CM530H SERIES

AC DRIVERS

COMPREHENSIVE MANUAL

Safe and Durable | Outstanding Performance | Stable and Reliable

COMPANY

INTRODUCTION

CHANGSHA SUNYE ELECTRICAL CO., LTD. (established in 2010) and Shenzhen Sunye Electrical Co., Ltd. (established in 2002) are national high-tech enterprises integrating the R&D, manufacturing, and sales of variable frequency drives, industry-specific all-in-one machines, servo drivers, and new energy products.

The company has purchased a land area of 30 acres in the National High-Tech Industrial Development Zone in Changsha to build its own industrial park with a total construction area of approximately 48,000 square meters. It boasts production lines and workshops covering 10,800 square meters, with an annual output value reaching up to 650 million yuan on average.

Sunye possesses independent intellectual property rights, with products passing national authoritative institution tests and certifications, obtaining multiple software copyrights and intellectual property certificates. Every year, a substantial amount of funds is invested in new technology and product R&D, with several patents or software copyrights being approved. The company owns core platform technologies such as construction hoist drivers, high-performance vector inverters, servos, and permanent magnet synchronous motor controls. Medium and low voltage inverters and servo drives are widely used in industries such as lifting machinery, stone processing, HVAC, machine tools, metal products, wire and cable, plastic packaging, printing and packaging, textile fiber, building materials, metallurgy, coal mines, municipal engineering, automotive, etc.

With the Sunye Industrial Park in Changsha as its R&D and production base and various offices as pivots, the company provides high-quality integrated services to customers across the country. Upholding the philosophy of "innovation, technology, strength," Sunye embodies the corporate spirit of "unity, progressiveness, pragmatism, innovation," adhering to the business principle of "sincerity and precision, coexistence of righteousness and profit," and follows the quality policy of "promoting total quality management and continuous quality improvement, striving for zero defects" to offer industry-leading products to customers.

Certificate of Quality Management system certification(ISO9001)

CE Certification Certificate

Over 100 patents have been granted in total

Product Overview

CM530H Series

Open-loop Vector Control Inverter

The CM530H Series inverter is a low-voltage inverter independently developed and produced by Riye Electrical. Based on the original model, after in-depth market demand analysis and summarization of market experience, the functions and structure of the product have been upgraded and optimized. It can be used to drive asynchronous motors, synchronous motors (CM530HS), and torque motors, and is widely applied in industries such as CNC machine tools, cable, papermaking, lifting, hoisting, fans and pumps, petrochemicals, air compressors, textile machinery, plastic machinery, woodworking machinery, ceramic machinery, stone machinery, etc.

CM530H Power Range

Single Phase 220V: 0.4kW ~ 5.5kW

Three Phase 380V: 0.75kW ~ 800kW

Open-loop vector control

Wide power range

More functions

Rich optional accessories

CM530H Series Applications

Textile industry (needling machine)

Rubber and plastic industry
(Blown film machine)

Stone industry (Ball mill

CNC machine tool

Synchronous machine
(industrial ceiling fan)

Synchronous machine
(high-speed permanent magnet motor)

Product advantages

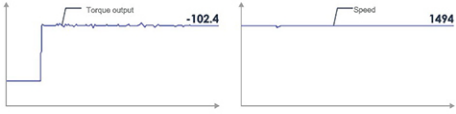
Comprehensive Features

High Starting Torque Function

Full Load Motor Output Rated Torque 102.4Nm

SVC Control Speed Fluctuation Measured 0.2%

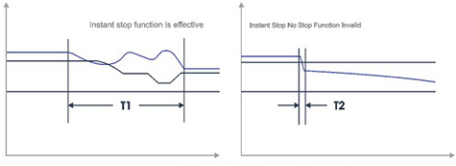
SVC Control Speed Stability Precision Measured 0.4%



Note: Torque Output, Speed Graph

Instant stop function: In the event of a momentary

Power outage or sudden voltage drop, the inverter reduces the output speed, using the energy fed back from the load to compensate for the voltage drop, maintaining operation of the inverter for a short period of time.

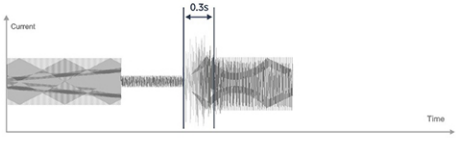


Note: Instant Stop No Stop Function Comparison Graph

Speed tracking function

0.3S to achieve direction recognition speed tracking start.

Applicable to fans, punch presses, and other occasions requiring speed tracking.



Overcurrent suppression function prevents motor

Current from exceeding the safety threshold, thus protecting the inverter and motor equipment from damage.

Applicable to machine tools, mixers, ball mills, centrifuges, conveyors,and other occasions with load variations.

Sudden Load, Sudden Unload Measured Current Waveform

Quality Assurance

Reliable Hardware and Software

Optimized Low Frequency Overload Software Design

Deeply excavate and efficiently utilize the potential overload capability of IGBTs, through intelligent control strategies, significantly enhancing the overall operational stability and reliability of the product. Extending the service life of equipment, enhancing its adaptability under complex working conditions.

Long Life High Redundancy Design

Key components and PCB board temperature rise are comprehensively monitored, optimized configuration, long design life, 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, overload protection, etc.

Test system assurance

100% withstand voltage test

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

Full power aging test

Simulate high load, long-term operation, and other extreme conditions to ensure the product's long-term stability in practical applications.

Overall temperature rise test

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

Cyclic Overload Test

Cyclic Overload: At an ambient temperature of 40 ℃, operate at 1.5 times the rated current for 1 minute, followed by operation at 1 times the rated current for 4 minutes, then operate at 1.5 times the rated current for 1 minute again, repeating this cycle continuously, with each cycle lasting 5 minutes, until the system reaches thermal equilibrium, ensuring that 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

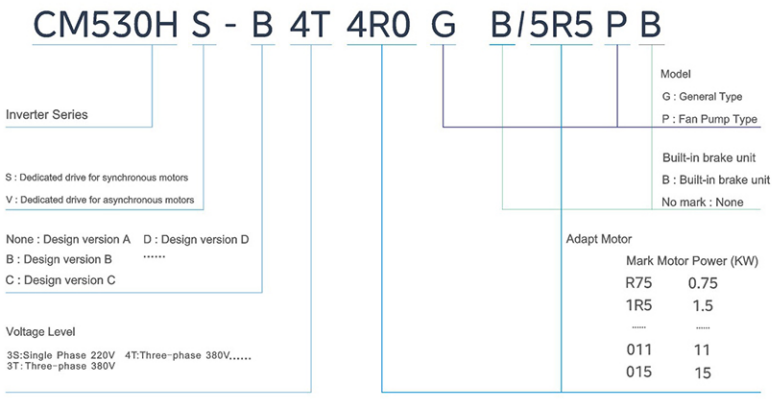
ICT and FCT dual test coverage exceeds 95%

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

Advanced Testing Conditions

Comprehensive Safety Performance Testing System | Intelligent Safety Compliance Integrated Analyzer | Precision Salt Spray Tester
Guaranteeing Every Unit Undergoes Comprehensive Testing Including Dielectric Strength, Functionality, and Aging.

Naming Rules



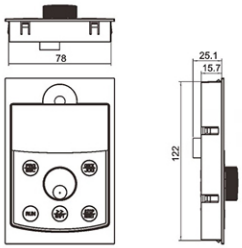
Product Selection

CM530H Inverter Model and Technical Data

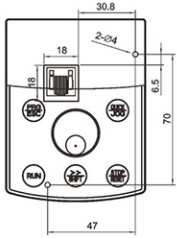
Inverter Model	Input Voltage (V)	Input Current (A)	Output Current (A)	Adapt Motor (kW)
CM530H-C3SR4G	Single Phase 220V Range : -15% ~ +20%	5.4	2.3	0.4
CM530H-C3SR75G		8.2	4.0	0.75
CM530H-C3S1R5G		14.0	7.0	1.5
CM530H-C3S2R2GB		23.0	9.6	2.2
CM530H-3S4R0GB		32.0	17	4.0
CM530H-3S5R5GB		45.0	25	5.5
CM530H-B4TR75GB	Three-phase 380V Range : -15% ~ +20%	3.4	2.1	0.75
CM530H-B4T1R5GB/2R2PB		5.0/5.8	3.8/5.1	1.5/2.2
CM530H-C4T2R2GB/4R0PB		5.8/10.5	5.1/9.0	2.2/4.0
CM530H-C4T4R0GB/5R5PB		10.5/14.6	9.0/13.0	4.0/5.5
CM530H-C4T5R5GB/7R5PB		14.6/20.5	13.0/17.0	5.5/7.5
CM530H-C4T7R5GB/9R0PB		20.5/22.0	17.0/20.0	7.5/9.0
CM530H-D4T9R0GB/011PB		22.0/26.0	20.0/25.0	9.0/11.0
CM530H-D4T011GB/015PB		26.0/35.0	25.0/32.0	11.0/15.0
CM530H-D4T015GB/018PB		35.0/38.5	32.0/37.0	15.0/18.5
CM530H-4T018GB/022PB		38.5/46.5	37.0/45.0	18.5/22.0
CM530H-4T022GB/030PB		46.5/62.0	45.0/60.0	22.0/30.0

Inverter Model	Input Voltage(V)	Input Current(A)	Output Current(A)	Suitable Motor (kW)
CM530H-4T030G/037P CM530H-4T030GB/037PB	Three Phase 380V range:-15%~+20%	62.0/76.0	60.0/75.0	30.0/37.0
CM530H-4T037G/045P CM530H-4T037GB/045PB		76.0/92.0	75.0/90.0	37.0/45.0
CM530H-4T045GB/055PB CM530H-4T045G/055P		92.0/113.0	90.0/110.0	45.0/55.0
CM530H-4T055GB/075PB CM530H-4T055G/075P		113.0/157.0	110.0/152.0	55.0/75.0
CM530H-4T075GB/093PB CM530H-4T075G/093P		157.0/180.0	152.0/176.0	75.0/93.0
CM530H-4T093GB/110PB CM530H-4T093G/110P		180.0/214.0	176.0/210.0	93.0/110.0
CM530H-4T110G/132P		214.0/256.0	210.0/253.0	110.0/132.0
CM530H-4T132G/160P		256.0/307.0	253.0/304.0	132.0/160.0
CM530H-4T160G/185P		307.0/345.0	304.0/340.0	160.0/185.0
CM530H-4T185G/200P		345.0/385.0	340.0/380.0	185.0/200.0
CM530H-4T200G/220P		385.0/430.0	380.0/426.0	200.0/220.0
CM530H-4T220G/250P		430.0/468.0	426.0/465.0	220.0/250.0
CM530H-4T250G/280P		468.0/525.0	465.0/520.0	250.0/280.0
CM530H-4T280G/315P		525.0/590.0	520.0/585.0	280.0/315.0
CM530H-4T315G/355P		590.0/665.0	585.0/650.0	315.0/355.0
CM530H-4T355G/400P		665.0/785.0	650.0/725.0	355.0/400.0
CM530H-4T400G/450P		785.0/883.0	725.0/820.0	400.0/450.0
CM530H-4T450G/500P		883.0/920.0	820.0/900.0	450.0/500.0
CM530H-4T450G/500P		920.0/1020.0	900.0/1000.0	450.0/500.0
CM530H-4T500G/550P		1020.0/1120.0	1000.0/1100.0	500.0/550.0
CM530H-4T630G		1120.0	1100.0	630.0
CM530H-4T710G		1315.0	1250	710.0
CM530H-4T800G		1525.0	1450	800.0

External Keyboard Installation Dimensions with Tray and without Tray (mm)



External keyboard with tray installation dimensions



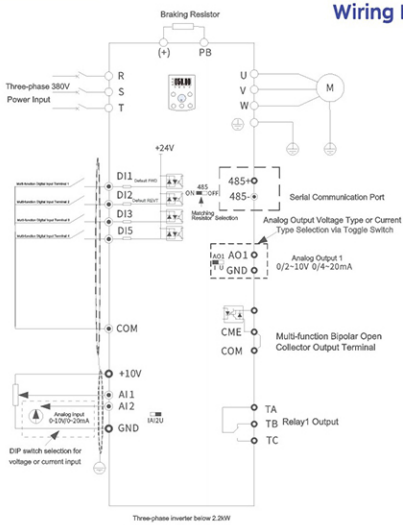
External keyboard without tray installation dimensions

CM530H Inverter Optional Accessories

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

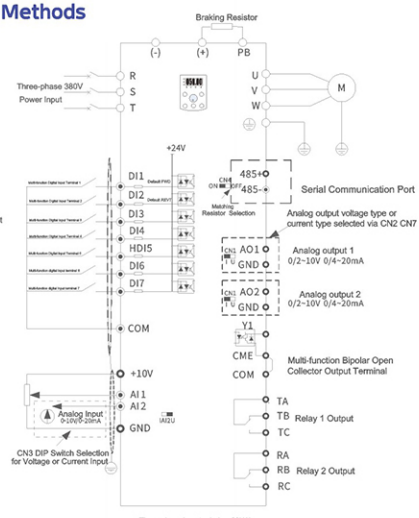
Name	Model	Function	Remarks
External LED operation panel	CM530H-LED	External LED Display and Operation Keyboard	RJ45 Interface
External LCD Operation Panel	CM530-LCD	External LCD Display and Operation Keyboard	RJ45 Interface
External LED2 Operation Panel	CM530H-LED2	External LED Dual Display Operation Keyboard	RJ45 Interface
Keyboard Bracket	CM530-1105-0 (Black)	For Use with Operation Keyboard	Optional

Wiring Methods



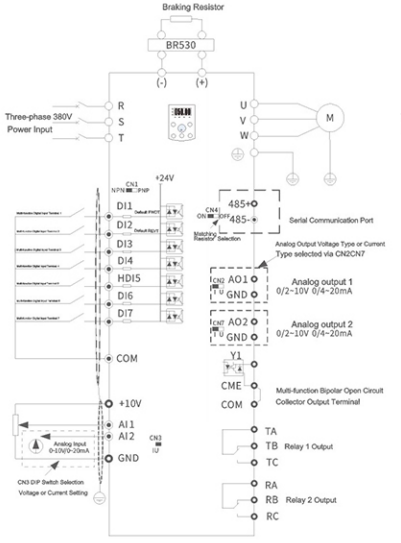
Three-phase inverter below 2.2kW

Note: This diagram applies to CM530H - 0.75 ~ 2.2kW (380V) product wiring



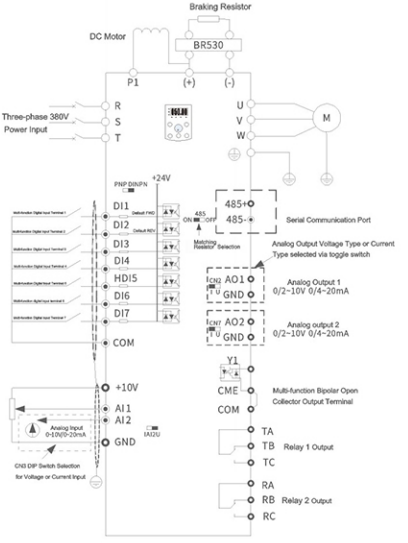
Three-phase inverter below 30kW

Note: The braking unit for the CM530H - 4T series 30 ~ 93kW is an optional feature.



37kW ~ 55kW Three-phase Inverter

Note: CM530H - 4T Series 30 ~ 93kW Braking Unit is an Optional Feature



75kW and Above Three-phase Inverter

Note: CM530H - 4T Series 30kW ~ 93kW Braking Unit is an Optional Feature, if Required, Please Specify When Ordering

75kW ~ 132kW DC Reactor is an Optional Component, 160kW and Above DC Reactor Is a Standard Configuration

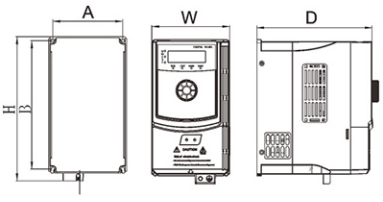
Technical Specifications

	Project	Specifications
Main Control Performance	Maximum Frequency	Vector Control : 0 ~ 600Hz VF Control : 0 ~ 1200Hz
	Carrier Frequency	0.5k ~ 16kHz ; Automatically adjusts carrier frequency based on 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) P Series : 0.5Hz / 120% (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	G-type machine: 150% rated current for 60 seconds; 180% rated current for 5 seconds P-type machine: 120% rated current for 60 seconds; 150% 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 method; four acceleration/deceleration times; acceleration/deceleration time range 0.0 ~ 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	Jog Frequency Range: 0.00Hz ~ 50.00Hz; Jog Acceleration/Deceleration Time: 0.0 ~ 3000.00
	Simple PLC, Multi-Speed Operation	Achieve up to 16-Segment Speed Operation via Built-in PLC or Control Terminals
	Built-in PID	Can Conveniently Achieve Process Control and Closed-loop Control Systems
	Automatic Voltage Adjustment (AVR)	When the Grid Voltage Changes, It Can Automatically Maintain a Constant Output Voltage
	Torque Limiting and Control	"Excavator" Characteristics, 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 Achieve Power-on Safety Testing of Peripheral Equipment Such as Grounding and Short Circuit
	DC Bus Function	Can Achieve the Function of Multiple Inverters Sharing the DC Bus
	JOG Key	Programmable Key : Run / Jog Function Selection
	Textile Swing Frequency Control	Multiple Triangle Wave Frequency Control Functions
	Rapid Current Limiting Function	Built-in Rapid Current Limiting Algorithm, Reduces the Probability of Overcurrent Alarm in the Inverter, Enhances the Overall Anti-Interference Capability
	Timed Control	Timed Control Function: Settable Time Range 0h ~ 65535h
	Standardized Keyboard Extension Cable	The customer can extend the keyboard using a standard network cable.
Operation	Operation Command Channel	Three channels: set by the operation panel, set by control terminals, set by serial communication port. Can be switched through various methods.
	Frequency Source	There are 10 frequency sources: digital set, analog voltage set, analog current set, pulse set, serial port set. Can be switched through various methods.
	Auxiliary Frequency Source	10 types of auxiliary frequency sources. Can flexibly achieve auxiliary frequency fine-tuning, frequency synthesis
	Input Terminals	Equipped with seven digital input terminals, up to nine digital input terminals (AI1, AI2 can be used as DI terminals), compatible with active PNP or NPN input methods in two modes. Analog input terminals, where AI1 can only be used for voltage input, AI2 can be used for voltage or current input. (For extended input, output terminal functions, please select the CM580 series)
	Output Terminals	One digital output terminal (bipolar output), two relay output terminals, two analog output terminals, respectively optional 0 / 4mA ~ 20mA or 0 / 2V ~ 10V, can achieve output of physical quantities such as set frequency, output frequency, speed, etc.
Display and Keys Panel operation	LED display	Display parameters
	LCD Display	Optional, Chinese / English prompt operation content
	LCD Parameter Copy	Using LCD can achieve quick parameter replication
	Key locking and function selection	Implement partial or full key locking, define the scope of action for some keys to prevent accidental operation
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	Usage Environment	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 ℃ ~ + 50 ℃ (Ambient temperature between 40 ℃ ~ 50 ℃, please use at a reduced rating)
	Humidity	Less than 95% RH, no condensation
	Vibration	Less than 5.9 m/s² (0.6g)
	Storage Temperature	- 20℃ ~ + 60℃
	Pollution Degree	2
Product Standards	Product Compliance with Safety Standards	IEC61800-5-1:2007
	Product Compliance with EMC Standards	IEC61800-3:2005

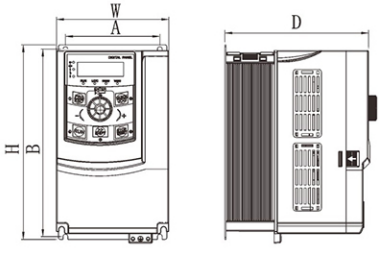
Note: Some power segments do not have hardware input phase loss detection function, please consult the manufacturer for specific models.

Installation Dimensions

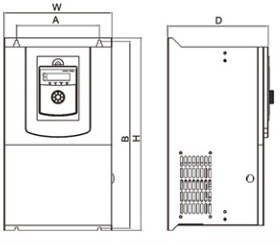
CM530H Inverter Appearance and Mounting Hole Dimensions (mm)



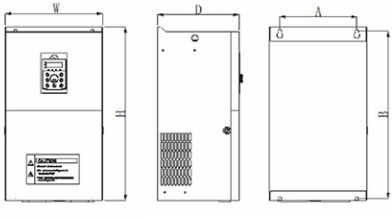
220V (3S) 2.2kW and Below Plastic Enclosure Dimensions and Installation Dimensions Schematic
380V (4T) 15kW and Below Plastic Enclosure Dimensions and Installation Dimensions Schematic



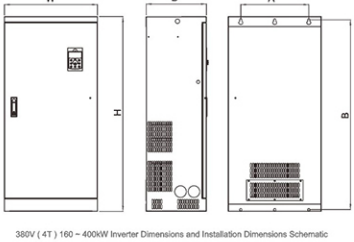
220V (3S) 4.0~5.5kW Plastic Enclosure Dimensions and Installation Dimensions Schematic



380V (4T) 18 ~ 37kW Inverter Dimensions and Installation Dimensions Schematic



380V (4T) 45 ~ 132kW Inverter Dimensions and Installation Dimensions Schematic



380V (4T) 160 ~ 400kW Inverter Dimensions and Installation Dimensions Schematic

380V (4T) 450 ~ 800kW Inverter Dimensions and Installation Dimensions Schematic

Model Description: If the product model ends with "B", it indicates that the braking unit is standard equipment. Please specify this when placing an order if required.

CM530H External Dimensions and Installation Hole Dimensions

Model	Mounting holes		Wall Penetration Opening Dimensions			Installation Hole Diameter (mm)
	A(mm)	B(mm)	H(mm)	W(mm)	D(mm)	
CM530H-C3SR4G	78	162	172.5	96	141	φ4.5
CM530H-C3SR75G						
CM530H-C3S1R5G						
CM530H-C3S2R2GB	100	199	206	119	154	φ5
CM530H-3S4R0GB	120	260	268	139	155.5	φ6
CM530H-3S5R5GB						
CM530H-B4TR75GB	86	158	172.5	96	141	φ4.5
CM530H-B4T1R5GB/2R2PB						
CM530H-C4T2R2GB/4R0PB						
CM530H-C4T4R0GB/5R5PB	100	199	206	119	154	φ5
CM530H-C4T5R5GB/7R5PB	120	260	268	139	155.5	φ5
CM530H-C4T7R5GB/9R0PB						
CM530H-D4T9R0GB/011PB	150	314	324	188	188	φ6
CM530H-D4T011GB/015PB						
CM530H-D4T015GB/018PB						
CM530H-4T018GB/022PB	165	372	383	215	200	φ6
CM530H-4T022GB/030PB						
CM530H-4T030GB/037PB CM530H-4T030G/037P	200	436	449	260	209	φ7
CM530H-4T037GB/045PB CM530H-4T037G/045P						
CM530H-4T045GB/055PB CM530H-4T045G/055P	245	531	550	310	260	φ10
CM530H-4T055GB/075PB CM530H-4T055G/075P						
CM530H-4T075GB/093PB CM530H-4T075G/093P	280	561	580	350	267	φ10
CM530H-4T093GB/110PB CM530H-4T093G/110P						
CM530H-4T110G/132P	320	695	715	430	295	φ10
CM530H-4T132G/160P						
CM530H-4T160G/185P	360	972	1000	470	318	φ12
CM530H-4T185G/200P						
CM530H-4T200G/220P	380	1060	1088	520	338	φ12
CM530H-4T220G/250P						
CM530H-4T250G/280P	440	1190	1220	650	330	φ12
CM530H-4T280G/315P						
CM530H-4T315G/355P	500	1255	1290	740	420	φ14
CM530H-4T355G/400P						
CM530H-4T400G/450P						
CM530H-4T450G/500P	–	–	1800	1060	500	-
CM530H-4T500G/550P						
CM530H-4T550G/630P						
CM530H-4T630G						
CM530H-4T710G	–	–	2200	1200	600	-
CM530H-4T800G						

The appearance, color, and parameters of the products listed in this book are for reference only. The actual products provided by the company shall prevail.
The company reserves the right to modify or cancel the parameters and information in this book at any time without prior notice.
The company reserves the final right of interpretation for this manual.

Official Public Account

Official Website

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