

# LOW VOLTAGE INVERTER

# FD200

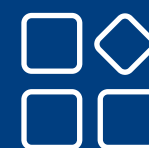


The FD200 series uses DSP control system as the platform, current vector control technology, and multiple protection methods, which can be applied to asynchronous motors to provide excellent driving performance.

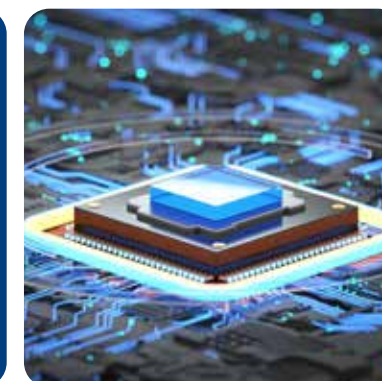
## ◆ Products features



Book style structural design



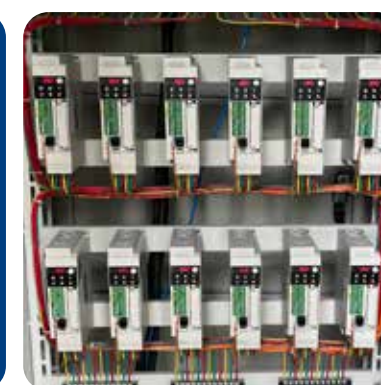
Rich functionality



Widely applicable



Security protection



## ◆ Performance improvement

Advanced motor drive technology enables efficient operation of synchronous and asynchronous motors



### Rich motor identification methods

Efficient and fast motor parameter identification algorithm, supporting multiple self-learning methods, precise and consistent dynamic and static learning, without the need for manual adjustment, fully leveraging driving performance



### Reliable braking performance

Integrated with various braking methods such as DC, magnetic flux, and short circuit, it can achieve safe and fast stopping of large inertia loads



### No impact velocity tracking

The software automatically searches for motor speed and direction, enabling smooth and shock free starting of the motor at any speed



### Stable low-frequency heavy-duty performance

In closed-loop vector mode, the low-frequency torque is high and the torque ripple is small, which can achieve stable load operation at extremely low speeds of 0.01Hz. The torque and speed modes can be smoothly switched online



### Excellent motor control algorithm

New magnetic field oriented control algorithm with superior low-frequency and heavy-duty performance, improving torque control accuracy, New type of speed observer reduces motor parameter dependence and improves speed control stability

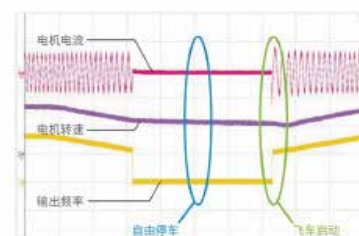


### Accurate torque limitation

The characteristic of "excavator" is to limit torque output through high-precision torque limiting function, which can safely and effectively protect mechanical equipment in case of sudden load changes

### Full band speed tracking

Full frequency speed tracking technology, smooth and impact free, effectively reducing motor and mechanical impacts, facilitating process implementation.



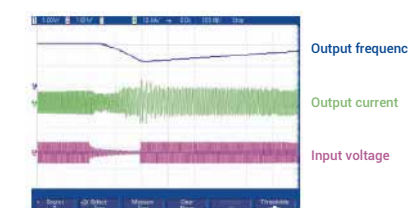
### Integrating speed, torque, and position control

#### More precise and powerful motor torque, speed, and position control capabilities

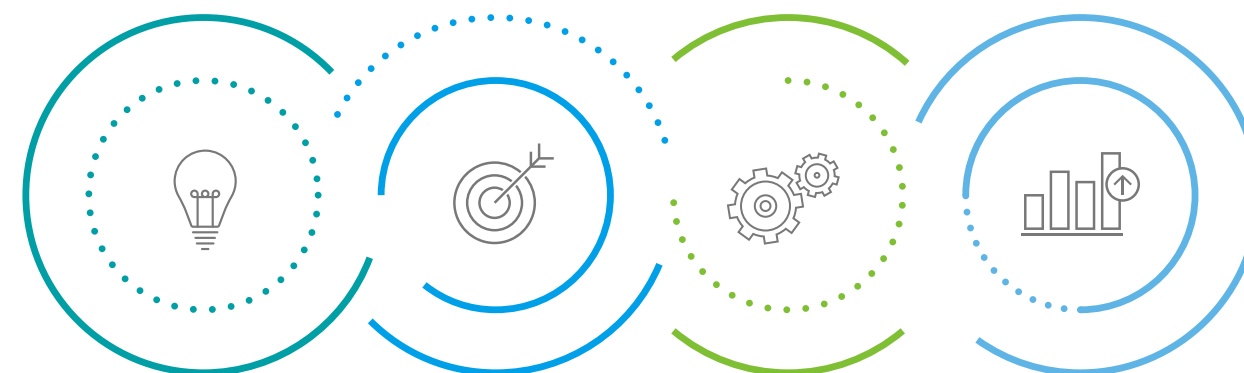
- (1) Position control performance - suitable for mechanical positioning applications
- (2) Torque and speed control performance - ensuring smooth mechanical operation, rapid response, and small torque fluctuations

### Instant stop automatic frequency reduction function

When the power grid suddenly drops, the frequency converter can operate without stopping due to the feedback energy within an effective time, especially suitable for situations with high requirements for equipment operation continuity, such as chemical fiber and textile production lines.



## ◆ Provide multiple braking methods for quick parking



### Energy consumption braking

High braking torque and fast braking speed.  
Suitable for frequent braking of large inertia loads.  
The braking unit and braking resistor must be configured.

### DC braking

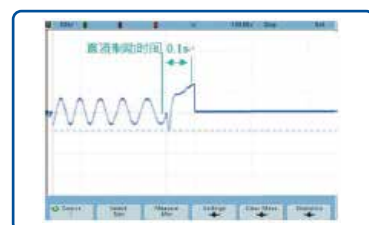
Suitable for situations where the motor is running freely after braking and then starting; Suitable for situations where torque output needs to be maintained after braking to zero speed.  
Not suitable for frequent or rapid braking of large inertia loads; Not suitable for braking when the motor is running at high speed.

### Magnetic flux braking

No need to configure the braking unit and braking resistor, it can brake quickly. Suitable for fast parking situations with infrequent braking and high inertia loads. Not suitable for frequent braking of large inertia loads. (Energy is consumed on the stator, and the cooling effect of the motor is better than that of DC braking)

### Short circuit braking

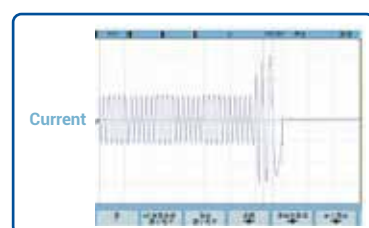
No need to configure the braking unit and braking resistor, it can brake quickly. Only suitable for permanent magnet synchronous motors in fast parking or braking before starting free running permanent magnet synchronous motors. Not suitable for frequent braking of large inertia loads.



The current waveform of asynchronous motor space voltage vector control mode with 100% braking current, DC braking starting frequency of 10Hz, and braking time of 0.1s.



Short circuit braking waveform of permanent magnet synchronous motor, acceleration time of 0.1s, deceleration time of 0.4s.  
(Motor rated frequency 100Hz, short-circuit braking frequency 20Hz, braking time 0.5s)



Asynchronous motor space voltage vector control mode operating frequency 50Hz, with 100% rated load deceleration time of 0.1s, magnetic flux braking current waveform.

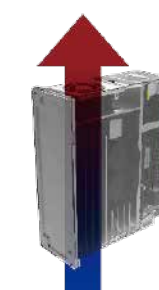
## Compact compact structure design

The product volume is miniaturized, and high power density can be installed side by side, effectively reducing the cabinet space and supporting wall mounting, rail mounting, and side wall installation



### Mini design

Multiple machines can be installed side by side, Save system integration space



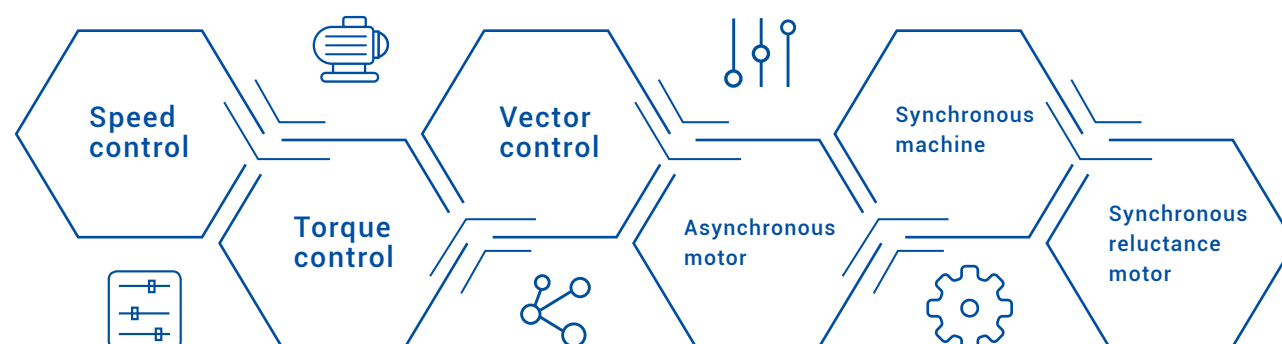
Independent air duct design



Reduce volume by more than 30%

## Integrating synchronous and asynchronous motor drives

Can drive various types of motors: direct drive motor, permanent magnet synchronous motor, electric spindle, synchronous reluctance motor, ordinary asynchronous motor, variable frequency motor, servo motor, etc



## Flexible installation methods



DIN-Rail Mounting  
(Optional configuration)



Wall mounted installation

Technical specifications

Item	Technical Index	Specification
Input	Input voltage	AC 1PH 220V (-15%) ~240V (+10%) AC 3PH 380V (-15%) ~440V (+10%)
	Input frequency	47~63Hz
Output	Output voltage	0~Input voltage
	Output current	Refer to "Product ratings"
	Output power	Refer to "Product ratings"
	Output frequency	0~400Hz
Technical control performance	Control mode	Space voltage vector control, sensorless vector control (SVC), and vector control with sensor feedback (FVC)
	Motor type	Asynchronous motor (AM) and permanent magnetic synchronous motor (SM)
	Speed regulation ratio	For AM1: 1:200 (SVC); for SM1, 1:20 (SVC); 1:1000 (FVC)
	Speed control precision	± 0.2% (SVC); ± 0.02% (FVC)
	Speed fluctuation	± 0.3% (SVC)
	Torque response	< 20ms (SVC); < 10ms (FVC)
	Torque control precision	10% (SVC); 5% (FVC)
	Starting torque	For AMs: 0.25Hz/150% (SVC) For SMs: 2.5Hz/150% (SVC) 0Hz/200% (FVC)
Running control performance	Overload capacity	150% for 1 min (every 5 mins); 180% for 10s; 200% for 1s
	Frequency setting method	Settings can be implemented through digital, analog, pulse frequency, multi-step speed running, simple PLC, PID communication, communication and so on. Settings can be combined and the setting channels can be switched.
	Automatic voltage regulation	The output voltage can be kept constant although the grid voltage changes.
	Fault protection	More than 30 protection functions, such as protection against overcurrent, overvoltage, undervoltage, overtemperature, phase loss, and overload
	Speed tracking restart	Used to implement impact-free smooth startup for rotating motors

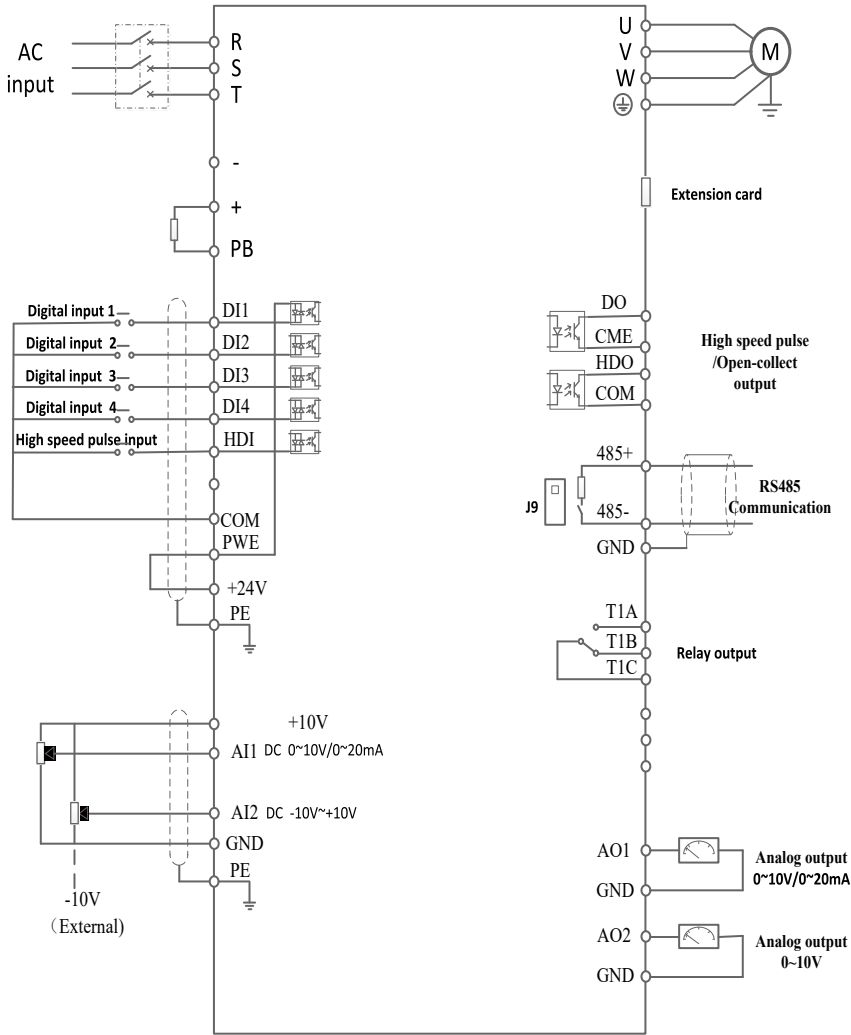
Item	Technical Index	Specification
Peripheral interface	Terminal analog input resolution	No more than 20mV
	Terminal digital input resolution	No more than 20mV
	Analog input	2 channels: AI1: 0(2)~10V/0(4)~20mA; AI2: -10~10V
	Analog output	2 channels; AO1: 0(2)~10V/0(4)~20mA
	Digital input	4 channels regular input; max. frequency: 1kHz; internal impedance: 3.3kΩ 1 channels high-speed input; max. frequency: 50kHz; supporting quadrature encoder input; with speed measurement function
	Digital output	1 high-speed pulse output; max. frequency: 50kHz 1 DO terminal open collector output
	Relay output	1 programmable relay outputs T1A: NO; T1B: NC; T1C: common Contact capacity: 3A/AC250V, 1A/DC30V
	Extended interfaces	3 extended interfaces: SLOT1 Supporting PG cards, communication cards, I/O cards and so on
Other	Mounting method	Wall mounting, Guide rail (optional below 380V/5.5KW), side mounted (optional)
	Temperature of running environment	-10 – +50°C; derating is required if the ambient temperature exceeds 40°C
	Protection grade	IP20
	Pollution degree	Degree 2
	Cooling method	Forced air cooling

◇ Product Model Description

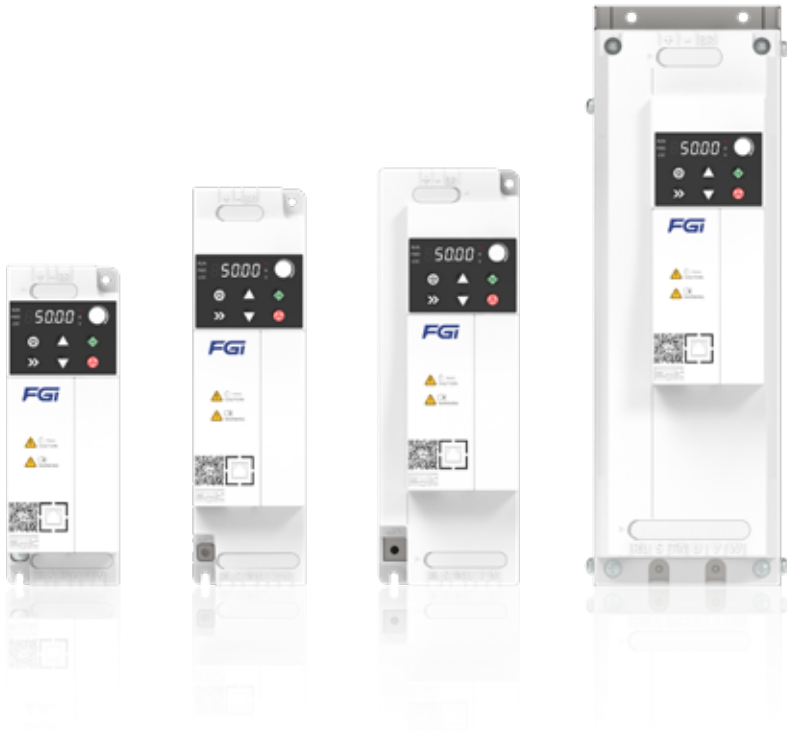
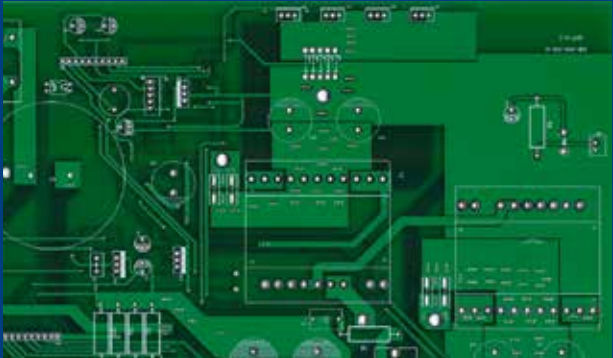
**FD200 – 004G – 4 – B**

①                      ②                      ③                      ④

①	Series code	FD200: FD200 series dexterous VFD
②	Rated power	004G: Constant torque load 4kW
③	Voltage class	4: AC 3PH 380V (-15%) ~440V (+10%) 2: AC 3PH 220V (-15%) ~240V (+10%) S2: AC 1PH 220V (-15%) ~240V (+10%)
④	DBU configuration	B: Built-in DBU



◇ System wiring

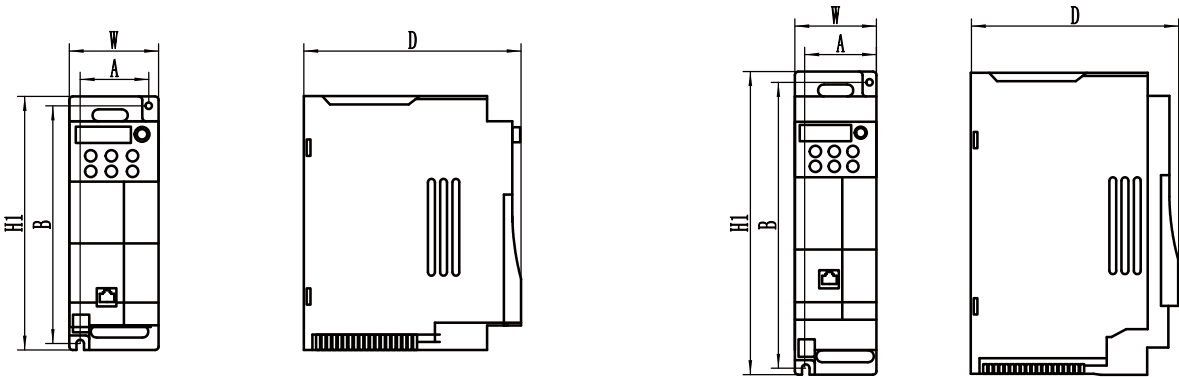




◇ Selection Guide

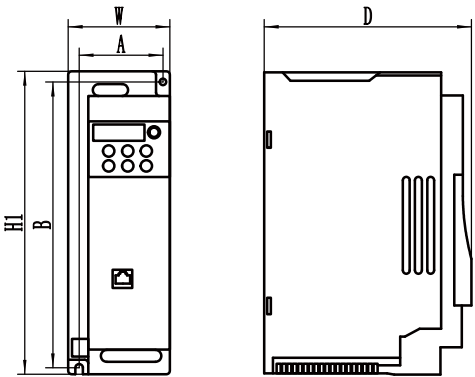
Size code	model	Voltage level	Output power (kW)	Input current (A)	Output current (A)	Carrier frequency (kHz)
A1	FD200-0R4G-S2	Single phase 220V	0.4	6.5	2.5	1~15(4)
A1	FD200-0R7G-S2		0.75	9.3	4.2	1~15(4)
A1	FD200-1R5G-S2		1.5	15.7	7.5	1~15(4)
A1	FD200-2R2G-S2		2.2	24	10	1~15(4)
A1	FD200-0R4G-2	Three phase 220V	0.4	3.7	2.5	1~15(4)
A1	FD200-0R7G-2		0.75	5	4.2	1~15(4)
A1	FD200-1R5G-2		1.5	7.7	7.5	1~15(4)
A1	FD200-2R2G-2		2.2	11	10	1~15(4)
A1	FD200-0R7G-4	Three phase 380V	0.75	3.4	2.5	1~15(4)
A1	FD200-1R5G-4		1.5	5.0	4.2	1~15(4)
A1	FD200-2R2G-4		2.2	5.8	5.5	1~15(4)
A1	FD200-004G-4		4	13.5	9.5	1~15(4)
A2	FD200-5R5G-4		5.5	17	14	1~15(4)
A3	FD200-7R5G-4		7.5	25	18.5	1~15(4)
A3	FD200-011G-4		11	32	25	1~15(4)
A3	FD200-015G-4		15	40	32	15

◇ Installation dimensions



A1 Installation dimension diagram

A2 Installation dimension diagram



A3 Installation dimension diagram

Size code	model	External dimensions			Hole position			Aperture	Screw
		W	H1	D	A1	A2	B1		
A1	FD200-0R7G-4	62	172.9	146	48.5	159.4		Φ5	M4
A1	FD200-1R5G-4	62	172.9	146	48.5	159.4		Φ5	M4
A1	FD200-2R2G-4	62	172.9	146	48.5	159.4		Φ5	M4
A2	FD200-004G-4	60	212	146	46.5	202		Φ5	M4
A2	FD200-5R5G-4	60	212	146	46.5	202		Φ5	M4
A3	FD200-7R5G-4	75	224	153	62	224		Φ5	M4
A3	FD200-011G-4	75	224	153	62	224		Φ5	M4
A3	FD200-015G-4	75	224	153	62	224		Φ5	M4

◇ Optional external keyboard  
& keyboard compartment

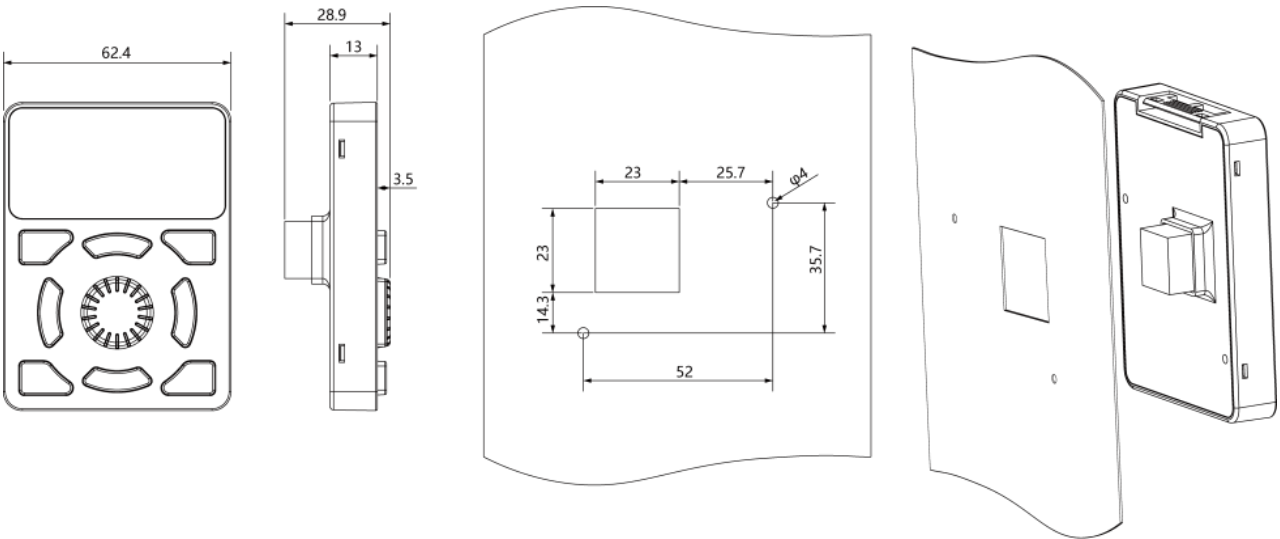


Figure B.1 Keypad structure diagram

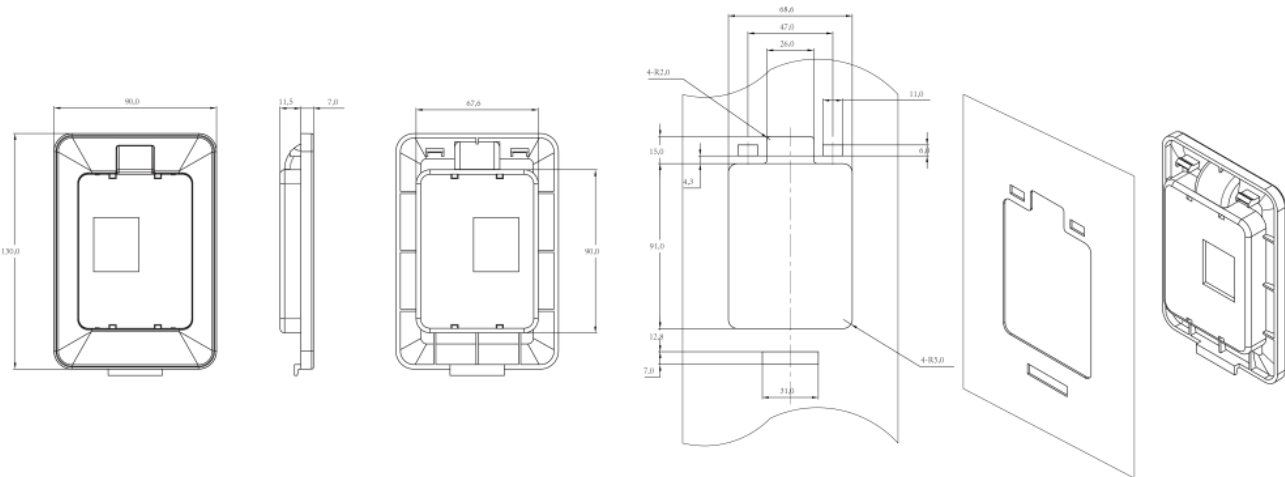


Figure B.2 Keypad installation bracket (optional)

◇ Application fields

