

## PXe-PI550A1 Series

### Basic Frequency Inverter



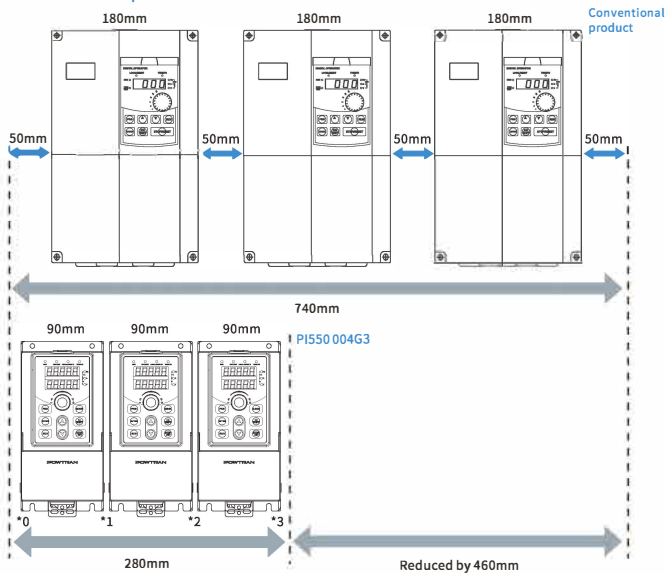
## Performance Feature

The PXE-P1550A1 series basic inverter is based on the market demand for low power, small volume and simple speed regulation. As a small volume and large capacity of the basic inverter product, the PXE-P1550A1 has high power density, high EMC specification design, high protection performance and other significant advantages, can be widely used in textile, paper, drawing, winding, machine tools, packaging, food, fan, water pump and other industries and small automated machinery.

## Compact design for miniaturization

- ▶ Optimal power density design, effectively minimize product volume;
- ▶ Book structure design with full power segment, support seamless installation in minimum space;
- ▶ Installation mode: Support wall mounting and guide rail installation.

### 380V 4kW Example

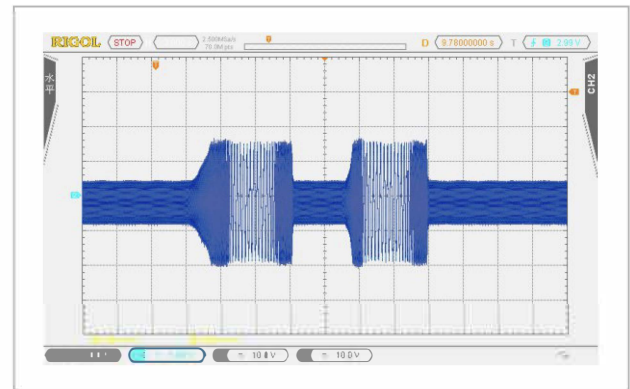


## Excellent control performance



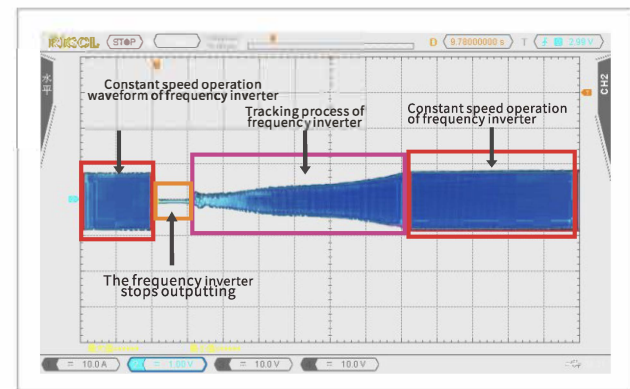
### 1> Leading motor drive technology

- ▶ No PG vector control, with PG vector control, VF control to meet different load process requirements.
- ▶ Advanced vector control algorithm can realize the current vector control of induction motor and permanent magnet synchronous motor with high performance. (PI550E is permanent magnet synchronous motor version)



### 2> Excellent control performance

- ▶ Speed stability accuracy:  $\pm 0.5\%$  (without PG vector control),  $\pm 0.02\%$  (with PG vector control)
- ▶ Speed range: 1:100 (without PG vector control), 1:1000 (with PG vector control)
- ▶ Torque response:  $<40\text{ms}$  (without PG vector control),  $<5\text{ms}$  (with PG vector control)
- ▶ Heavy load overload capacity: 110% rated stable operation (110% continuous operation) 150% rated load 1Min, 180% rated load 5S.



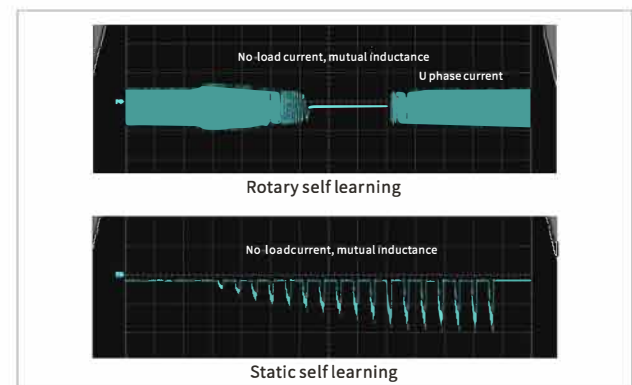
### 3> Real hard speed tracking function: "car start"

- ▶ Accurate, stable and reliable tracking

## Rich easy-to-use features

### 1> Self-learning of accurate motor parameters

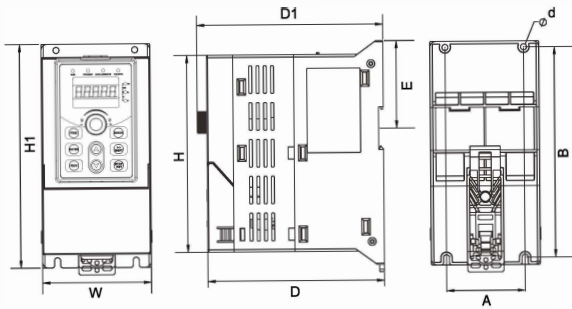
- ▶ Convenient, simple operation, providing higher control accuracy and response speed
- ▶ Can be fully self-learning motor parameters (rotation self-learning) or static self-learning (motor and load can not be separated from the occasion), debugging



## Standard specifications

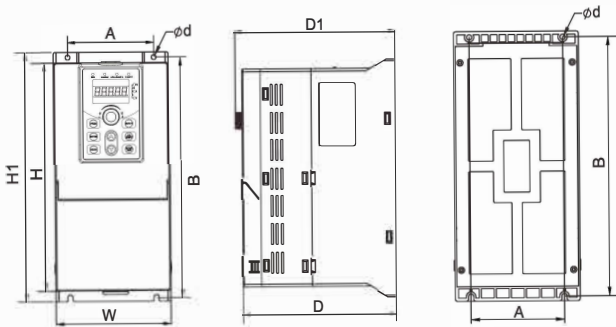
| Items                    | Function                                      |                                            | Specification                                                                                                                                                                                                                                                                                  |
|--------------------------|-----------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Input              | Rated voltage                                 |                                            | AC 1 PH 220V(-15%)~240V(+10%)/AC 3PH 220V(-15%)~240V(+10%)<br>AC 3PH 380V(-15%)~440V(+10%)/AC 3PH 480V(-10%)~480V(+10%)                                                                                                                                                                        |
|                          | Input frequency                               |                                            | 50Hz/60Hz                                                                                                                                                                                                                                                                                      |
|                          | Allowable fluctuation                         | Continuous voltage fluctuation: $\pm 10\%$ | The voltage imbalance rate is less than 3%                                                                                                                                                                                                                                                     |
|                          |                                               | Input frequency fluctuation: $\pm 5\%$     | Distortion rate meets the standard IEC61800-2                                                                                                                                                                                                                                                  |
| control system           | Control system                                |                                            | High performance vector control inverter based on DSP                                                                                                                                                                                                                                          |
|                          | Control method                                |                                            | V/F control, vector control W/OPG                                                                                                                                                                                                                                                              |
|                          | Automatic torque boost function               |                                            | Realize low frequency (1Hz) and large output torque control under the V/F control mode                                                                                                                                                                                                         |
|                          | Acceleration/deceleration control             |                                            | Straight or S-curve mode. Four times available and time range is 0.0 to 6500.0s                                                                                                                                                                                                                |
|                          | V/F curve mode                                |                                            | Linear, square root/m-th power, custom V/F curve                                                                                                                                                                                                                                               |
|                          | Over load capability                          |                                            | G type: rated current 150% - 1 minute, rated current 180% - 2 seconds F type: rated current 120% - 1 minute, rated current 150% - 2 seconds                                                                                                                                                    |
|                          | Maximum frequency                             |                                            | 1、Vector control: 0 to 300Hz; 2、V/F control: 0 to 3200Hz                                                                                                                                                                                                                                       |
|                          | Carrier Frequency                             |                                            | 0.5 to 16kHz; automatically adjust carrier frequency according to the load characteristics                                                                                                                                                                                                     |
|                          | Input Frequency resolution:                   |                                            | Digital setting: 0.01Hz; Minimum analog quantity: Maximum frequency 0.025%                                                                                                                                                                                                                     |
|                          | Starting torque:                              |                                            | G-type machine: 0.5Hz/150% (without PG vector control); F-type machine: 0.5Hz/100% (without PG daily control)                                                                                                                                                                                  |
|                          | Speed range:                                  |                                            | 1: 100 (without PG vector control)                                                                                                                                                                                                                                                             |
|                          | Steady speed accuracy:                        |                                            | No PG vector control: $\leq 0.5\%$ (rated synchronous speed)                                                                                                                                                                                                                                   |
|                          | Torque response:                              |                                            | $\leq 20\text{ms}$ (without PG vector control)                                                                                                                                                                                                                                                 |
|                          | Torque boost                                  |                                            | Automatic torque boost; manual torque boost (0.1% to 30.0%)                                                                                                                                                                                                                                    |
|                          | DC braking                                    |                                            | DC braking frequency: 0.0Hz to max. frequency, braking time: 0.0 to 100.0 seconds, braking current value: 0.0~100.0s                                                                                                                                                                           |
|                          | Jogging control                               |                                            | Jog Frequency Range: 0.00Hz to max. frequency; Jog Ac/deceleration time: 0.0s-6500.0s                                                                                                                                                                                                          |
|                          | Built-in PID                                  |                                            | Easy to realize closed-loop control system for the process control.                                                                                                                                                                                                                            |
| Personalization function | Automatic voltage regulation (AVR)            |                                            | Automatically maintain a constant output voltage when the voltage of electricity grid changes                                                                                                                                                                                                  |
|                          | Self-inspection of peripherals after power-on |                                            | After powering on, peripheral equipment will perform safety testing, such as ground, short circuit, etc.                                                                                                                                                                                       |
|                          | Common DC bus function                        |                                            | Multiple inverters can use a common DC bus.                                                                                                                                                                                                                                                    |
|                          | Quick current limiting                        |                                            | The current limiting algorithm is used to reduce the inverter overcurrent probability, and improve whole unit anti-interference capability.                                                                                                                                                    |
| Running                  | Input signal                                  | DI1 input terminal                         | 6 digital input terminal, DI5 can be high speed pulse input (0~100kHz square wave)                                                                                                                                                                                                             |
|                          |                                               | AI1 analog input                           | 1 analog AI1 input terminal, can choose 0~10v or 0~20mA input                                                                                                                                                                                                                                  |
|                          |                                               | Multi-speed                                | At most 16-speed can be set (run by using the multi-function terminals or program)                                                                                                                                                                                                             |
|                          |                                               | Emergency stop                             | Interrupt controller output                                                                                                                                                                                                                                                                    |
|                          |                                               | Fault reset                                | When the protection function is active, you can automatically or manually reset the fault condition                                                                                                                                                                                            |
|                          | Output signal                                 | PID feedback signal                        | Including DC (0 to 10V), DC (0 to 20mA)                                                                                                                                                                                                                                                        |
|                          |                                               | Output terminal                            | 1 collector output terminal SPA; 1 relay output terminal; 1 DA1 analog output terminal                                                                                                                                                                                                         |
|                          |                                               | SPA / relay output                         | each port has 40 signals can be optional, contact capacity of relay: normally open contact 5A/AC 250V; 1A/DC 30V                                                                                                                                                                               |
|                          | DA1 analog output                             |                                            | 1 analog output, 16 signals can be selected such as frequency, current, voltage and other, output signal range (0 to 10V / 0 to 20mA)                                                                                                                                                          |
|                          |                                               |                                            |                                                                                                                                                                                                                                                                                                |
| Protection function      | Running command channel                       |                                            | Three channels: operation panel, control terminals and serial communication port. They can be switched through a variety of ways.                                                                                                                                                              |
|                          | Run function                                  |                                            | Limit frequency, jump frequency, frequency compensation, auto-tuning, PID control                                                                                                                                                                                                              |
|                          | Frequency source                              |                                            | Total 9 frequency sources: digital, analog voltage, multi-speed and serial port. They can be switched through a variety of ways                                                                                                                                                                |
|                          | Inverter protection                           |                                            | Overvoltage protection, undervoltage protection, overcurrent protection, overload protection, overheat protection (optional), external fault, communication error. PID feedback signal abnormalities, PG failure and short circuit to ground protection.                                       |
| Display                  | LED display keyboard                          | Running information                        | Monitoring objects including: running frequency, set frequency, bus voltage, output voltage, output current, output power, output torque, input terminal status, output terminal status, analog AI1 value, motor actual running speed, PID set value percentage, PID feedback value percentage |
|                          |                                               | Error information                          | At most save three error message, and the time, type, voltage, current, frequency and work status can be queried when the failure is occurred                                                                                                                                                  |
|                          | Key lock and function selection               |                                            | Lock part or all of keys, define the function scope of some keys to prevent misuse                                                                                                                                                                                                             |
|                          | IGBT temperature                              |                                            | Display current IGBT temperature                                                                                                                                                                                                                                                               |
| communication            | RS485                                         |                                            | Built-in RS485                                                                                                                                                                                                                                                                                 |
| Environment              | Environment temperature                       |                                            | -10°C~40°C (temperature at 40°C to 50°C, please derating for use)                                                                                                                                                                                                                              |
|                          | Storage temperature                           |                                            | -20°C to 65°C                                                                                                                                                                                                                                                                                  |
|                          | Environment humidity                          |                                            | Less than 90% R.H, no condensation of moisture                                                                                                                                                                                                                                                 |
|                          | Vibration                                     |                                            | Below 5.9m/s <sup>2</sup> (=0.6g)                                                                                                                                                                                                                                                              |
|                          | Application sites                             |                                            | Indoor where no sunlight or corrosive, explosive gas, dust, combustible gas, oil mist, water vapor, dripping water or salt, etc                                                                                                                                                                |
|                          | Altitude                                      |                                            | No derating is used below 1000m, and 1% derating is used for every 100m increase above 1000m. The highest altitude is 3000m                                                                                                                                                                    |
|                          | IP degree                                     |                                            | IP20                                                                                                                                                                                                                                                                                           |
| Product standard         | Product adopts safety standards               |                                            | IEC61800-5-1:2007                                                                                                                                                                                                                                                                              |
|                          | Product adopts EMC standards                  |                                            | IEC61800-3:2005                                                                                                                                                                                                                                                                                |
| Cooling method           |                                               | Forced air cooling                         |                                                                                                                                                                                                                                                                                                |

## Technical Specification

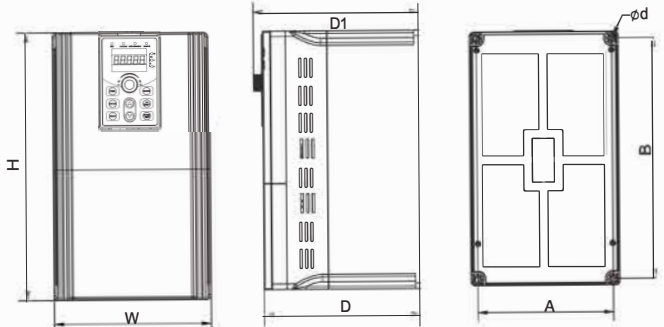


0.75~4kW G3(plastic shell) support Din-rail installation (Base No. A1~A2)

| Base No. | Dimension (mm) |     |     |     |     | Installation (mm) |     |   | Din-Rail mounting (mm)<br>E | N.W (kg) |
|----------|----------------|-----|-----|-----|-----|-------------------|-----|---|-----------------------------|----------|
|          | H              | H1  | W   | D   | D1  | A                 | B   | d |                             |          |
| A1       | 163            | 185 | 90  | 146 | 154 | 65                | 174 | 5 | 72.5                        | 1.6      |
| A2       | 163            | 185 | 90  | 166 | 174 | 65                | 174 | 5 | 72.5                        | 1.8      |
| A3       | 238            | 260 | 120 | 182 | 190 | 90                | 250 | 5 | /                           | 2.7      |
| A4       | 290            | /   | 170 | 193 | 201 | 155               | 276 | 5 | /                           | 5.8      |



4~11kW G3 (plastic shell) support Wall-mounted installation(Base No. A3)



15~22kW G3(plastic shell) support Wall-mounted installation(Base No. A4)

## Configuration parameter

| Base No. | Inverter model | Output power (kW) | Dimension (mm) |    |   |   |    | Installation (mm) |   |   | Din-Rail mounting (mm)<br>E | N.W (kg) |
|----------|----------------|-------------------|----------------|----|---|---|----|-------------------|---|---|-----------------------------|----------|
|          |                |                   | H              | H1 | W | D | D1 | A                 | B | d |                             |          |

### Single phase 220VAC external dimension diagram and installation dimensions

|    |               |      |     |     |     |     |     |     |     |   |      |     |
|----|---------------|------|-----|-----|-----|-----|-----|-----|-----|---|------|-----|
| A1 | PI550A1 0R4G1 | 0.4  | 163 | 185 | 90  | 146 | 154 | 65  | 174 | 5 | 72.5 | 1.4 |
|    | PI550A1 0R7G1 | 0.75 |     |     |     |     |     |     |     |   |      |     |
| A2 | PI550A1 1R5G1 | 1.5  | 163 | 185 | 90  | 166 | 174 | 65  | 174 | 5 | 72.5 | 1.6 |
|    | PI550A1 2R2G1 | 2.2  |     |     |     |     |     |     |     |   |      |     |
| A3 | PI550A1 004G1 | 4    | 238 | 260 | 120 | 182 | 190 | 90  | 250 | 5 | /    | 3.2 |
| A4 | PI550A1 5R5G1 | 5.5  | 290 | /   | 170 | 193 | 201 | 155 | 276 | 5 | /    | 5.9 |

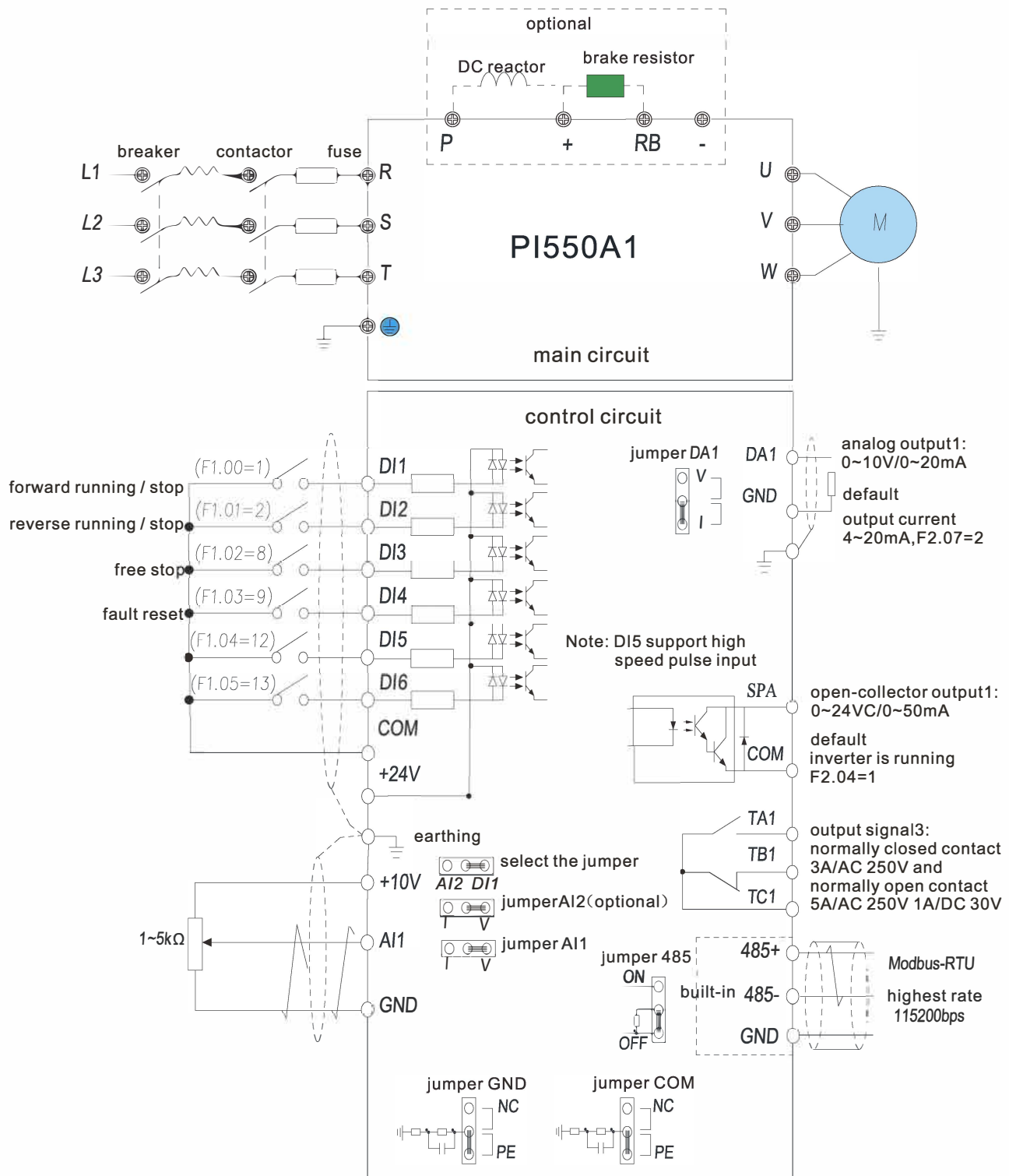
### Single phase 220VAC external dimension diagram and installation dimensions, load for single-phase motor, only valid for PI550A1G1S model

|    |                |      |     |     |     |     |     |     |     |   |      |     |
|----|----------------|------|-----|-----|-----|-----|-----|-----|-----|---|------|-----|
| A1 | PI550A1 0R4G1S | 0.4  | 163 | 185 | 90  | 146 | 154 | 65  | 174 | 5 | 72.5 | 1.4 |
|    | PI550A1 0R7G1S | 0.75 |     |     |     |     |     |     |     |   |      |     |
| A2 | PI550A1 1R5G1S | 1.5  | 163 | 185 | 90  | 166 | 174 | 65  | 174 | 5 | 72.5 | 1.6 |
|    | PI550A1 2R2G1S | 2.2  |     |     |     |     |     |     |     |   |      |     |
| A3 | PI550A1 004G1S | 4    | 238 | 260 | 120 | 182 | 190 | 90  | 250 | 5 | /    | 3.2 |
| A4 | PI550A1 5R5G1S | 5.5  | 290 | /   | 170 | 193 | 201 | 155 | 276 | 5 | /    | 5.9 |

## Configuration parameter

| Base No.                                                                    | Inverter model              | Output power (kW) | Dimension (mm) |     |     |     |     | Installation (mm) |     |   | Din-Rail mounting (mm) | N.W (kg) |
|-----------------------------------------------------------------------------|-----------------------------|-------------------|----------------|-----|-----|-----|-----|-------------------|-----|---|------------------------|----------|
|                                                                             |                             |                   | H              | H1  | W   | D   | D1  | A                 | B   | d | E                      |          |
| Outline dimension diagram and installation dimensions of three-phase 220VAC |                             |                   |                |     |     |     |     |                   |     |   |                        |          |
| A1                                                                          | PI550A1 0R4G2               | 0.4               | 163            | 185 | 90  | 146 | 154 | 65                | 174 | 5 | 72.5                   | 1. 4     |
|                                                                             | PI550A1 0R7G2               | 0.75              |                |     |     |     |     |                   |     |   |                        |          |
|                                                                             | PI550A1 1R5G2               | 1.5               |                |     |     |     |     |                   |     |   |                        |          |
| A2                                                                          | PI550A1 2R2G2               | 2.2               | 163            | 185 | 90  | 166 | 174 | 65                | 174 | 5 | 72.5                   | 1. 6     |
| A3                                                                          | PI550A1 004G2               | 4                 | 238            | 260 | 120 | 182 | 190 | 90                | 250 | 5 | /                      | 3.2      |
|                                                                             | PI550A1 5R5G2               | 5.5               |                |     |     |     |     |                   |     |   |                        |          |
| A4                                                                          | PI550A1 7R5G2               | 7.5               | 290            | /   | 170 | 193 | 201 | 155               | 276 | 5 | /                      | 5. 9     |
|                                                                             | PI550A1 011G2               | 11                |                |     |     |     |     |                   |     |   |                        |          |
| Outline dimension diagram and installation dimensions of three-phase 380VAC |                             |                   |                |     |     |     |     |                   |     |   |                        |          |
| A1                                                                          | PI550A1 0R7G3               | 0.75              | 163            | 185 | 90  | 146 | 154 | 65                | 174 | 5 | 72.5                   | 1. 4     |
|                                                                             | PI550A1 1R5G3               | 1.5               |                |     |     |     |     |                   |     |   |                        |          |
|                                                                             | PI550A1 2R2G3               | 2.2               |                |     |     |     |     |                   |     |   |                        |          |
| A2                                                                          | PI550A1 004G3               | 4                 | 163            | 185 | 90  | 166 | 174 | 65                | 174 | 5 | 72.5                   | 1. 6     |
| A3                                                                          | PI550A1 5R5G3               | 5.5               | 238            | 260 | 120 | 182 | 190 | 90                | 250 | 5 | /                      | 3.2      |
|                                                                             | PI550A1 7R5 F 3             | 7.5               |                |     |     |     |     |                   |     |   |                        |          |
|                                                                             | PI550A1 7R5G3               | 7.5               |                |     |     |     |     |                   |     |   |                        |          |
|                                                                             | PI550A1 011F3               | 11                |                |     |     |     |     |                   |     |   |                        |          |
|                                                                             | PI550A1 011G3               | 11                |                |     |     |     |     |                   |     |   |                        |          |
| A4                                                                          | PI550A1 015F3               | 15                | 290            | /   | 170 | 193 | 201 | 155               | 276 | 5 | /                      | 5. 9     |
|                                                                             | PI550A1 015G3/PI550A1 018F3 | 15/18.5           |                |     |     |     |     |                   |     |   |                        |          |
|                                                                             | PI550A1 018G3/PI550A1 022F3 | 18.5/22           |                |     |     |     |     |                   |     |   |                        |          |
|                                                                             | PI550A1 022G3               | 22                |                |     |     |     |     |                   |     |   |                        |          |
| Outline dimension diagram and installation dimensions of three-phase 480VAC |                             |                   |                |     |     |     |     |                   |     |   |                        |          |
| A1                                                                          | PI550A1 0R7G4               | 0.75              | 163            | 185 | 90  | 146 | 154 | 65                | 174 | 5 | 72.5                   | 1. 4     |
|                                                                             | PI550A1 1R5G4               | 1.5               |                |     |     |     |     |                   |     |   |                        |          |
|                                                                             | PI550A1 2R2G4               | 2.2               |                |     |     |     |     |                   |     |   |                        |          |
| A2                                                                          | PI550A1 004G4               | 4                 | 163            | 185 | 90  | 166 | 174 | 65                | 174 | 5 | 72.5                   | 1. 6     |
| A3                                                                          | PI550A1 5R5G4               | 5.5               | 238            | 260 | 120 | 182 | 190 | 90                | 250 | 5 | /                      | 3.2      |
|                                                                             | PI550A1 7R5G4               | 7.5               |                |     |     |     |     |                   |     |   |                        |          |
|                                                                             | PI550A1 011F4               | 11                |                |     |     |     |     |                   |     |   |                        |          |
|                                                                             | PI550A1 011G4               | 11                |                |     |     |     |     |                   |     |   |                        |          |
| A4                                                                          | PI550A1 015F4               | 15                | 290            | /   | 170 | 193 | 201 | 155               | 276 | 5 | /                      | 5. 9     |
|                                                                             | PI550A1 015G4/PI550A1 018F4 | 15/18.5           |                |     |     |     |     |                   |     |   |                        |          |
|                                                                             | PI550A1 018G4/PI550A1 022F4 | 18.5/22           |                |     |     |     |     |                   |     |   |                        |          |
|                                                                             | PI550A1 022G4               | 22                |                |     |     |     |     |                   |     |   |                        |          |

## Wiring diagram



Note: — shielding layer — twisted-pair