

AC Motor Drive

RM6S Compact Series 125W~1.5kW



All-around Performance Extraordinary Versatility

The RM6S series is centered on its lightweight appearance and user-friendly interface. The best selection of various speed control application for single-phase electric power supply, small or fractional horsepower.

RM6S AC motor drives can be placed in a control panel or mounted on walls, meeting any requirements you may have. When paired with high efficiency motors, RM6S inverters can elevate the efficiency of the whole system; for example, an IE3 motor paired with our RM6S inverter is equivalent to an IE4 motor.



RM6S2 / RM6S3



RM6S1



Model	RM6S1	RM6S2	RM6S3
Maximum Applicable Motor (kW)	0.125~0.2kW	0.4~1.5kW	0.4~1.5kW
Power Source (50/60Hz)	Single phase 100~120V Single phase 200~240V	Single phase 100~120V Single phase 200~240V	Three phase 200~240V Three phase 380~480V
Installation	Panel	Wall Mounting	Wall Mounting
Keypad	Standard	Optional	Optional
EMI Filter	Optional		
Product Compliance	UL 508C , UL 61800-5-1 , CSA C22.2 No. 274-17		

3 in 1 Motor Control

RM6S series includes sensorless vector control technology which can precisely control motor. In addition to the induction motor, it is also applicable to IPM and SPM motors.

	V/F Control	IM* Sensorless vector control	PM* Sensorless vector control
Speed control range	1:40	1:120	1:100
Speed control accuracy	± 3%	± 0.2%	± 0.2%
Speed response	3Hz	>10Hz	>10Hz
Start torque	150% @ 3Hz	200% @ 1Hz	100% @ 2% Rated speed

(*RM6S1 doesn't support vector control.)

01 Product Features

Control Features

1. 16 sections speed, jog command, multiple acceleration/deceleration rates, can be widely used in many industries.
2. Built-in RS-485 Modbus RTU communication, capable of connecting multiple inverters and control them as a system.
3. Speed control is up to 600Hz, wider range than traditional choppers.
4. Constant torque control of IM or PM motor, high torque value at low speed.
5. With a chopper, you need to increase the motor capacity in order to reach maximum speed range; but with torque control feature of inverters, you can get the same result without doing so. This will make you more competitive with lower cost, and more eco-friendly as well.

User-friendly

1. In addition to the built-in control panel, the keypad can be extended simply with an extension cable and operated as an external device to meet different requirements.
2. Either built-in or external Pot is available to control the motor's speed without parameter adjustment.
3. The keypad's SPEC button can be programmed up to 60 functions (eg. FWD/REV, speed control), convenient for on-site operation.

Safe to Use

1. UL approval and CE certified design, product stability assured.
2. Equipped with PTC thermistor for motor overheat protection and overheat warnings. A trip point can be set.
3. Inverter's temperature is monitored automatically and can be shown on the keypad. Warnings show when the inverter is overheated and the inverter trips according to the setting.
4. Recording drive running hours and accumulated power-on time for maintenance planning.
5. Optional EMI filter is available to reduce conduction interference.

Compact design and precise performance

01 RM6S Series VS AC Chopper

RM6S Series

Sinusoidal PWM Control

Optimum Torque

Maximum 600Hz Output

Optimum Efficiency

Available

VS

Traditional AC Chopper

Non- Sinusoidal Output

Low Start Torque

Limited Range

Low Efficiency

Unavailable

Output

Torque

Speed Control Range

Efficiency

Parallel Control

Torque Output

Field Applications

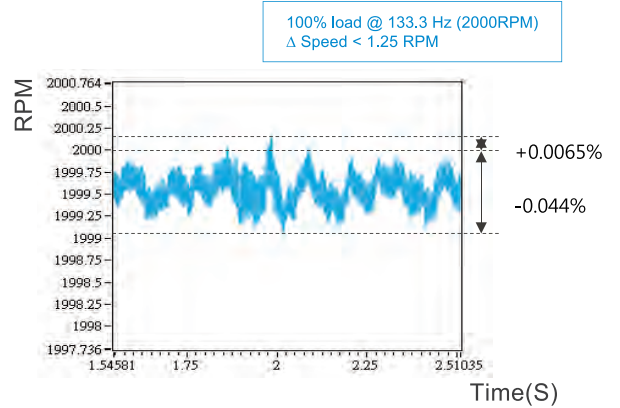
HVAC – Fans, pumps, ventilation fans, etc.

Manufacturing equipment – food packaging, pharmaceutical production, conveyor, feeder, vibration, industrial grinding, packaging machine, woodworking.



High Speed Accuracy at Steady State

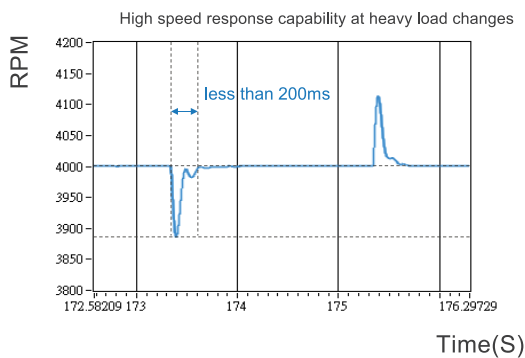
Speed deviation at steady state can be lower than 0.05%, which is suitable for high-precision applications.



Motor: permanent magnet motor
 Control Condition: Sensorless

High Torque Output

With sensorless vector control technology, the motor can reach 200% rated torque when running at extremely low speeds. It is suitable for equipment with high starting torque and heavy load operation.

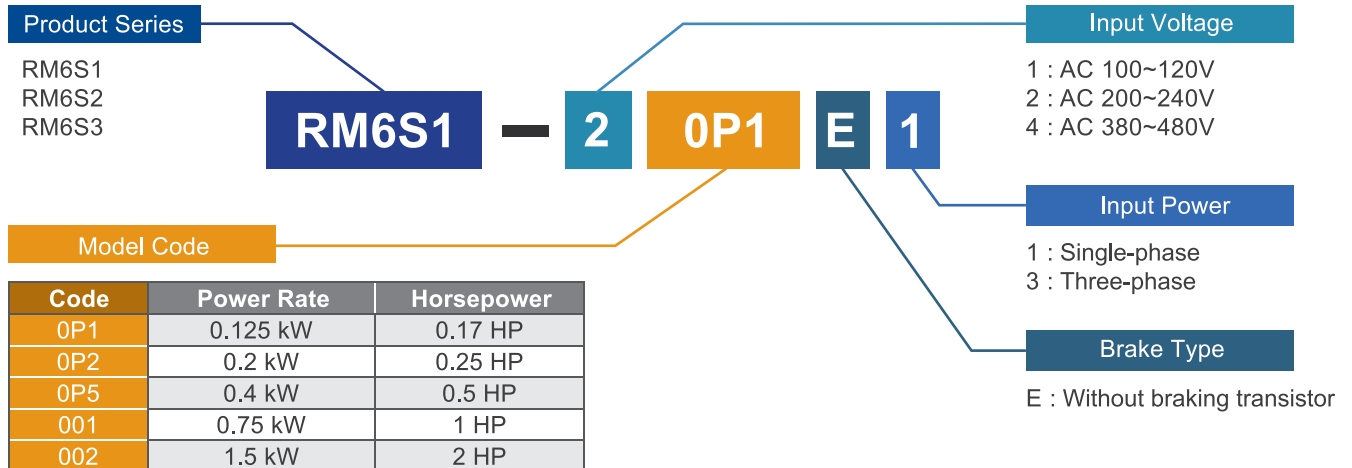


Motor: permanent magnet motor
 Control Condition: Sensorless

Swift Compensation of Speed under Variable Load

Motor speed will suddenly decrease as load increases, this reduces the quality of processing. With high speed response capability, inverter can drive motor back to the setting frequency in short time.

04 Model Number Scheme



05 Specifications

RM6S1 / Single Phase Power / Panel Type

Model Name (RM6S1-□□□□E1)	10P1*	20P1	20P2
Maximum Applicable Motor (HP/kW)	0.17 / 0.125	0.17 / 0.125	0.25 / 0.2
Rated Output Capacity(kVA)	0.4	0.4	0.6
Rated Output Current(A)	1	1	1.5
Maximum Output Voltage(V)	Three phase 200~240V		
Range of Output Frequency(Hz)	0.1~400.00Hz		
Power Source(φ, V, Hz)	Single phase 100~120V 50/60 Hz	Single phase 200~240V 50/60 Hz	
Input Current(A)	4	2	3
Permissible AC Power Source Fluctuation	85V~132V 50 / 60 Hz / ± 5 %	170V~264V 50 / 60 Hz / ± 5%	
Overload Protection	150% of drive rated output current for 1 min		
Product Compliance	cUL (UL508C , CSA C22.2 NO.274-17)		
Cooling Method	Natural cooling		
Protective Structure	IP20		

*10P1 is under development.

RM6S2 / Single Phase Power / Wall Mounted Type

Model Name (RM6S2-□□□□E1)	10P5	1001	1002	20P5	2001	2002
Maximum Applicable Motor (HP/kW)	0.5 / 0.4	1 / 0.75	2 / 1.5	0.5 / 0.4	1 / 0.75	2 / 1.5
Rated Output Capacity(kVA)	0.95	1.6	2.6	1.14	1.71	2.86
Rated Output Current(A)	2.5	4.2	6.8	3	4.5	7.5
Maximum Output Voltage(V)	Three phase 200~240V					
Range of Output Frequency(Hz)	0.1~600.00Hz					
Power Source(φ, V, Hz)	Single phase 100~120V 50 / 60 Hz			Single phase 200~240V 50 / 60 Hz		
Input Current(A)	9.9	16.7	27	6	8.9	14.8
Permissible AC Power Source Fluctuation	85V~132V 50/60 Hz / ± 5%			170V~264V 50/60 Hz / ± 5%		
Overload Protection	150% of drive rated output current for 1 min					
Product Compliance	CE (LVD EN61800-5-1 , EMC 61800-3) , cUL (UL508C , CSA C22.2 NO.274-17)					
Cooling Method	Natural cooling		Fan cooling	Natural cooling		Fan cooling
Protective Structure	IP20					

RM6S3 / Three Phase Power / Wall Mounted Type

Model Name(RM6S3-□□□□E3)	20P5	2001	2002	40P5	4001	4002
Maximum Applicable Motor (HP/kW)	0.5 / 0.4	1 / 0.75	2 / 1.5	0.5 / 0.4	1 / 0.75	2 / 1.5
Rated Output Capacity(kVA)	1.14	1.71	2.86	0.99	1.65	2.63
Rated Output Current(A)	3	4.5	7.5	1.5	2.5	4
Maximum Output Voltage(V)	Three phase 200~240V			Three phase 380~480V		
Range of Output Frequency(Hz)	0.1~600.00Hz					
Power Source(φ, V, Hz)	Three phase 200~240V , 50 / 60Hz			Three phase 380~480V , 50 / 60Hz		
Input Current(A)	3.4	5.2	8.6	1.7	2.9	4.6
Permissible AC Power Source Fluctuation	170V~264V 50 / 60 Hz / ± 5%			323~528V 50 / 60Hz / ± 5%		
Overload Protection	150% of drive rated output current for 1 min					
Product Compliance	CE (LVD EN61800-5-1 , EMC 61800-3) , cUL (UL508C , CSA C22.2 NO.274-17)*					
Cooling Method	Natural cooling		Fan cooling	Natural cooling		Fan cooling
Protective Structure	IP20					

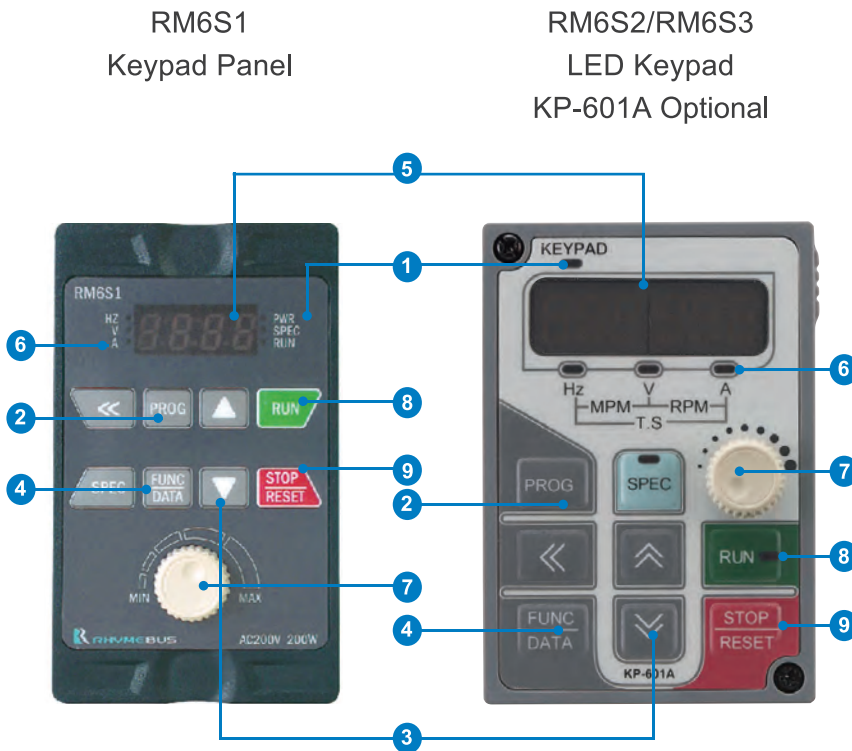
*400V series is under application.

06 General Specifications

Control Characteristics	Control Method	Sinusoidal PWM control (V/F control ,IM sensorless vector control*,PM sensorless vector control*). Switching frequency: 800Hz~16kHz.
	Range of Frequency Setting	RM6S1 : 0.1~400.00Hz , RM6S2/S3 : 0.1~600.00Hz
	Resolution of Frequency Setting	Keypad Panel : 0.01Hz Analog signal : 0.06Hz/60Hz
	Resolution of Output Frequency	0.01Hz
	Overload Protection	150% of drive rated output current for 1 min
	DC Braking	Time of DC braking after stop/before start: 0~60.0sec, DC braking frequency at stop: 0.1~60Hz Capability of DC braking: 0~150% of rated current
	Braking Torque	Approximately 20%
	Acceleration/Deceleration Time	0sec (coast to stop), 0.0~3200.0sec (independent setting of the acceleration/deceleration).
	V/F Pattern	V/F pattern (2 V/F points). 1.5 th , 1.7 th power and square curve V/F pattern can be adjusted independently by analog input signal.
	Other Functions	slip compensation, auto-torque compensation, auto-adjustment for output voltage stability, auto-operation for energy-saving, auto-adjustment of switching frequency, restart after instantaneous power failure, speed tracing, DC braking, counter, Modbus (RS-485), jump frequency, holding frequency, upper and lower limits output frequency, 16 sections speed*, acceleration/deceleration switch, S-curve acceleration/deceleration, temperature control, copying parameters
Operation Characteristics	Frequency Setting Signal	Control panel (with keypad) : ▲ , ▼ Analog signal: DC 0~10V (RM6S1), DC 0~10V/4~20mA (RM6S2/S3) Digital signal: jog operation, 8 section speeds (RM6S1), 16 section speeds (RM6S2/S3) Modbus (RS-485) communication
	Operation Setting Signal	Control panel (with keypad): RUN, STOP Digital signal: FWD/REV control Modbus (RS-485) communication
	Multi-Function Inputs	3 sets programmable input: X1-X3(RM6S1), 6 sets programmable input X1-X6(RM6S2/S3)
	Analog Inputs	1 set analog input: VI (RM6S1: DC 0~10V, RM6S2/S3: DC 0~10V/4~20mA) Analog filter, analog frequency dead band, adjustable gain bias
	Multi-Function Outputs	RM6S1: 1 set programmable output: Y1/COM (48V/50mA) RM6S2 & RM6S3: 1 set programmable output: Ta/Tb/Tc, (AC250V/0.5A · COS θ =0.3)
Protections	Fault Protection	Drive over current (OC, include short circuit protection), Motor overload (OL), Drive overload (OL1), System overload (OLO), Over voltage (OE), Under voltage (LE.LE1), Drive overheat (OH.OHt), direction command error (dFt), External fault (EF), Drive output interruption (bb), Coast to stop (Fr), Keypad interruption during copy (PA dF), different software versions of drive copy fault (wrF), Keypad cable trip(Err_00, Err_01), Modbus communication overtime (Cot)
Environment	Atmosphere	Non-corrosive or non-conductive, or non-explosive gas or liquid, and non-dusty
	Surrounding Temperature	-10℃ ~ +50℃ (Non-condensing and non-condensing)
	Storage Temperature	-25℃ ~ +70℃
	Relative Humidity	95% RH or less (Non-condensing atmosphere)
	Vibration	Less than 5.9m/sec ² (0.6G)
Altitude	Less than 1000m (3280 ft.)	

*Items are not available for RM6S1

07 Introduction



1. Light ON:
Primary frequency command is set by keypad or UP/DOWN terminal.
2. Light OFF:
Primary frequency command is set by multi-function input terminal.

1. Enter the function setting mode
2. Back to the monitor mode

- 3 Adjust functions and parameters

1. Enter the parameter setting mode
2. Back to the function setting mode
3. Switch the monitor mode

- 5 Display panel

- 6 Unit indicator

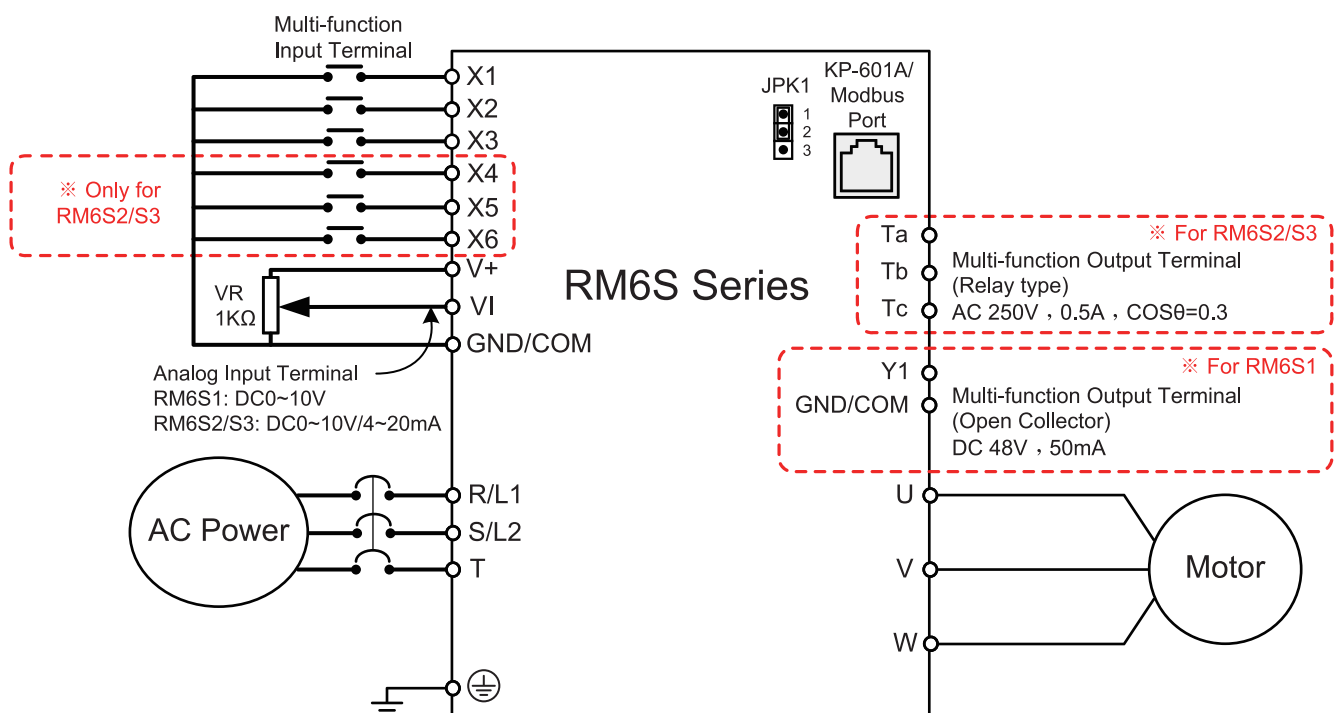
- 7 Pot knob

Drive start key :


1. Blinking: accelerating/decelerating
2. Light on : constant speed
3. Light off : stops

1. Drive stops
(Cut off the output frequency of drive)
2. Fault reset

08 Control Terminal Circuit Wiring Diagram



Main Circuit Terminals

Type	Symbol	Description
AC Power Source Input Terminals	RM6S1 RM6S2	L1,L2 Single-phase; sinusoidal power source input terminals. 100V~120V ; 200V~240V (50/60Hz)
	RM6S3	R,S,T Three-phase; sinusoidal power source input terminals. 200V~240V ; 380~480V (50/60Hz)
Drive Outputs to Motor Terminals	U,V,W	Output three-phase variable frequency, variable voltage, to motor.
Grounding Terminal		Ground the drive in compliance with the NEC standard or local electrical Code.

Control Terminals

Type	Symbol	Function	Description	
Multi-Function Input Terminals	RM6S1 RM6S2/S3	X1	input terminal 1	
		X2	input terminal 2	
		X3	input terminal 3	
		X4	input terminal 4	
		X5	input terminal 5	
		X6	input terminal 6	
Multi-Function Output Terminals	RM6S1	Y1	Multi-function output terminals (open collector type)	The functions are set by parameters Max Capacity: DC48V, 50mA Max
		COM		Common of output/input control signal
	RM6S2 RM6S3	Ta	Multi-function output terminals (relay type)	Ta : N.O. (contact a), Tb : N.C. (contact b) The function is set by parameter. Capacity : AC250V, 0.5A Max, cosθ=0.3
		Tb		
		Tc		
Control Power	V+	Control power terminal	Output:DC+12V Max current: 20mA	
	VI	Analog input signal terminal	RM6S1: DC 0~10V RM6S2/S3: DC 0~10V/4~20mA	
	GND	Common terminal	Common of input terminals	

Modbus Port(RJ-45-8P8C)

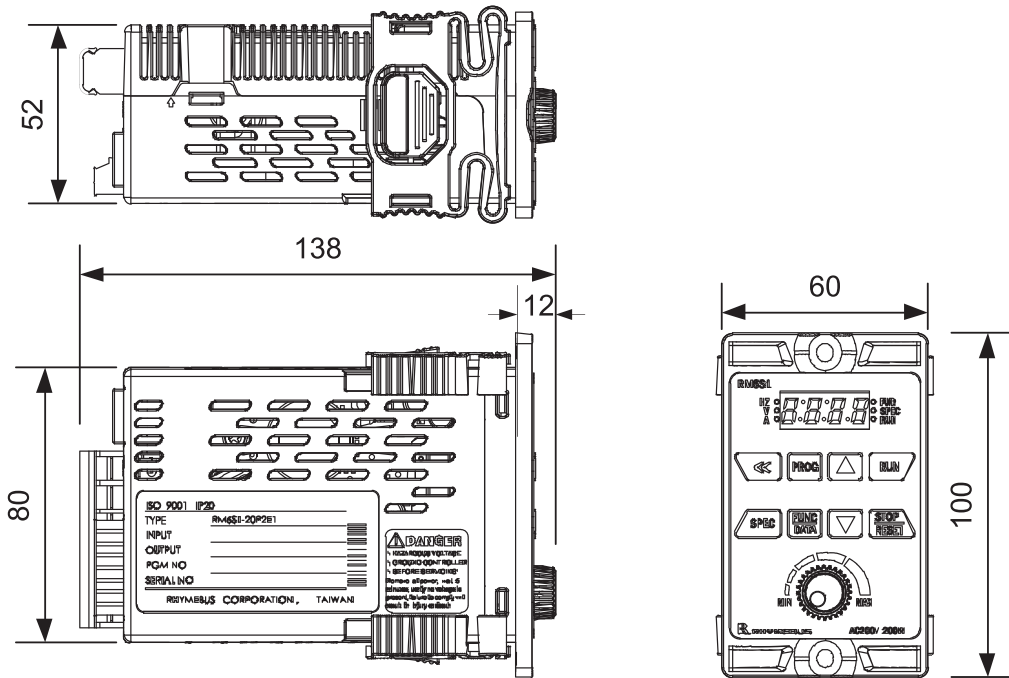
Type	Symbol	Function	Description
Modbus (RS-485)	1	Communication transmission terminal (DX+)	Modbus (RS-485) communication uses pin1, 2.
	2	Communication transmission terminal (DX-)	
	3	KP power terminal (+13V)	Only for KP 601A linking
	4	KP auto detection terminal	Only for KP 601A linking
	5,6	Reserved	Reserved
	7,8	KP power common terminal (0V)	Only for KP 601A linking

Note1: The terminal resistor (100Ω) is set by JPK1 (default setting: ON).

Note2: The cable of KP-601A should be CAT-5e 24AWG or above (the longest length is 100 meters).

09 Dimensions

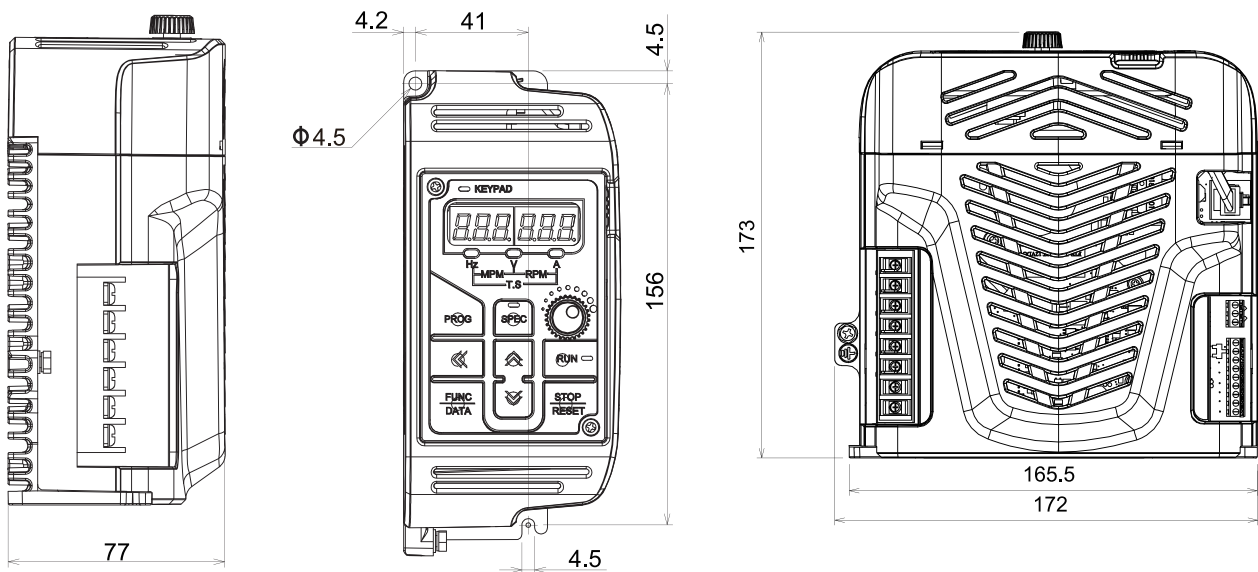
RM6S1



unit : mm

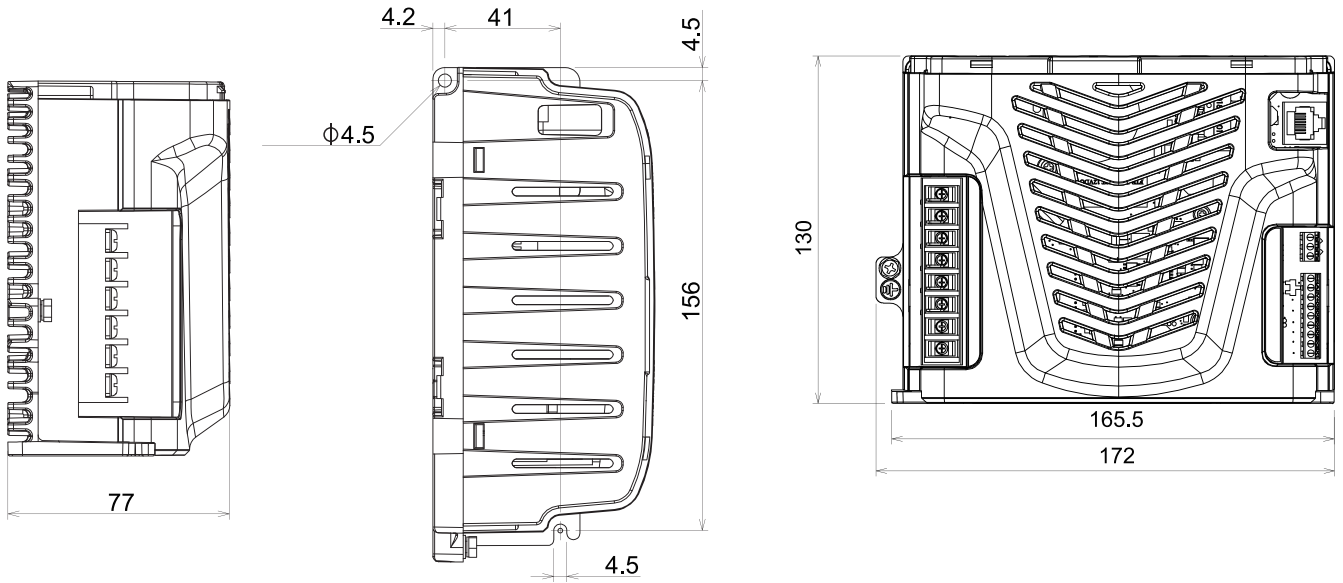
RM6S2 / RM6S3

Keypad Included



unit : mm

Keypad Excluded



unit : mm

10 EMC Filter Recommendations

Drive Model Number	EMC Filter Type
RM6S1-10P1E1	FN2090-4-06
RM6S1-20P1E1	FN2090-4-06
RM6S1-20P2E1	FN2090-4-06
RM6S2-10P5E1	FN2090-10-06
RM6S2-1001E1	FN2090-20-06
RM6S2-1002E1	FN2090-30-08
RM6S2-20P5E1	FN2090-6-06
RM6S2-2001E1	FN2090-10-06
RM6S2-2002E1	FN2090-20-06
RM6S3-20P5E3	FN3270H-10-44
RM6S3-2001E3	FN3270H-10-44
RM6S3-2002E3	FN3270H-10-44
RM6S3-40P5E3	FN3270H-10-44
RM6S3-4001E3	FN3270H-10-44
RM6S3-4002E3	FN3270H-10-44



Green Tech

科技創未來 · 打造綠生活 **Green Life**

Small but complete in every detail.

Rhymebus' RM6S inverter is complete with multiple functions packed in a small case, providing you a high level of versatility.

It's like a sparrow, inconspicuous but reflects changes in the environment. Nature Forever Society has made March 20th World Sparrow Day, in promotion of environmental protection.

In correspondence with WSD, Rhymebus has spent decades refining manufacturing techniques, reducing energy consumption, and minimizing sizes while maximizing efficiency in hopes of caring Mother Nature.



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