

# Goodrive270 series

VFD for fan and pump



CE



# Features

Goodrive270 series VFD is an optimized VFD special for fan and pump. Simple and easy to use, the VFD can drive the fans and pumps in wastewater treatment, HVAC, chemical, metallurgical, electric power and other industries.

**Power range: 1.5~500kW**

**Voltage class: AC 3PH 380~480V**

- ◆ Optimized size: Booksize compact, easy to install.
- ◆ Motor compatibility: Able to drive both synchronous motors and asynchronous motors.
- ◆ Functions special for fans and pumps.
- ◆ Energy-saving and efficient.
- ◆ Flexible expansion: Support for IO, communication, and IoT add-ons.



# Applications



HVAC



Municipal water supply



Delivery pump



Sewage treatment



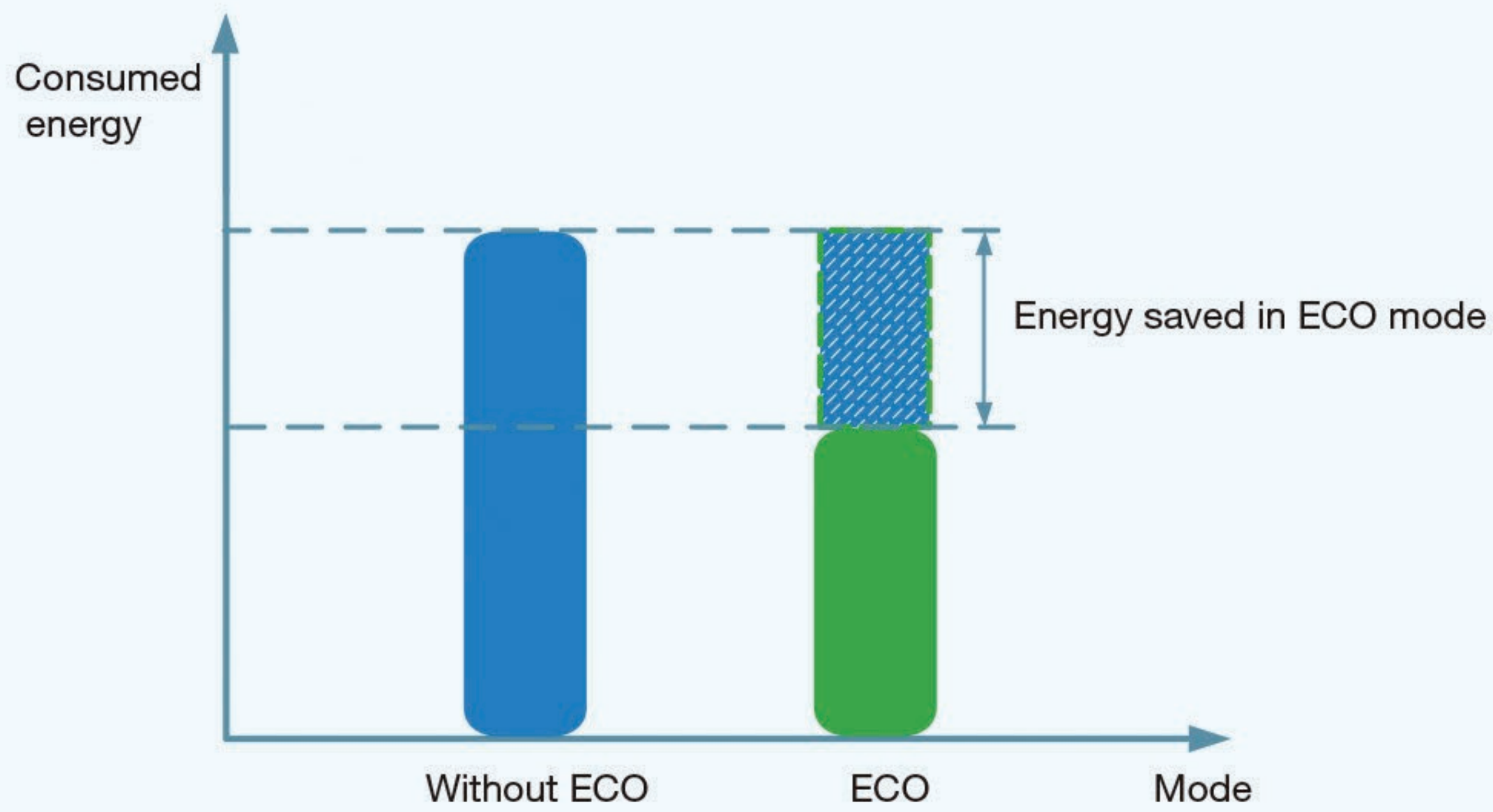
Municipal heating system



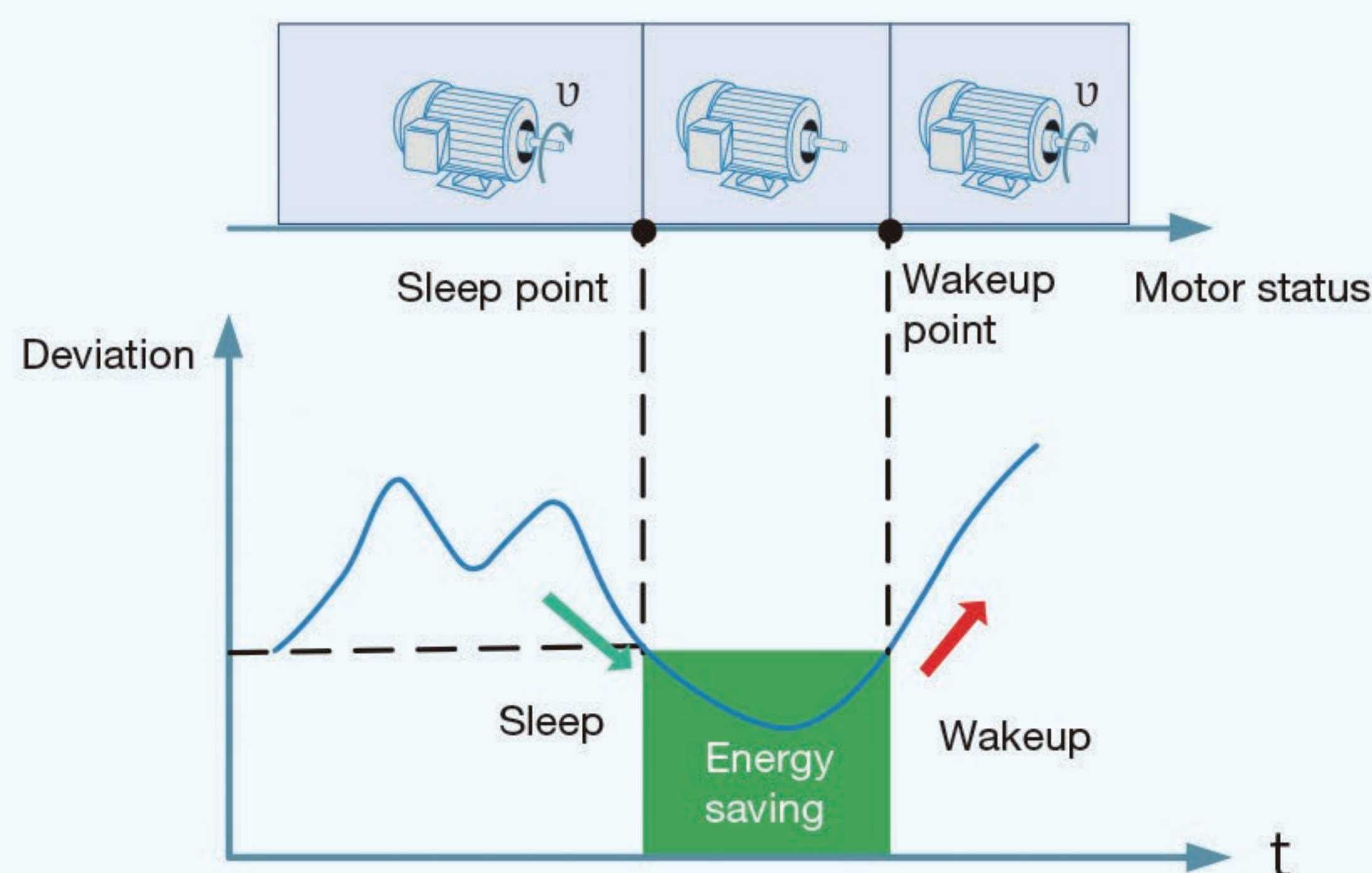
Irrigation pump

# Advantages

- ◆ **ECO mode:** ensures the implementation of best performance and minimum loss at low dynamic load to optimize the output power.



- ◆ **Energy-saving control:** implements sleep at night or energy-saving run at extremely light load to avoid frequent startup or stop.



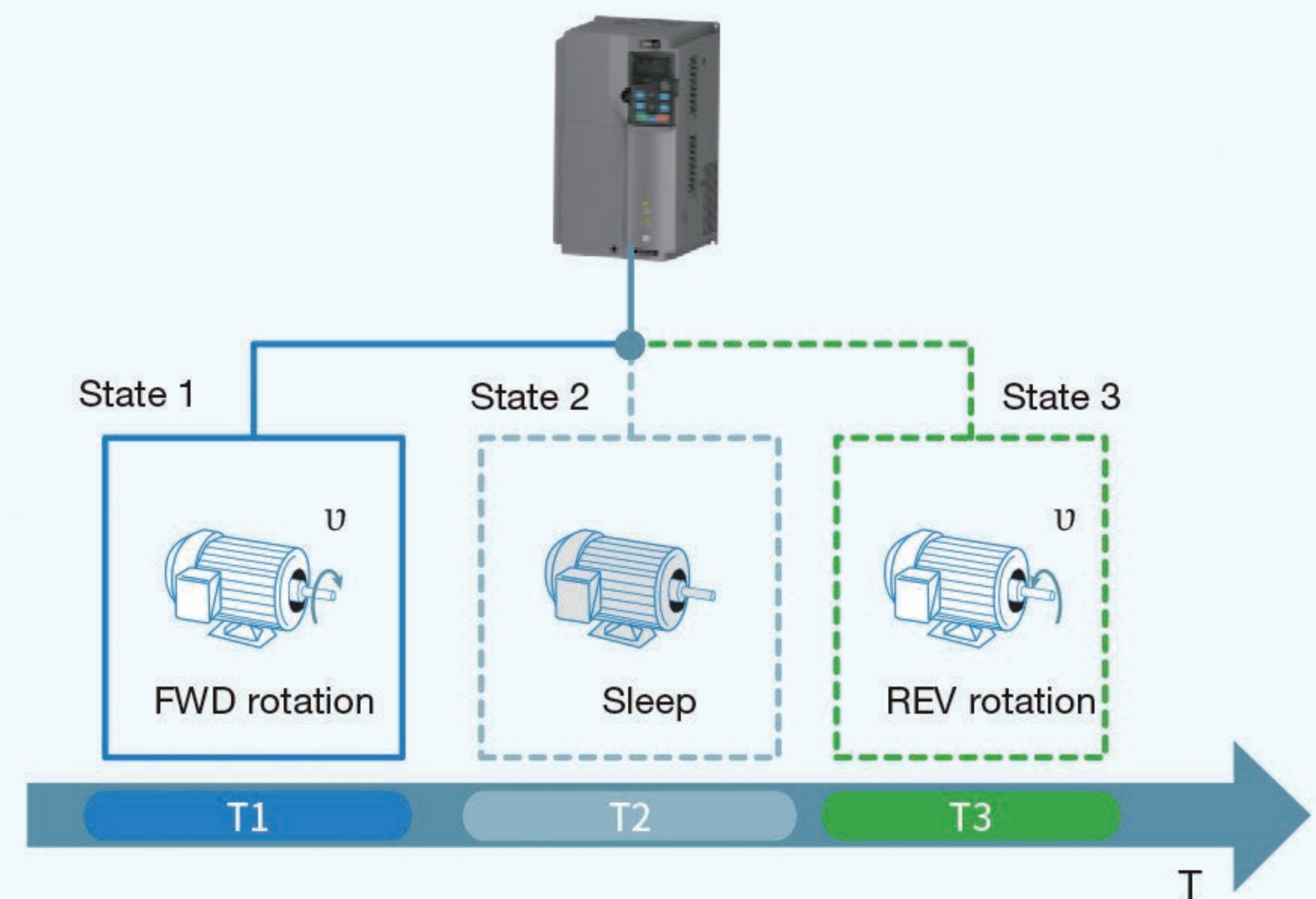
- ◆ **Anti-waterhammer**

Prevents water pump damage or water valve damage.

- ◆ **Water level control**

When the present water level is lower than the water level lower limit but higher than the water shortage level, the system runs at the backup pressure for exceptional situations. When the present water level is lower than the water shortage level, the system stops running.

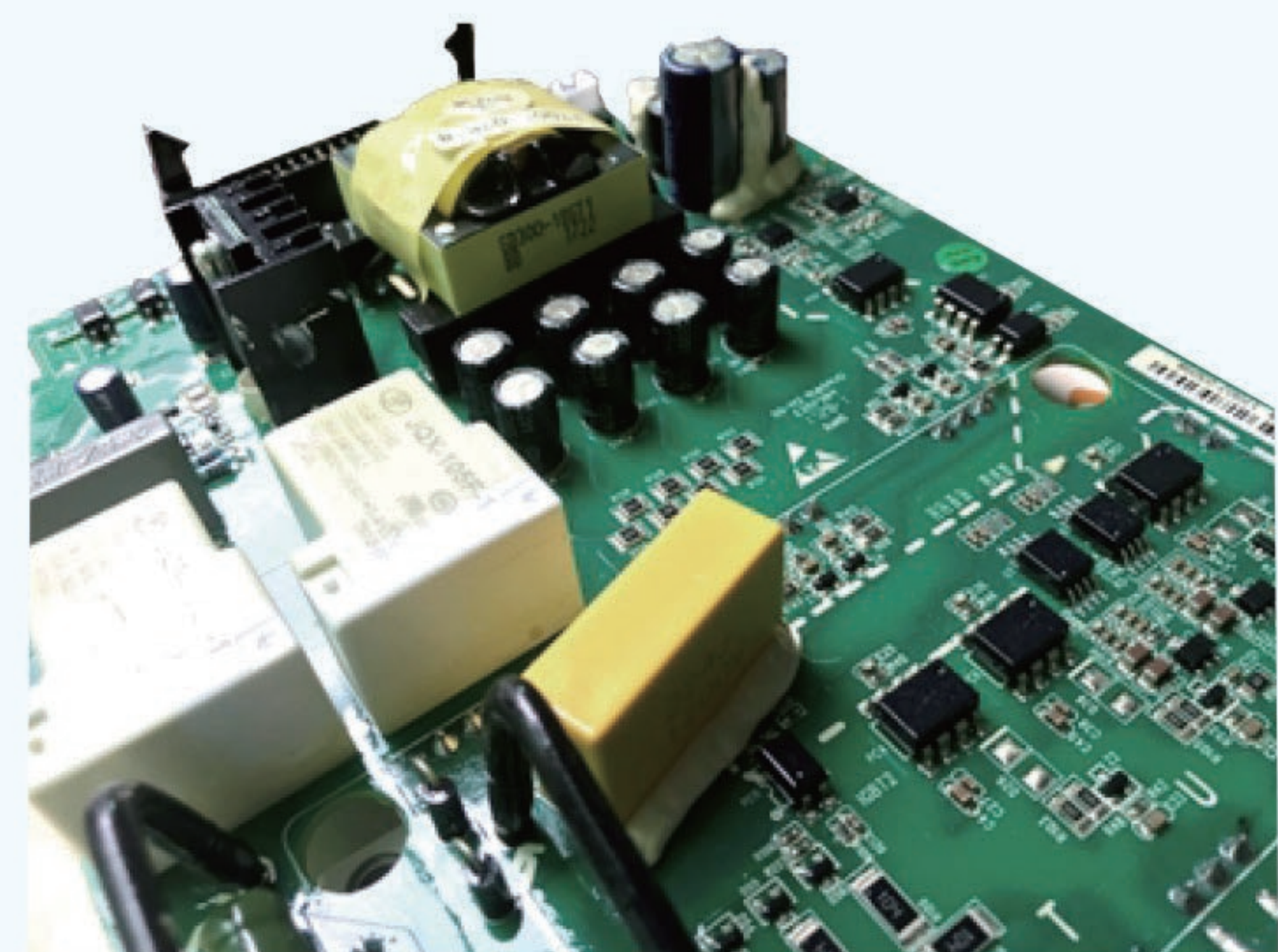
- ◆ **Cleaning:** implements automatic cleaning for water pumps by means of periodic forward/reverse rotation and sleep to reduce the manual maintenance workload.

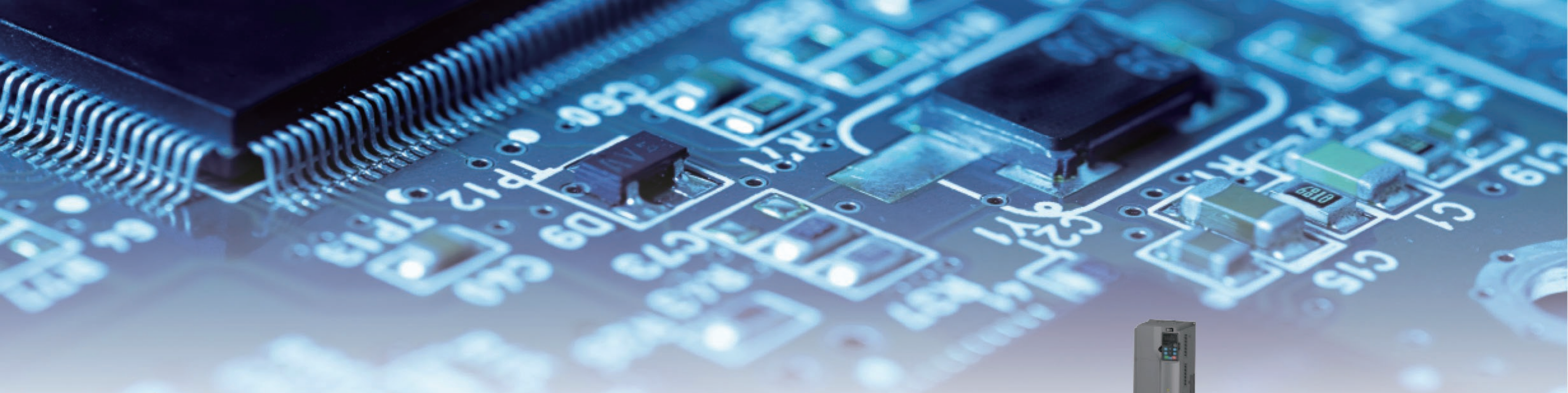


- ◆ **Fire ride-through (special for water pumps):** In fire mode for tunnel or building fans in emergency, the fault alarm is screened out to ensure longer running.



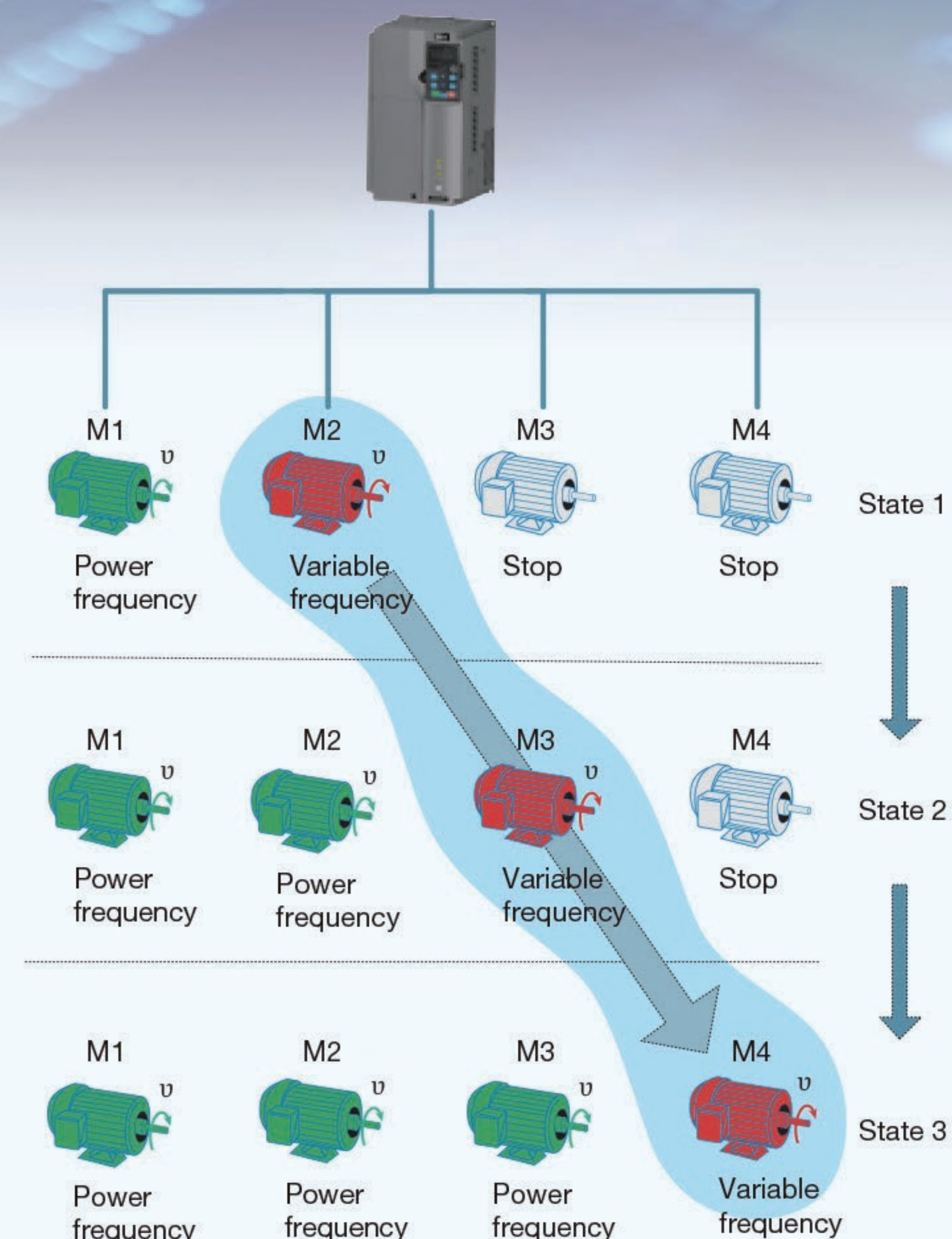
- ◆ **Thickened circuit board coating:** helps to enhance the PCB protection and adapt to hostile environments to ensure long and reliable run.





- ◆ Multi-pump polling and auxiliary pump startup/stop: Support for cyclic and fixed variable-frequency pump water supply, and sleep control.

The VFD does not specify a certain pump as the variable-frequency pump. If the water supply pressure is insufficient, the variable-frequency pump that is running is switched to the power grid, and a next pump is selected as the variable-frequency pump (a maximum of eight variable-frequency pumps can be controlled and only one variable-frequency pump can be used at a time).



- ◆ Freezing protection: When the ambient temperature is lower than the specified threshold, the motor automatically rotates to avoid freezing to achieve the protection purpose.



- ◆ Motor heating: uses DC energizing to increase the motor surface temperature at intermittent working and avoid motor faults caused by condensation.



## Abundant configuration

- ◆ **A.** 30~355kW VFD models support optional built-in DC reactors. 400~500kW VFD models have been configured with DC reactors.



- ◆ **B.** 220kW and higher VFD models support output reactors (Optional -L2/L3 model).



# Type Selection

## Naming conventions

### GD270-160-4-L1

①                      ②                      ③                      ④



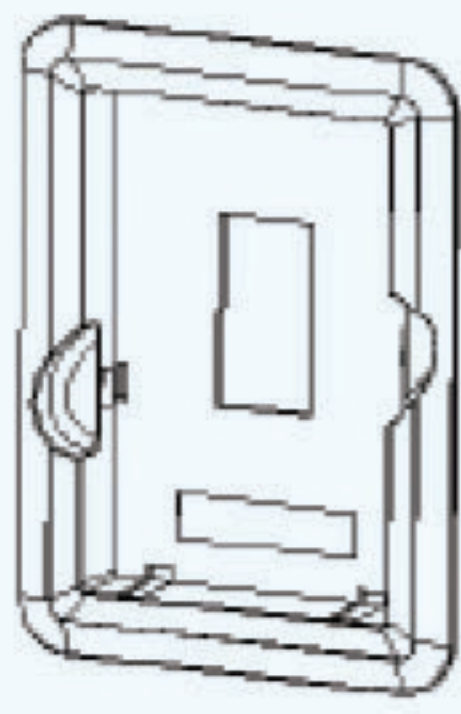
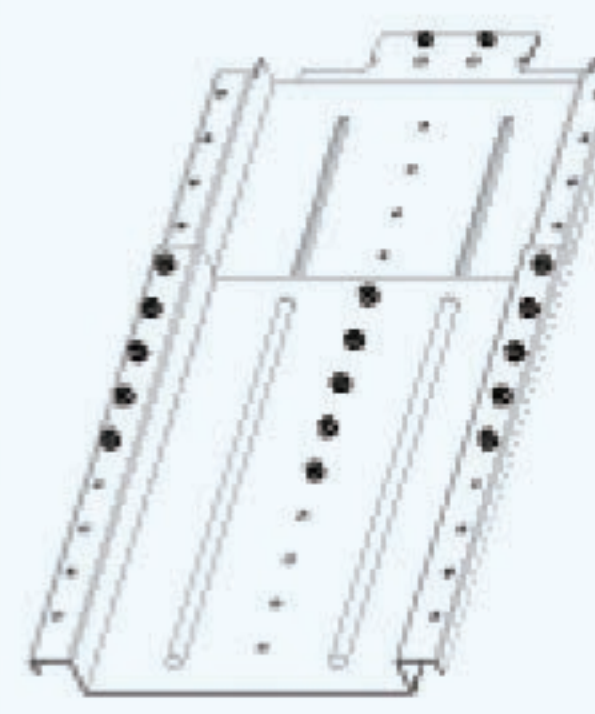
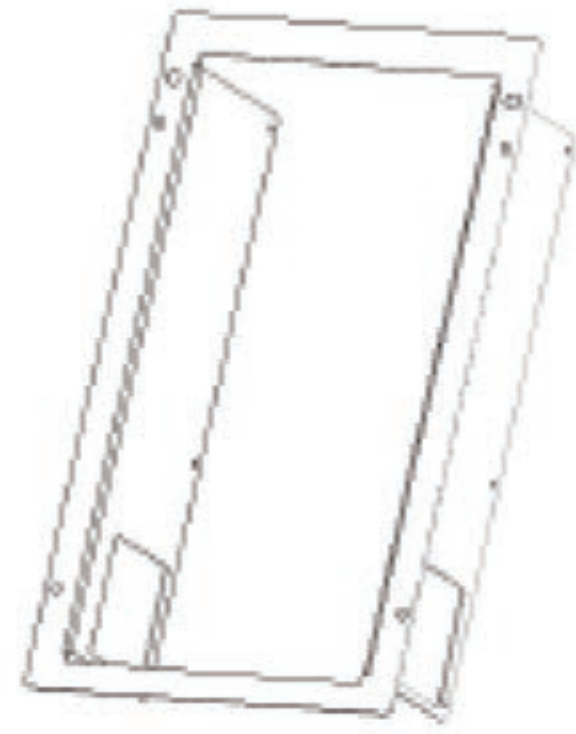
| Field                       | Sign | Description                 | Content   |
|-----------------------------|------|-----------------------------|---|
| Product series abbreviation | ①    | Product series abbreviation | GD270: Goodrive270 series VFD for fan and pump.   |
| Rated power                 | ②    | power level                 | 160: 160kW  |
| Voltage class               | ③    | Voltage class               | ◆ 4: AC 3PH 380~480V<br>◆ Rated voltage: 380V   |
| Management number           | ④    | Optional                    | ◆ Default: Empty.<br>◆ L1: with built-in DC reactor, applicable to 30~355kW models.<br>◆ L3: with built-in DC reactor and output AC reactor, applicable to 220kW and higher models.<br>Note: DC reactors are standard parts for 400~500kW models. |

## Product model selection

| VFD model      | Output power (kW) | Input current (A) | Output current (A) | Boundary dimension W*H*D (mm) | Package dimensions L*W*H (mm) | Standard weight (kg) | Gross weight (kg) |
|----------------|-------------------|-------------------|--------------------|-------------------------------|-------------------------------|----------------------|-------------------|
| GD270-030-4    | 30                | 75                | 60                 | 266*371*208                   | 490x315x315                   | 8                    | 10                |
| GD270-037-4    | 37                | 90                | 75                 | 266*371*208                   | 490x315x315                   | 8                    | 10                |
| GD270-045-4    | 45                | 108               | 92                 | 316*430*223                   | 580x395x360                   | 14                   | 16                |
| GD270-055-4    | 55                | 142               | 115                | 352*580*258                   | 695x440x410                   | 18                   | 21                |
| GD270-075-4    | 75                | 177               | 150                | 352*580*258                   | 695x440x410                   | 18                   | 21                |
| GD270-090-4    | 90                | 200               | 180                | 352*580*258                   | 695x440x410                   | 18                   | 21                |
| GD270-110-4    | 110               | 240               | 215                | 338*554*338.3                 | 725x495x500                   | 34                   | 40                |
| GD270-132-4    | 132               | 278               | 250                | 338*554*338.3                 | 725x495x500                   | 34                   | 40                |
| GD270-160-4    | 160               | 310               | 305                | 338*825*398.3                 | 955x480x600                   | 53                   | 64                |
| GD270-185-4    | 185               | 335               | 330                | 338*825*398.3                 | 955x480x600                   | 53                   | 64                |
| GD270-200-4    | 200               | 385               | 380                | 338*825*398.3                 | 955x480x600                   | 53                   | 64                |
| GD270-220-4    | 220               | 430               | 425                | 303*1108*480                  | 1310x630x560                  | 78                   | 99                |
| GD270-250-4    | 250               | 465               | 460                | 303*1108*480                  | 1310x630x560                  | 78                   | 99                |
| GD270-280-4    | 280               | 485               | 530                | 330*1288*544                  | 1438*668*531                  | 89                   | 119               |
| GD270-315-4    | 315               | 550               | 600                | 330*1288*544                  | 1438*668*531                  | 89                   | 119               |
| GD270-355-4    | 355               | 600               | 650                | 330*1288*544                  | 1438*668*531                  | 90                   | 120               |
| GD270-400-4-L1 | 400               | 660               | 720                | 330*1398*544                  | 1558*678*530                  | 173                  | 205               |
| GD270-450-4-L1 | 450               | 745               | 820                | 330*1398*544                  | 1558*678*530                  | 175                  | 207               |
| GD270-500-4-L1 | 500               | 800               | 860                | 330*1398*544                  | 1558*678*530                  | 175                  | 207               |

Note: The dimensions and weight of models with L suffix are provided separately by INVT .

## Optional parts

| Name                    | Image   | Model/Function/Apply to   | Name                   | Image  | Model/Function/Apply to   |
|-------------------------|---|---|------------------------|--|---|
| LCD keypad              |    | <b>Model:</b> SOP-270<br><b>Function:</b> External LCD display and operation panel<br><b>Apply to:</b> Full series                    | LED keypad             |   | <b>Model:</b> BOP-270<br><b>Function:</b> External LCD display and operation panel<br><b>Apply to:</b> Any models in the power range 1.5~22kW (Standard configuration for models in the power range 30~500kW) |
| Keypad bracket          |   | <b>Model:</b> GD350-JPZJ<br><b>Function:</b> For fixing LED/LCD keypad outside the electrical cabinet<br><b>Apply to:</b> Full series | Cabinet rail component |  | <b>Model:</b> GD270-DGZJ<br><b>Function:</b> To assist cabinet installation to improve installation efficiency and safety<br><b>Apply to:</b> Any models in the power range 220~500kW                         |
| Flange mounting bracket |  | <b>Model:</b> Contact us<br><b>Functions:</b> For flange mounting<br><b>Apply to:</b> Any models in the power range 1.5~200kW         |                        |  |   |

## Expansion card model selection

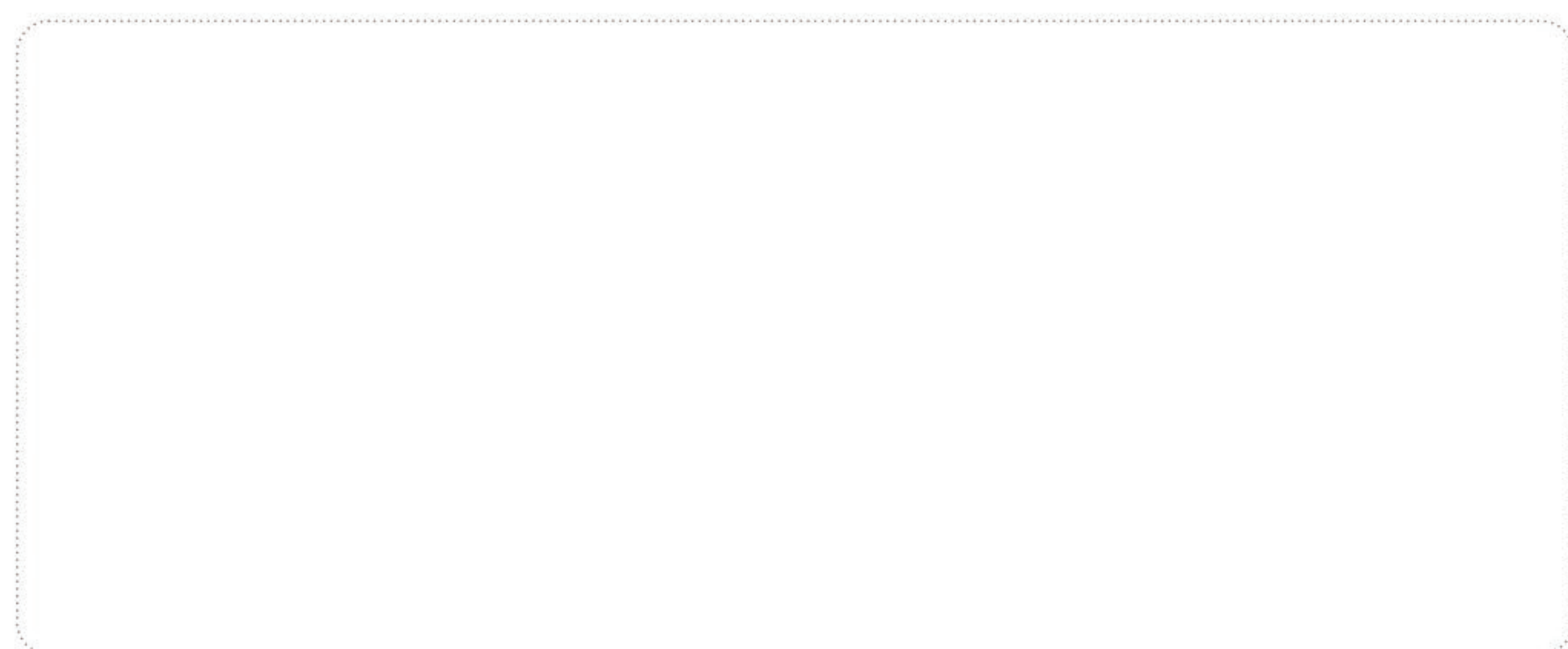
| Category           | Model       | Name  | Specifications   |
|--------------------|-------------|---|--|
| IO card            | EC-IO501-00 | IO expansion card                           | <ul style="list-style-type: none"> <li>◆ 4 digital inputs</li> <li>◆ 1 digital output</li> <li>◆ 1 analog input</li> <li>◆ 1 analog output</li> <li>◆ 2 relay outputs: 1 double-contact output, and 1 single-contact output</li> </ul> |
|                    | EC-IO503-00 | Relay card                                  | <ul style="list-style-type: none"> <li>◆ 2 digital inputs</li> <li>◆ 6 relay outputs</li> </ul>  |
| Communication card | EC-TX503    | PROFIBUS-DP communication card              | Supporting the PROFIBUS-DP protocol.   |
|                    | EC-TX505    | CANopen communication card                  | <ul style="list-style-type: none"> <li>◆ Based on the CAN2.0A physical layer.</li> <li>◆ Supporting the CANopen protocol.</li> </ul>   |
|                    | EC-TX511    | CAN master/slave control communication card | <ul style="list-style-type: none"> <li>◆ Based on the CAN2.0B physical layer.</li> <li>◆ Adopting INVT's master-slave control proprietary protocol.</li> </ul>   |
|                    | EC-TX509    | PROFINET communication card                 | Supporting the PROFINET protocol.  |

Note: The table describes expansion card are optional and need to be purchased separately. The SIM card is used with the Internet of Things card, which needs to be purchased extra.

## Technical parameters

|                               | Function                              | Specifications  |
|-------------------------------|---------------------------------------|---|
| Technical control performance | Input voltage (V)                     | ◆ AC 3PH 380~480V Rated voltage: 380V   |
|                               | Allowed voltage transient fluctuation | ◆ -15%~+10%   |
|                               | Input frequency (Hz)                  | ◆ 50Hz or 60Hz; Allowed range: 47~63Hz  |
|                               | Output frequency (Hz)                 | ◆ 0~400Hz   |
|                               | Control mode                          | ◆ Space voltage vector control, and sensorless vector control (SVC)   |
|                               | Motor type                            | ◆ Asynchronous motor (AM) and synchronous motor (SM)  |
|                               | Speed ratio                           | ◆ For AMs: 1:200 (SVC), for SMs: 1:20 (SVC)   |
|                               | Speed control accuracy                | ◆ $\pm 0.2\%$ ((SVC)  |
|                               | Speed fluctuation                     | ◆ $\pm 0.3\%$ ((SVC)  |
|                               | Torque response                       | ◆ <20ms ((SVC)  |
|                               | Torque control accuracy               | ◆ $\pm 10\%$ ((SVC)   |
|                               | Overload capacity                     | ◆ Able to run at 110% of rated current for 1min, and an overload allowed for every 5min   |
| Running control performance   | Frequency setting method              | ◆ Settings can be implemented through digital, analog, pulse frequency, multi-step speed run, simple PLC, PID, and communication.<br>◆ 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                      | ◆ Many protection functions available, such as protection against overcurrent, overvoltage, undervoltage, overtemperature, and phase loss   |
|                               | Speed tracking restart                | ◆ Used to implement impact-free smooth startup for rotating motors  |
| Peripheral interface          | Analog input                          | ◆ Two inputs. AI1: 0(2)~10V / 0(4)~20mA; AI2: -10 ~ +10V  |
|                               | Analog output                         | ◆ Two outputs. AO0/AO1: 0(2)~10V/0(4)~20mA  |
|                               | Digital input                         | ◆ Five regular inputs. Max. frequency: 1kHz; internal impedance: 3.3k $\Omega$<br>◆ One high-speed input. Max. frequency: 50kHz   |
|                               | Digital output                        | ◆ One Y terminal open collector output, sharing the terminal with S4. The function can be selected through a jumper.  |
|                               | Relay output                          | ◆ One programmable relay output.<br>◆ RO1A: NO; RO1B: NC; RO1C: common<br>◆ Contact capacity: 3A/AC250V, 1A/DC30V   |
|                               | Extended interfaces                   | ◆ Two extended interfaces: SLOT1 and SLOT2<br>◆ Supporting communication expansion cards, I/O cards and so on   |
| Other                         | Installation method                   | ◆ Supports wall-mounting (1.5kW~250kW)<br>◆ Supports floor-mounting (1.5kW~132kW)<br>◆ Supports flange-mounting (220kW~500kW)   |
|                               | Keypad                                | ◆ 1.5~22kW: with laminated LED keyboard as a standard configuration<br>◆ 30~500kW: with a LED keypad that can be used externally  |
|                               | EMC filter                            | ◆ A built-in C3 filter is optional for 1.5~132kW<br>◆ A built-in C3 filter is a standard configuration for 160kW and higher   |
|                               | Temperature of running environment    | ◆ -10°C ~+50°C; Derating is required when the ambient temperature exceeds 40°C.   |
|                               | IP rating                             | ◆ IP20 for 200kW and lower<br>◆ IP00 for 200kW and higher, supporting the optional part IP20 assembly   |
|                               | Pollution degree                      | ◆ Degree 2  |
|                               | Cooling method                        | ◆ 1.5kW: Natural cooling<br>◆ 2.2kW and higher: Forced air cooling  |

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