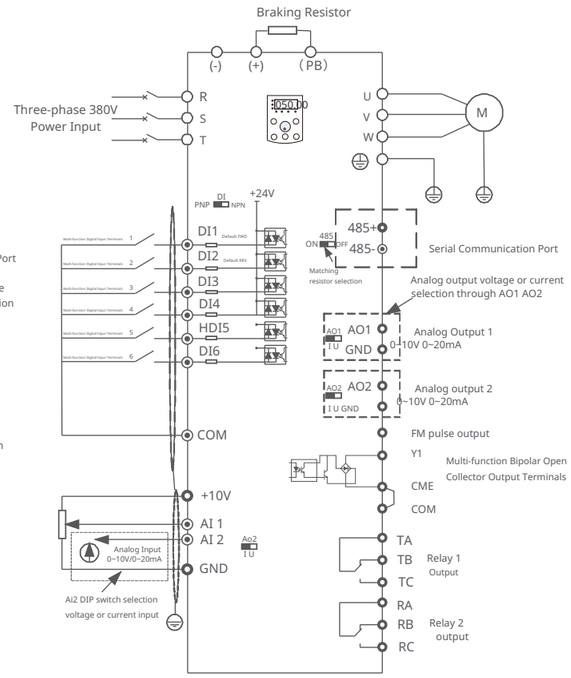


Figure 6. Three-phase Inverter (380V) 11kW and above (General Type)

It is suitable for applications with high performance requirements, mainly including the textile, machine tool, mining, food, metal products, and semiconductor industries.

Woodworking Industry Applications

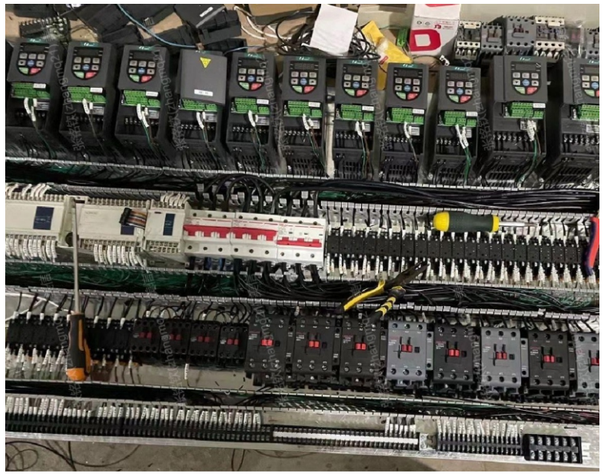
A Furniture Manufacturing Company

Continuous Edge Banding Machine

Woodworking machinery refers to a type of machine tool used in the wood processing industry to process wood semi-finished products into wooden products. The load for this project is a continuous edge banding machine. By using the CM800 Series inverter, the production efficiency, edge banding quality, and energy consumption have been significantly improved.

Usage advantages:

- Fast material cutting speed, high efficiency;
- Soft limit protection for X/Y/Z axes, fault protection, etc.;
- Achieve rapid start-stop and quick tool change functions;
- Convenient operation parameter debugging, flexible changes, short debugging time;
- Increase the deceleration speed, significantly reducing the stopping time;
- Reduce equipment failure rate, help customers reduce production costs, and enhance product competitiveness;
- Improves the processing accuracy of woodworking machinery and the quality of wood veneer, significantly enhancing production efficiency and the degree of automation of the entire machine.



Typical Case of Musical Fountain

Hohhot Music Fountain

The upper-level computer simultaneously connects to dozens of inverters.

The music fountain equipment converts the received music rhythm and intensity into control signals, which are then transmitted to the industrial PC. The industrial PC controls each inverter via the bus. The upper-level computer uses the DM512 music fountain dedicated protocol to connect to dozens of inverters. By controlling the inverter, the motor speed changes according to the pitch, rhythm, and intensity of the music, causing the pressure of the pump to vary, and the water to be sprayed at different heights, achieving a magnificent effect.

Usage advantages:

- Sensorless flux vector control, with high control accuracy and fast response speed;
- Complete with phase loss protection, undervoltage protection, overload protection, and various intelligent protections;
- New speed tracking function, achieving speed tracking within 0—80Hz in just 0.5 seconds, with more flexible SVC torque control;
- Superior weak magnetic performance.

It is suitable for applications with high performance requirements, mainly including the textile, machine tool, mining, food, metal products, and semiconductor industries.

Industrial Washing Machine Application Case

Industrial Washing Machine

An industrial washing machine is an electrical device used for large-scale laundry cleaning in hotels, inns, laundries, or factories. With the rapid development of automation and the continuous improvement of industry process requirements, the demands on inverters for industrial washing machines are also increasing. The inverter must meet the requirements of industrial washing machines for high starting torque, multi-speed operation, wide voltage range, automatic slip compensation, and fast and powerful communication methods. In addition, the inverter must be stable in performance and capable of adapting to various complex high-temperature and high-humidity environments. In summary, the CM800 series inverter, independently developed and produced by Nichicon Electric, has become the top choice. There are already multiple successful cases, and after a period of customer use verification, its superior performance and high reliability have received unanimous praise from customers .

Usage advantages:

- High starting torque, normal start-up under full load;
- Stable speed at high, medium, and low speeds throughout the operation;
- No stalling or overcurrent during acceleration and deceleration;
- Wide speed control range;
- High torque at low frequency to meet the 7Hz washing process;
- Simple parameter settings; default V/F can meet production requirements;
- Equipped with a protective cover, strong environmental adaptability.

Logistics Industry

Large Logistics Company

To improve sorting efficiency and the level of operational automation, a large logistics company decided to upgrade and transform multiple sorting centers, introducing advanced intelligent logistics equipment.

Among them, the telescopic machine, as a crucial component of the sorting system, has its performance and stability directly related to the smoothness and efficiency of the entire logistics process. Therefore, the logistics company chose the highly reliable and adaptable CM800 Inverter to drive the telescopic system in its sorting center.

Usage advantages:

Power Matching: The CM800 motor power range is “0.4 kW ~ 75 kW”, meeting application requirements and ensuring the telescopic system operates efficiently during start-up, acceleration, stable operation, and braking.

Environmental Adaptability: Sorting centers are typically open sites with significant temperature fluctuations, with a maximum of 50°C. The CM800, with its excellent self-cooling design, can operate stably in high-temperature environments, effectively avoiding performance degradation or failures due to overheating

Electromagnetic Compatibility:The CM800 has passed rigorous electromagnetic compatibility tests (C3) and will not interfere with PLCs.

High Stability and Low Failure Rate: The CM800 uses advanced control algorithms and high-quality components, significantly reducing maintenance costs and greatly improving the overall operational efficiency of the sorting center.

Diverse Control Functions: Supports terminal start-up, analog input/frequency setting via keyboard, RS485 communication, and parameter upload/download functions, facilitating flexible adjustment and monitoring according to user needs, enhancing operational convenience.