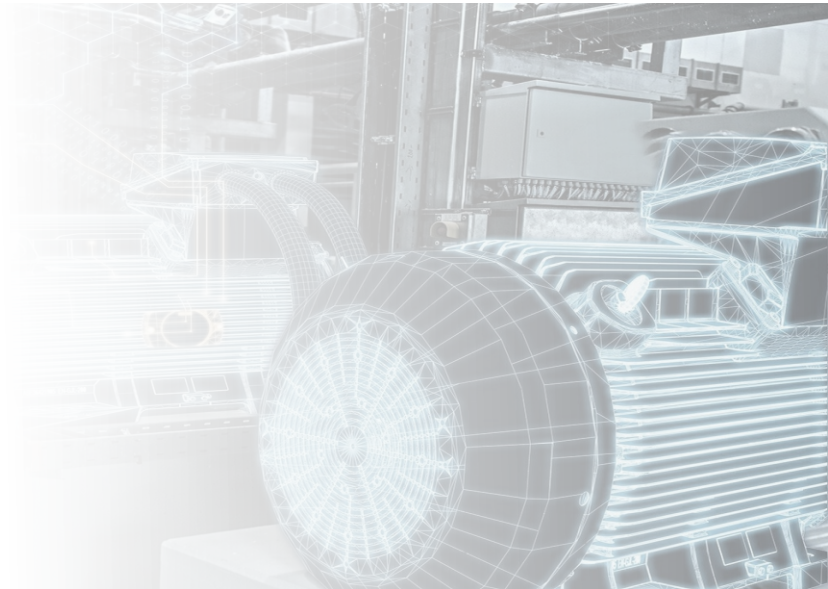


# ATSEL - FD9

General Purpose AC Drives

1HP 0.75KW to 10HP 7.5KW

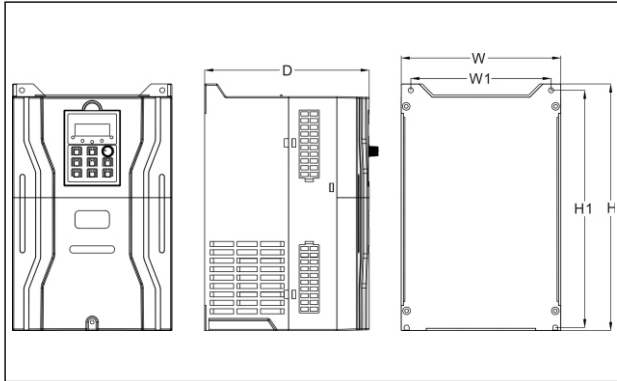
**selec**<sup>®</sup>  
Creating Best Value



## Specifications

|                               |                                |                                                                                                                      |
|-------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Power supply</b>           | Rated Voltage                  | Single phase 230 VAC, 50 Hz/ 60 Hz; Three phase 415 VAC, 50 Hz/ 60 Hz                                                |
|                               | Range                          | Voltage: -20 % ~ +15 % voltage unbalance rate: <3 %; frequency: ±5 %                                                 |
| <b>Control Characteristic</b> | Control mode                   | V/F, Sensorless vector control (SVC), Speed Sensor vector control (FVC)                                              |
|                               | Frequency Control range        | 0 Hz ~ 5000 Hz                                                                                                       |
|                               | Frequency Accuracy             | Digital setting: The highest frequency×± 0.01 %, Analog setting: The highest frequency ×±0.2 %                       |
|                               | Frequency resolution           | Digital setting: 0.01 Hz; Analog setting: The highest frequency× 0.1 %                                               |
|                               | Accelerated / decelerated time | 0.1 ~ 6000.0 Sec.                                                                                                    |
|                               | Multi Speed running            | Max 16 multi-stage speed running via build-in PLC or control terminals                                               |
|                               | Build-in Double PID            | Easily constitute a close loop control system                                                                        |
|                               | Jog running                    | Jog frequency range:0.1 Hz~50.00 Hz, JOG Acc./ Dec. time: 0.1~60.0 s                                                 |
|                               | DC braking                     | DC Braking Frequency: 000Hz~ Max Frequency Braking Time: 0.0 s~36.0 s<br>Braking Action Current Value: 0.0 %~100.0 % |
|                               | Torque control accuracy        | ±5 % (FVC) & Auto torque boost, manual torque boost 0.1 %~30.0 %                                                     |
|                               | Automatic Voltage Regulation   | Keep a stable voltage automatically when the grid voltage transients                                                 |
| <b>Running Function</b>       | Input channel                  | Upto 8DI (1 High speed 100 KHz pulse input) ; 2 AIs (0-10 V and 0-10 V/ 0-20 mA)                                     |
|                               | Output Channel                 | 1 High speed 0~100 KHz Pulse output, 1TO,2RO,2AO(0~20 mA/ 0~10 V)                                                    |
| <b>Operating conditions</b>   | Operating environment          | Ambient Temperature -10°C ~ +50°C                                                                                    |
|                               | Operations Area                | Indoors, free from direct sunlight, dust, corrosive gas, oil mist, steam, etc.                                       |
|                               | Storage Temperature            | -20 ~ +60°C                                                                                                          |
|                               | Vibration                      | Lower than 5.9 m/s <sup>2</sup> (0.6 g)                                                                              |

## Dimensions



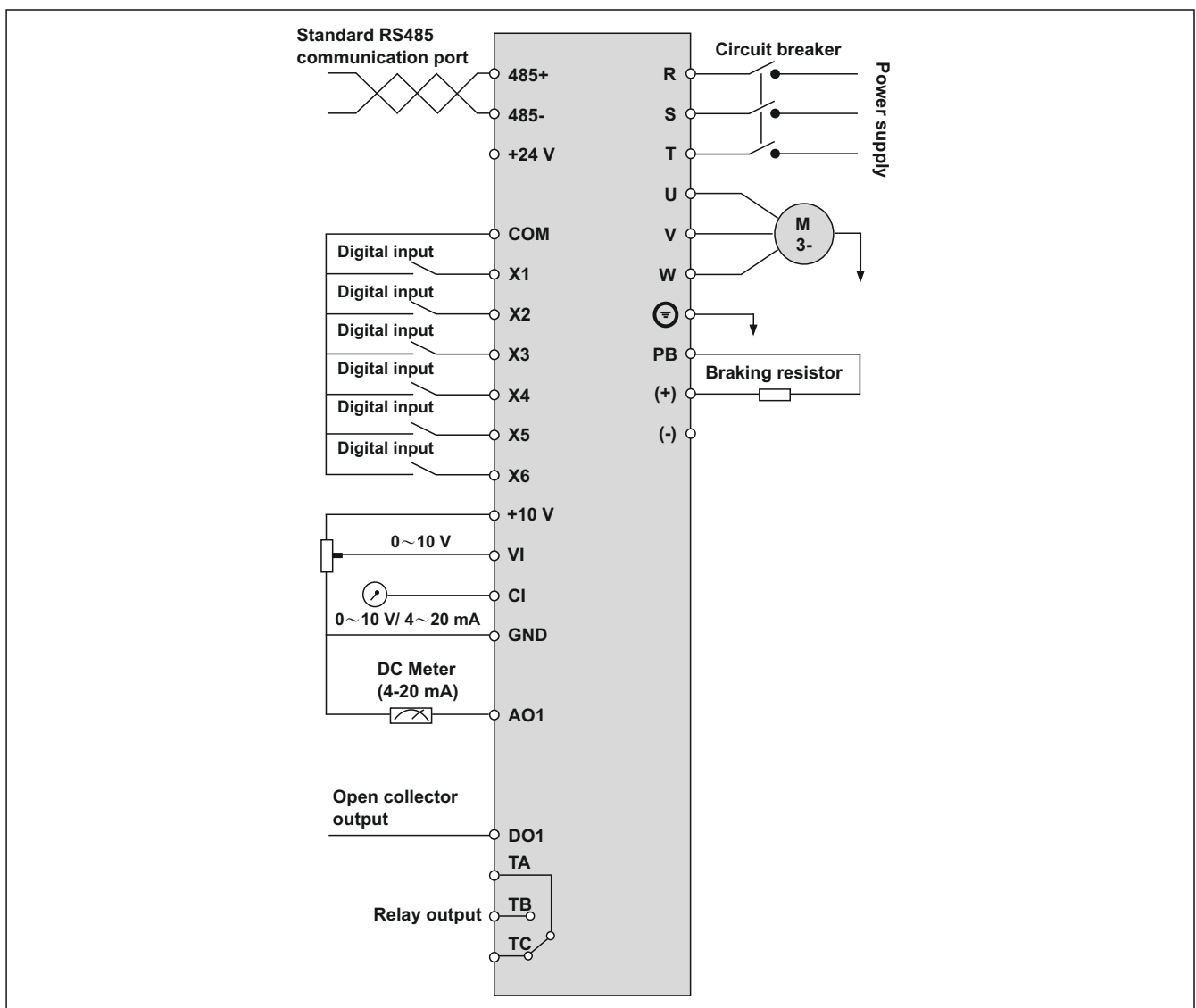
| Inverter Model                                 | Dimension (mm) |     |     | Installation (mm) |       |     |            |
|------------------------------------------------|----------------|-----|-----|-------------------|-------|-----|------------|
|                                                | H              | W   | D   | H2                | H1    | W1  | Mount hole |
| FD9 series/Input voltage: 230 VAC Single-phase |                |     |     |                   |       |     |            |
| FD9-1-010-C-CE                                 | 174            | 76  | 131 | ---               | 162.5 | 58  | Φ5         |
| FD9 series/Input voltage: 415 VAC three-phase  |                |     |     |                   |       |     |            |
| FD9-3-010-C-CE                                 | 184            | 98  | 135 | ---               | 174   | 88  | Φ5         |
| FD9-3-020-C-CE                                 |                |     |     |                   |       |     |            |
| FD9-3-030-C-CE                                 |                |     |     |                   |       |     |            |
| FD9-3-050-C-CE                                 | 184            | 98  | 156 | ---               | 174   | 88  | Φ5         |
| FD9-3-075-C-CE                                 | 230            | 118 | 153 | ---               | 220   | 108 | Φ5         |
| FD9-3-100-C-CE                                 | 230            | 118 | 173 | ---               | 220   | 108 | Φ5         |

## FD9 control loop terminal instruction

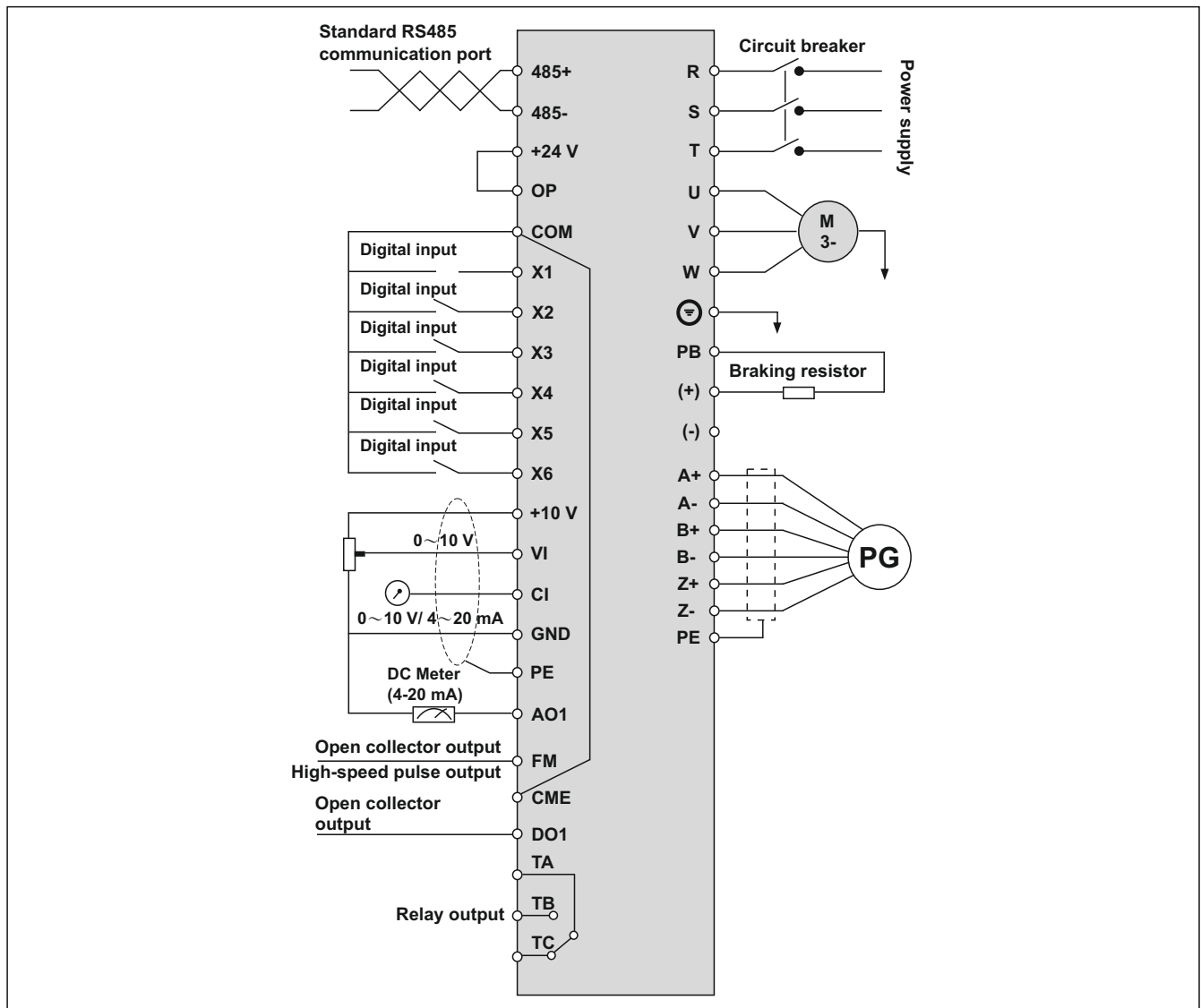
| Class                   | Sign | Terminal Name                    | Terminal instruction and factory default                                                                |
|-------------------------|------|----------------------------------|---------------------------------------------------------------------------------------------------------|
| Multi-functional Inputs | X1   | Multifunction input terminal 1   | Default : Forward Run                                                                                   |
|                         | X2   | Multifunction input terminal 2   | Default : External Forward Jog                                                                          |
|                         | X3   | Multifunction input terminal 3   | Default : Fault Reset                                                                                   |
|                         | X4   | Multifunction input terminal 4   | Default : Multi-Reference Terminal 1                                                                    |
|                         | X5   | Multifunction input terminal 5   | Default: Multi-Reference Terminal 2                                                                     |
|                         | X6   | Multifunction input terminal 6   | Default: No Function                                                                                    |
| Analog Input            | VI   | Analog input VI                  | Input voltage range : 0~10 V (Impedance : 10 KΩ)                                                        |
|                         | CI   | Analog voltage/ current input CI | Input voltage range : 0~10 V ( Impedance : 10 KΩ )<br>Input current range : 0~20 mA (Impedance : 500 Ω) |
| Multi-functional Output | TA   | Relay output                     | Default: P4.12 - 0.0 % P4.13 - 1.00                                                                     |
|                         | TB   | TA - TC Normally Closed          |                                                                                                         |
|                         | TC   | TA - TB Normally Open            |                                                                                                         |
| Analog Output           | AO1  | Analog output terminal           | Current output range : 4~20 mA / Voltage output range : 0~10 V                                          |
|                         | AO2  | Analog output terminal           | Current output range : 4~20 mA / Voltage output range : 0~10 V                                          |
| Communication           | 485+ | RS 485 Positive terminal         | RS485 Communication with Modbus Protocol                                                                |
|                         | 485- | RS 485 Negative terminal         |                                                                                                         |

| Class                 | Sign    | Terminal Name                        | Terminal instruction and factory default                                                                                                                |
|-----------------------|---------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power</b>          | OP      | External power supply                | When using external using external 24 V, OP terminal needs to connect to +24 V of external PS but before that please remove Jumper between +24 V and OP |
|                       | 10V     | +10 V power                          | Supply+10 V power (negative terminal: GND) ; Max Output current :50 mA)                                                                                 |
|                       | GND     | +10 V common terminal                | Grounding of analog signal and+10 V power source                                                                                                        |
|                       | COM     | Common Terminal                      | Digital signal input, output common terminal                                                                                                            |
|                       | +24V    | +24 V common terminal                | Supply +24 V power (negative terminal: COM)                                                                                                             |
| <b>Digital output</b> | DO1-CME | Open collector output terminal 1     | Output voltage range: 0-24 V Output current range: 0–50 mA                                                                                              |
| <b>Pulse output</b>   | FM-COM  | Open collector pulse output terminal | Output range defined by P4.09, Max 100 KHz                                                                                                              |

## 3-2-1 Standard wiring diagram for FD9



FD9-3-010-C-CE to FD9-3-030-C-CE



FD9-3-050-C-CE to FD9-3-100-C-CE

## Ordering Information

| Product Code   | Description                 | Output Current | Certification |
|----------------|-----------------------------|----------------|---------------|
| FD9-1-010-C-CE | 1 Phase 230V, 1HP 0.75 KW   | 4A             | CE            |
| FD9-3-010-C-CE | 3 Phase 415V, 1HP 0.75 KW   | 2.5A           | CE            |
| FD9-3-020-C-CE | 3 Phase 415V, 2HP 1.5 KW    | 3.7A           | CE            |
| FD9-3-030-C-CE | 3 Phase 415V, 3HP 2.2 KW    | 5.1A           | CE            |
| FD9-3-050-C-CE | 3 Phase 415V, 5HP 3.75 KW   | 9A             | CE            |
| FD9-3-075-C-CE | 3 Phase 415V, 7.5 HP 5.5 KW | 13A            | CE            |
| FD9-3-100-C-CE | 3 Phase 415V, 10HP 7.5 KW   | 17A            | CE            |

**Applications :** Suitable for fans, pumps, Conveyor, Food & drink packaging machinery, Industrial washing machine, Winder application, Hoists, Paper Mills, Textile Applications and most general industries etc.

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