

# Goodrive290 Series

Low-Voltage Multifunction General-Purpose VFD





# Contents

|                               |    |
|-------------------------------|----|
| Company introduction.....     | 2  |
| Product introduction.....     | 4  |
| Product application.....      | 5  |
| Product features.....         | 6  |
| Technical specifications..... | 9  |
| Naming rule.....              | 10 |
| Product selection.....        | 11 |
| Expansion card selection..... | 12 |
| Accessory selection.....      | 12 |
| Reactor&filter selection..... | 13 |
| Wiring diagram .....          | 14 |
| Installation method.....      | 15 |

INVT (Shenzhen INVT Electric Co., Ltd) has been concentrating on industry automation and energy power since its foundation in 2002 and is committed to "Providing the best product and service to allow customers more competitiveness". INVT goes public in 2010 and is the first A-share listed company (002334) in Shenzhen Stock Exchange in the industry. At present, INVT owns 15 subsidiaries and more than 4500 employees, over 40 branches, forming a sales network covering more than 100 overseas countries and regions.

INVT has been awarded as the Key High-tech Enterprise of National Torch Plan based on mastering of key technologies in power electronics, auto control and IT. With business covering industry automation, electric vehicle, network power and rail transit, INVT has established 10 R&D centers nationwide, boasts more than 1400 patents and owns the first lab in the industry awarded ACT qualification from TÜV SÜD, UL-WTDP and CNAS National Lab. The industrial parks in Shenzhen and Suzhou aim to provide customers with advanced integrated product development design management, comprehensive product R&D test and auto informational production. The worldwide INVT branches and warranty service centers are ready to offer customers all-around back-ups including professional solutions, technical trainings and service support.

In the next decade, INVT will continue to take "Sincere Virtuous, Professional Aspiring" as our business philosophy, enhance core business sectors including industrial automation, electric vehicle, network power and rail transit based on the three major technologies in industry automation and energy power fields, and strive to become a leading, responsible and harmonic international professional group armed with proper product structure, leading technologies, efficient management, robust profitability and superior competitiveness.



INVT Guangming  
Technology Building



INVT Suzhou Industry Park



INVT Zhongshan  
New Energy Industry Base

# COMPANY PROFILE



# Product introduction

GD290 series VFD is a low-voltage multifunction general-purpose VFD with a power range from 0.75kW to 1200kW (380–480V). It delivers robust performance in driving asynchronous motors and can be widely applicable to constant torque and variable torque load equipment across various industries such as municipal engineering, chemical processing, HVAC, textiles, food, and packaging.



## Easy to use

- Compact book-style design; T10–T13 frames adopt a roller-type structure; built-in braking units up to 110kW are supported, saving installation space and labor time and reducing cabinet assembly costs.
- Supports 24V power supply cards and LCD keypads, making commissioning safe, intuitive, and easy to operate.
- Supports a wide range of industrial bus communication expansions and I/O expansions, including PROFINET, PROFIBUS-DP, Modbus TCP, and CANopen; features grid voltage and frequency selection. G-type models are available up to 1000kW, and P-type models up to 1200kW, enabling one VFD to efficiently meet diverse requirements.
- Built-in dedicated water supply functions such as multi-pump rotation reduce manual intervention and extend the service life of water pumps.



## Reliable and durable

- Wide 380–480V input voltage design provides strong resistance to grid fluctuations.
- Independent air duct design, thickened conformal coating, and support for dustproof cover plates (for T3–T6 frames) effectively protect against dust and corrosive gas environments, improving equipment operating reliability.
- High-power models are supplied as standard with built-in C3 filters for T9–T15 frames and reactors for T12–T15 frames, improving EMC performance and optimizing the power factor.
- Two-year warranty; compliant with the RoHS Directive, and CE- and EAC-certified, providing reliable assurance and meeting requirements for overseas markets.



## Energy efficient

- Equipped with an ECO energy-saving control algorithm to dynamically match load demand and effectively reduce energy consumption during no-load and light-load operation.
- Supports intelligent sleep mode, enabling start/stop on demand and optimizing energy efficiency throughout the equipment lifecycle.

# / Product application

District heating >>>



Wastewater treatment >>>



HVAC >>>



Plastic machinery >>>



Food processing >>>



Paper production equipment >>>

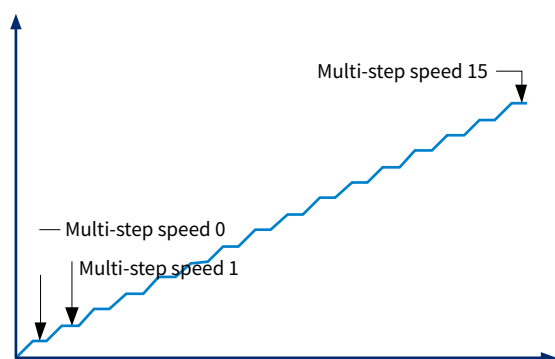


# Product features

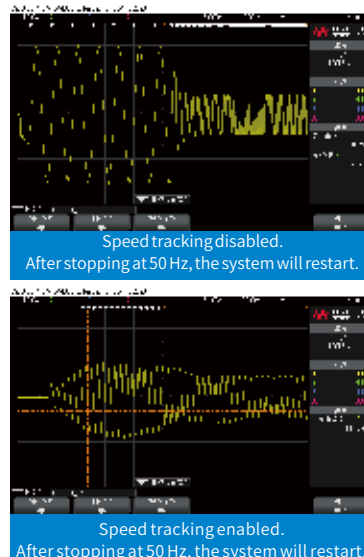


## Rich functionality

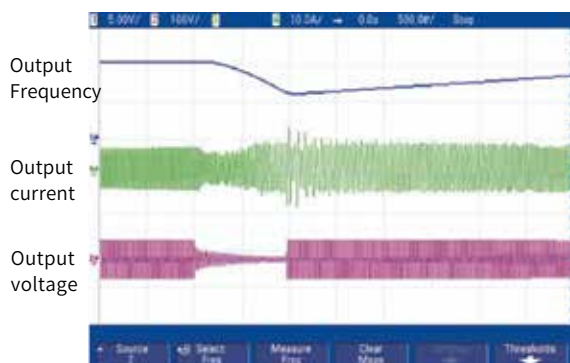
- Multi-step speed setting function:** Enables 16-step speed settings through combinations of 4 terminals to meet process-specific speed requirements.



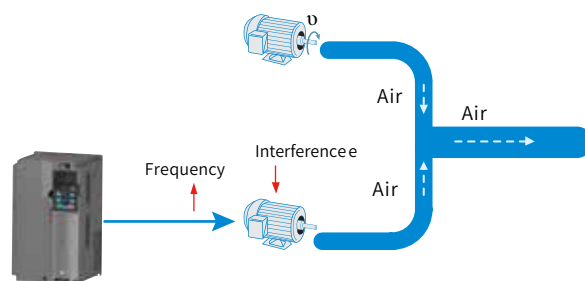
- Speed tracking function:** Reduces device impact and enhances restart performance by tracking the device rotation speed.



- Ride-through function:** Ensures continuous operation during short-term power grid fluctuations, preventing unexpected shutdowns.



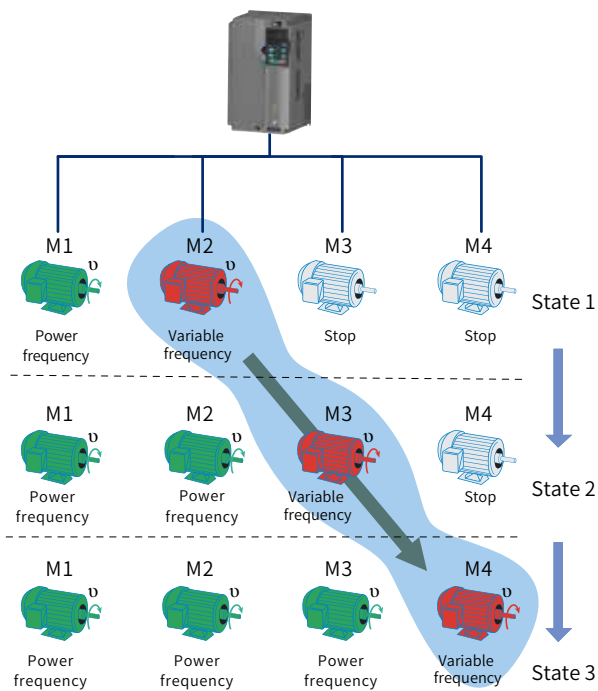
- Regeneration avoidance:** When the system is in a light regenerative state, the output frequency is automatically increased to prevent over voltage alarms, ensuring stable machine running.



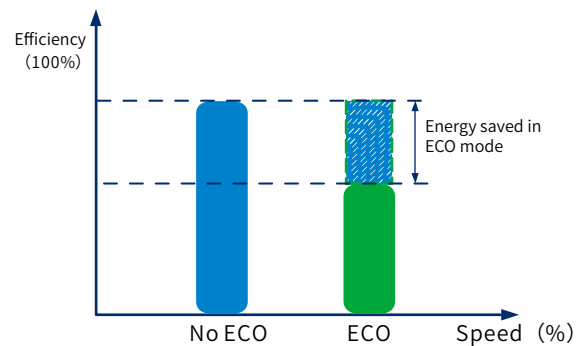
- Restart after power failure:** The automatic restart function after power failure can be selected, with no restart command required.

- Multi-pump alternation and auxiliary pump start/stop functions:** Supports alternating operation of variable frequency pumps for water supply, fixed frequency pump water supply, and sleep control (Note: Relay card configuration is required)

If no specific pump is designated as the variable frequency pump, and the water supply pressure is insufficient, the running variable frequency pump will switch to grid frequency operation. The variable frequency control will then switch to the next pump as the variable frequency pump (up to 8 variable frequency pumps can be controlled; only one variable frequency pump can operate at a time).

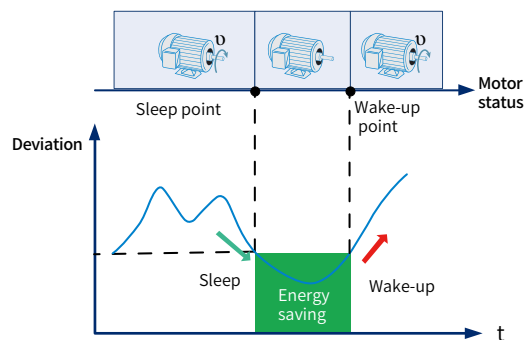


- ECO mode:** Ensures optimal performance and minimum loss at low dynamic loads, optimizing output power.



| Energy saving effect (annual)                                                                                                                                                           | Condition                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Annual energy saving:<br>Approx. <b>8100kWh</b>                                                                                                                                         | <ul style="list-style-type: none"> <li>• Applicable to 4kW IE2 asynchronous motors</li> <li>• Load rate: 40% Number of units: 10 units</li> <li>• Annual operation days: 24 hours/365 days</li> <li>• Control, energy saving mode: V/F, maximum efficiency mode</li> <li>• Energy saving gain coefficient: 100%</li> <li>• Energy saving angle compensation coefficient: 80%</li> </ul> |
| <small>Note: Internal measurement data. Actual energy savings may vary depending on the motor's characteristics and performance.</small>                                                |                                                                                                                                                                                                                                                                                                                                                                                         |
| <small>Only effective for asynchronous motor control and V/F control. It is recommended to enable this function in fan and pump applications where load variations are minimal.</small> |                                                                                                                                                                                                                                                                                                                                                                                         |

- Energy saving control:** Avoids frequent starts and stops, enabling sleep mode at night or energy-efficient operation under very low loads.

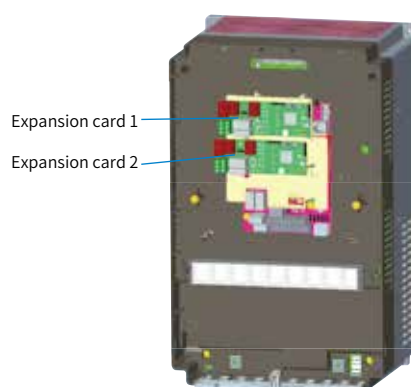




## Strong expandability

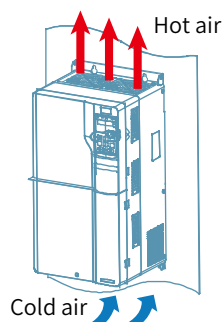
- **Dual expansion channels:** Can simultaneously meet two different types of expansion requirements.

|   |                                       |                                                                                                      |
|---|---------------------------------------|------------------------------------------------------------------------------------------------------|
| 1 | Optional I/O expansion card           | Allows for the expansion of digital and analog input/output terminals as well as relay terminals.    |
| 2 | Optional communication expansion card | Supports various industrial fieldbuses such as PROFINET, PROFIBUS-DP, and CANopen.                   |
| 3 | Optional 24V power supply card        | Enables parameter read/write through communication or keypad even when the main power supply is off. |



## Reliable and environmentally friendly

- **Independent air duct design:** Effectively improves the protection of the VFD, preventing dust from entering the VFD's interior, avoiding faults such as short circuits. It also helps expel internal heat, solving the machine's cooling issues, enhancing reliability, and extending the VFD's lifespan.
- **Enhanced PCB coating:** Strengthens the three-proof treatment, improving the PCB's protective capability. The board is more resistant to harsh environments, ensuring the VFD operates healthily for an extended lifespan.



- **CE and EAC certified**
- **Compliant with RoHS:** Standard products comply with the RoHS Directive (EU Specific Restriction of Hazardous Substances)

# Technical specifications

|                               | 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)                                                                                                                                                                                                        |
|                               | Speed ratio                           | For AM: 1:200 (SVC)                                                                                                                                                                                                            |
|                               | Speed control accuracy                | ±0.2% (SVC)                                                                                                                                                                                                                    |
|                               | Speed fluctuation                     | ±0.3% (SVC)                                                                                                                                                                                                                    |
|                               | Torque response                       | <20ms (SVC)                                                                                                                                                                                                                    |
|                               | Torque control accuracy               | ±10% (SVC)                                                                                                                                                                                                                     |
|                               | Overload capacity                     | For G type: 150% for 1min, 180% for 10s, with overload allowed once every 5min.<br>For P type: 110% for 1min, with overload allowed once every 5min.                                                                           |
| Running control performance   | Frequency setting method              | Supports keypad digital setting, analog setting, multi-step speed running setting, simple PLC setting, PID setting, communication setting, and so on. These 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                      | Various protection functions, such as protection against overcurrent, overvoltage, undervoltage, overtemperature, phase loss, and overload.                                                                                    |
|                               | Speed tracking restart function       | Enables smooth startup of a rotating motor.                                                                                                                                                                                    |
| 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: 3.3kΩ<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                          | Two programmable relay outputs<br>RO1A: NO; RO1B: NC; RO1C: common<br>RO2A: NO; RO2B: NC; RO2C: common<br>Contact capacity: 3A/AC 250V, 1A/DC 30V                                                                              |
|                               | Expansion interfaces                  | Two expansion interfaces, SLOT1 and SLOT2, supporting communication cards and I/O cards.                                                                                                                                       |
| Other                         | Mounting method                       | T1–T10 frames support wall mounting.<br>T1–T9 frames support flange mounting.<br>T10–T15 frames support floor mounting.                                                                                                        |
|                               | Keypad configuration                  | T1–T4 frames are equipped with a membrane LED keypad as standard.<br>T5–T12 frames are equipped with a remote-mountable LED keypad as standard.                                                                                |
|                               | Operating ambient temperature         | -10–50° C. Derating required above 40° C.                                                                                                                                                                                      |
|                               | Ingress protection (IP) rating        | T1–T9 frames: IP20<br>T10–T13 frames: IP00<br>T14–T15 frames: IP21                                                                                                                                                             |
|                               | Pollution degree                      | Degree 2                                                                                                                                                                                                                       |
|                               | Cooling method                        | 0R7G/1R5P: Natural cooling<br>Other power ratings: Forced air cooling                                                                                                                                                          |

# / Naming rule

## GD290-045G/055P-4-X

| Field description       | Definition                                                                    |
|-------------------------|-------------------------------------------------------------------------------|
| Product series          | GD290:<br>Goodrive290 Series Low-Voltage<br>Multifunction General-Purpose VFD |
| Power class + Load type | 0.75-1200: Power class<br>G: Constant torque load<br>P: Variable torque load  |
| Grid side voltage class | 4: AC 3PH 380V-480V<br>Rated voltage: 380V                                    |
| Braking unit            | X = B: optional built-in braking unit<br>X = L3: optional built-in reactor.   |

### Remarks:

Braking unit: T1-T5 frames are embedded with a braking unit as standard. T9-T15 frames: An external braking unit is optional.

G/P design explanation: For 132G/160P and below, G- and P-types are integrated; above that, they are separate.

L3 description: For T14 frame models, “-L3” indicates a standard built-in input reactor and an optional built-in output reactor.

# / Product selection

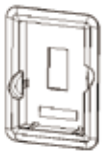
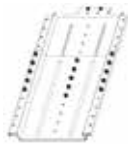
| Frame | VFD model             | Output power (kW) | Input current (A) | Output current (A) |
|-------|-----------------------|-------------------|-------------------|--------------------|
| T1    | GD290-0R7G/1R5P-4     | 0.75/1.5          | 3.5/5             | 2.5/3.7            |
|       | GD290-1R5G/2R2P-4     | 1.5/2.2           | 4.5/6             | 3.7/5              |
|       | GD290-2R2G/003P-4     | 2.2/3             | 6/10.5            | 5/6.8              |
|       | GD290-003G/004P-4     | 3.0/4.0           | 10.5/15           | 6.8/9.5            |
| T2    | GD290-004G/5R5P-4     | 4/5.5             | 15/20             | 9.5/13             |
|       | GD290-5R5G/7R5P-4     | 5.5/7.5           | 20/27             | 14/17              |
| T3    | GD290-7R5G/011P-4     | 7.5/11            | 27/35             | 18.5/25            |
|       | GD290-011G/015P-4     | 11.0/15           | 35/44             | 25/32              |
| T4    | GD290-015G/018P-4     | 15/18.5           | 38/46             | 32/38              |
|       | GD290-018G/022P-4     | 18.5/22           | 46/54             | 38/45              |
| T5    | GD290-022G/030P-4     | 22/30             | 54/75             | 45/60              |
|       | GD290-030G/037P-4     | 30/37             | 72/90             | 57/75              |
| T6    | GD290-037G/045P-4(-B) | 37/45             | 90/108            | 75/92              |
| T7    | GD290-045G/055P-4(-B) | 45/55             | 108/142           | 92/115             |
|       | GD290-055G/075P-4(-B) | 55/75             | 142/177           | 115/150            |
|       | GD290-075G/090P-4(-B) | 75/90             | 177/200           | 150/180            |
| T8    | GD290-090G/110P-4(-B) | 90/110            | 200/240           | 180/215            |
|       | GD290-110G/132P-4(-B) | 110/132           | 220/278           | 205/250            |
| T9    | GD290-132G/160P-4     | 132/160           | 278/310           | 250/305            |
|       | GD290-160G-4          | 160               | 310               | 305                |
|       | GD290-185P-4          | 185               | 335               | 330                |
|       | GD290-200P-4          | 200               | 385               | 380                |
| T10   | GD290-185G-4          | 185               | 345               | 340                |
|       | GD290-200G-4          | 200               | 370               | 365                |
|       | GD290-220P-4          | 220               | 430               | 425                |
|       | GD290-250P-4          | 250               | 465               | 460                |
| T11   | GD290-220G-4          | 220               | 430               | 425                |
|       | GD290-250G-4          | 250               | 485               | 480                |
|       | GD290-280G-4          | 280               | 530               | 520                |
|       | GD290-280P-4          | 280               | 540               | 530                |
|       | GD290-315P-4          | 315               | 605               | 600                |
|       | GD290-355P-4          | 355               | 655               | 650                |
| T12   | GD290-315G-4          | 315               | 605               | 600                |
|       | GD290-355G-4          | 355               | 655               | 650                |
|       | GD290-400G-4          | 400               | 660               | 720                |
|       | GD290-400P-4          | 400               | 660               | 720                |
|       | GD290-450P-4          | 450               | 745               | 820                |
|       | GD290-500P-4          | 500               | 800               | 860                |
| T13   | GD290-450G-4          | 450               | 745               | 820                |
|       | GD290-500G-4          | 500               | 800               | 900                |
|       | GD290-560P-4          | 560               | 970               | 1020               |
|       | GD290-630P-4          | 630               | 1100              | 1120               |
| T14   | GD290-560G-4          | 560               | 970               | 1020               |
|       | GD290-560G-4-L3       | 560               | 970               | 1020               |
|       | GD290-630G-4          | 630               | 1100              | 1120               |
|       | GD290-630G-4-L3       | 630               | 1100              | 1120               |
|       | GD290-710P-4          | 710               | 1200              | 1260               |
|       | GD290-710P-4-L3       | 710               | 1200              | 1260               |
|       | GD290-800P-4          | 800               | 1320              | 1460               |
|       | GD290-800P-4-L3       | 800               | 1320              | 1460               |
| T15   | GD290-710G-4          | 710               | 1200              | 1260               |
|       | GD290-800G-4          | 800               | 1320              | 1460               |
|       | GD290-900P-4          | 900               | 1490              | 1640               |
|       | GD290-1000P-4         | 1000              | 1600              | 1720               |
|       | GD290-900G-4          | 900               | 1490              | 1640               |
|       | GD290-1000G-4         | 1000              | 1600              | 1720               |
|       | GD290-1120P-4         | 1120              | 1940              | 2040               |
|       | GD290-1200P-4         | 1200              | 2200              | 2240               |

Note: A product model suffixed with (-B) indicates that it supports an optional built-in braking unit.

## Expansion card model selection

| Expansion card type | Model       | Name                                                              | Specifications                                                                                                                                                       |
|---------------------|-------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IO card             | EC-IO501-00 | I/O expansion card                                                | Four digital inputs<br>One digital output<br>One analog input<br>One analog output<br>Two relay outputs<br>One double-contact output, and one single-contact output. |
|                     | EC-IO503-00 | Relay card                                                        | Two digital inputs<br>Six relay outputs                                                                                                                              |
| Power supply card   | EC-PS501-24 | 24V power supply expansion card                                   | Input voltage range: DC18–30V(Rated 24VDC)/2A                                                                                                                        |
| Communication card  | EC-TX509C   | PROFINET communication card                                       | Supporting the PROFINET protocol                                                                                                                                     |
|                     | EC-TX503D   | PROFIBUS-DP communication card                                    | Supporting the PROFIBUS-DP protocol                                                                                                                                  |
|                     | EC-TX505D   | CANopen communication/CAN master-slave control communication card | CANopen communication or CAN master-slave control communication selectable through a DIP switch.                                                                     |
|                     | EC-TX510B   | Ethernet/IP & Modbus TCP communication card                       | Ethernet/IP communication or Modbus TCP communication selectable through a DIP switch.                                                                               |

## Accessory selection

| Accessory name          | Appearance                                                                          | Model/Function/<br>Applicable to                                                                                                                                            | Accessory name                         | Appearance                                                                            | Model/Function/<br>Applicable to                                                                                                                                                                   |
|-------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LCD keypad              |  | <b>Model:</b> SOP-290<br><b>Function:</b> Externally connected LCD display and operation panel<br><b>Applicable to:</b> All series                                          | LED keypad                             |   | <b>Model:</b> BOP-270<br><b>Function:</b> Externally connected LED display and operation panel<br><b>Applicable to:</b> T1–T4 frames<br>Standard for T5–T15 frames.                                |
| Keypad bracket          |  | <b>Model:</b> GD350-JPZJ<br><b>Function:</b> Used for external mounting on the electrical cabinet<br>LED/LCD keypad<br><b>Applicable to:</b> All series                     | Rail assembly for cabinet installation |   | <b>Model:</b> GD270-DGZJ<br><b>Function:</b> Assists with internal cabinet installation, improving efficiency and safety<br><b>Applicable to:</b> T10–T13 frames                                   |
| Flange mounting bracket |  | <b>Model:</b> Consult with manufacturer<br><b>Function:</b> Meets flange mounting requirements<br><b>Applicable to:</b> T1–T9 frames                                        | Keypad dust cover                      |   | <b>Model:</b> GD270-JPFH<br><b>Function:</b> Prevents dust or foreign objects from entering the keypad opening when the keypad is mounted externally<br><b>Applicable to:</b> T5 and above frames. |
| Base                    |  | <b>Model:</b> Consult us<br><b>Function:</b> Raises the cabinet unit and reserves bottom wiring space, making on-site wiring easier<br><b>Applicable to:</b> T14–T15 frames | Ventilation dust cover                 |  | <b>Model:</b> Consult us<br><b>Function:</b> Prevents dust and foreign matter from entering the circuit board area<br><b>Applicable to:</b> T3–T6 frames                                           |

# / Reactor&filter selection

| VFD power<br>(kW) | Reactor         |                 | Filter         |                |
|-------------------|-----------------|-----------------|----------------|----------------|
|                   | Input reactor   | Output reactor  | Input filter   | Output filter  |
| 0.75              | GDL-ACL0005-4CU | GDL-OCL0005-4CU | FLT-P04006L-B  | FLT-L04006L-B  |
| 1.5               | GDL-ACL0005-4CU | GDL-OCL0005-4CU | FLT-P04006L-B  | FLT-L04006L-B  |
| 2.2               | GDL-ACL0006-4CU | GDL-OCL0006-4CU | FLT-P04006L-B  | FLT-L04006L-B  |
| 4                 | GDL-ACL0014-4CU | GDL-OCL0010-4CU | FLT-P04016L-B  | FLT-L04016L-B  |
| 5.5               | GDL-ACL0020-4CU | GDL-OCL0014-4CU | FLT-P04032L-B  | FLT-L04032L-B  |
| 7.5               | GDL-ACL0025-4CU | GDL-OCL0020-4CU | FLT-P04032L-B  | FLT-L04032L-B  |
| 11                | GDL-ACL0035-4AL | GDL-OCL0025-4CU | FLT-P04045L-B  | FLT-L04045L-B  |
| 15                | GDL-ACL0040-4AL | GDL-OCL0035-4AL | FLT-P04045L-B  | FLT-L04045L-B  |
| 18.5              | GDL-ACL0051-4AL | GDL-OCL0040-4AL | FLT-P04065L-B  | FLT-L04065L-B  |
| 22                | GDL-ACL0051-4AL | GDL-OCL0050-4AL | FLT-P04065L-B  | FLT-L04065L-B  |
| 30                | GDL-ACL0070-4AL | GDL-OCL0060-4AL | FLT-P04100L-B  | FLT-L04065L-B  |
| 37                | GDL-ACL0090-4AL | GDL-OCL0075-4AL | FLT-P04100L-B  | FLT-L04100L-B  |
| 45                | GDL-ACL0110-4AL | GDL-OCL0092-4AL | FLT-P04100L-B  | FLT-L04100L-B  |
| 55                | GDL-ACL0150-4AL | GDL-OCL0115-4AL | FLT-P04150L-B  | FLT-L04150L-B  |
| 75                | GDL-ACL0150-4AL | GDL-OCL0150-4AL | FLT-P04240L-B  | FLT-L04150L-B  |
| 90                | GDL-ACL0220-4AL | GDL-OCL0220-4AL | FLT-P04240L-B  | FLT-L04240L-B  |
| 110               | GDL-ACL0220-4AL | GDL-OCL0220-4AL | FLT-P04240L-B  | FLT-L04240L-B  |
| 132               | GDL-ACL0265-4AL | GDL-OCL0265-4AL | FLT-P04400L-B  | FLT-L04400L-B  |
| 160               | GDL-ACL0330-4AL | GDL-OCL0330-4AL | FLT-P04400L-B  | FLT-L04400L-B  |
| 185               | GDL-ACL0390-4AL | GDL-OCL0400-4AL | FLT-P04400L-B  | FLT-L04400L-B  |
| 200               | GDL-ACL0390-4AL | GDL-OCL0400-4AL | FLT-P04400L-B  | FLT-L04400L-B  |
| 220               | GDL-ACL0450-4AL | GDL-OCL0450-4AL | FLT-P04600L-B  | FLT-L04600L-B  |
| 250               | GDL-ACL0500-4AL | GDL-OCL0500-4AL | FLT-P04600L-B  | FLT-L04600L-B  |
| 280               | GDL-ACL0500-4AL | GDL-OCL0560-4AL | FLT-P04600L-B  | FLT-L04600L-B  |
| 315               | GDL-ACL0580-4AL | GDL-OCL0660-4AL | FLT-P04800L-B  | FLT-L04800L-B  |
| 355               | GDL-ACL0660-4AL | GDL-OCL0660-4AL | FLT-P04800L-B  | FLT-L04800L-B  |
| 400               | GDL-ACL0715-4AL | GDL-OCL0720-4AL | FLT-P04800L-B  | FLT-L04800L-B  |
| 450               | GDL-ACL0840-4AL | GDL-OCL0820-4AL | FLT-P041000L-B | FLT-L041000L-B |
| 500               | GDL-ACL1000-4AL | GDL-OCL1000-4AL | FLT-P041000L-B | FLT-L041000L-B |

## Remarks:

T12-T13 frames are supplied as standard with a built-in DC reactor. T14 frames are supplied as standard with a built-in input reactor, and a built-in output reactor is optional. T15 frames are supplied as standard with a built-in DC reactor and output reactor.

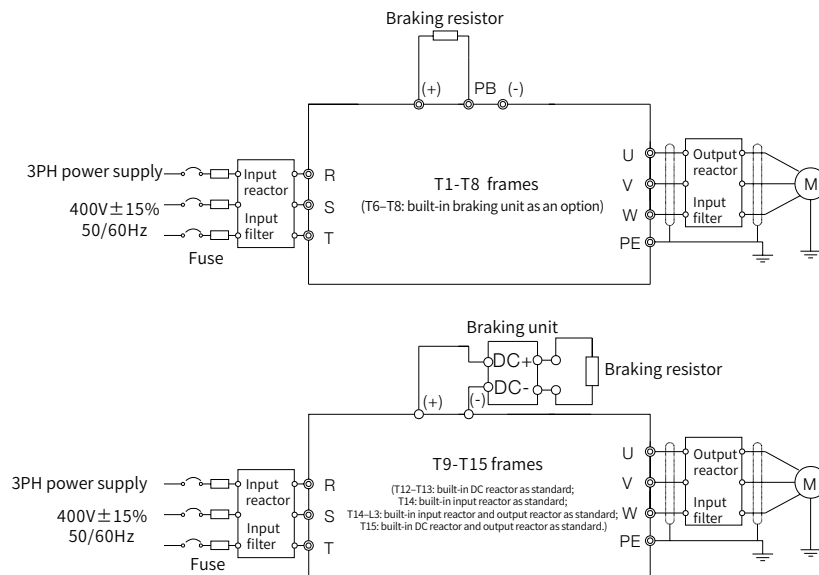
For reactor or filter selection for 560kW and above models, consult us.

The preceding reactors and filters are external options.

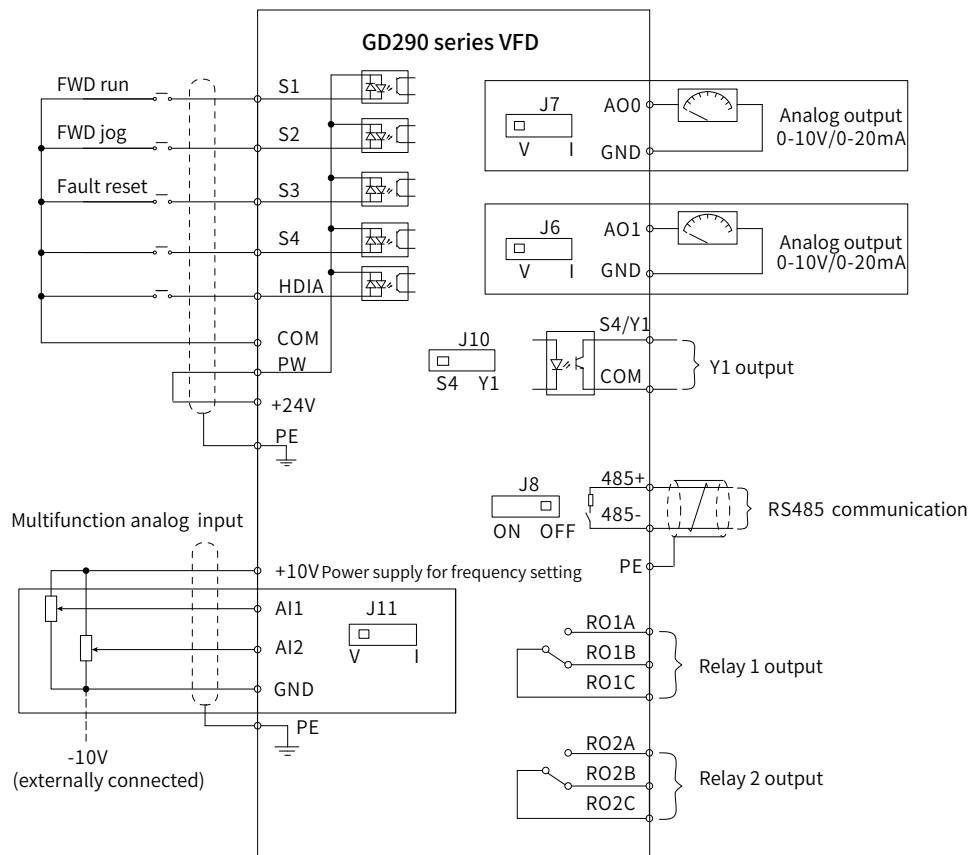
For other option information, refer to the low-voltage VFD GDL series filter option brochure.

# Wiring diagram

## Main circuit wiring diagram >>>

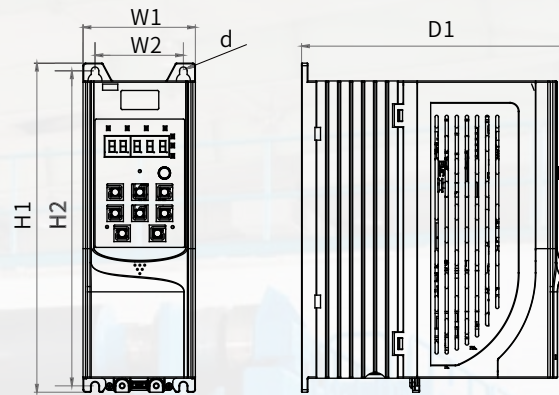


## Control circuit wiring diagram >>>

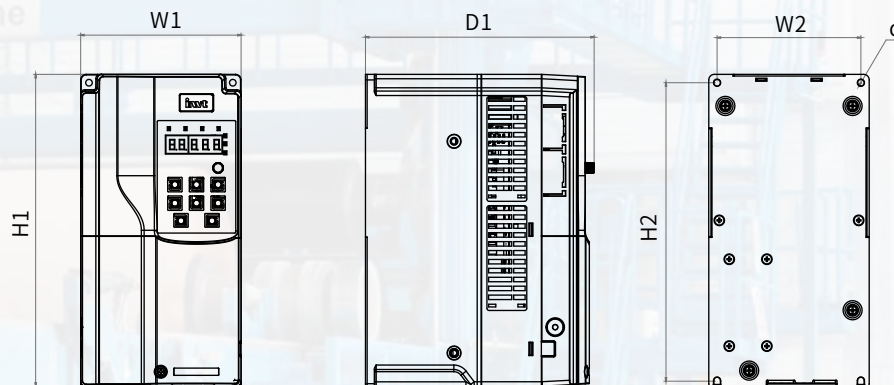


# / Installation method

## Wall mounting >>>



Wall mounting diagram for T1-T2 frames

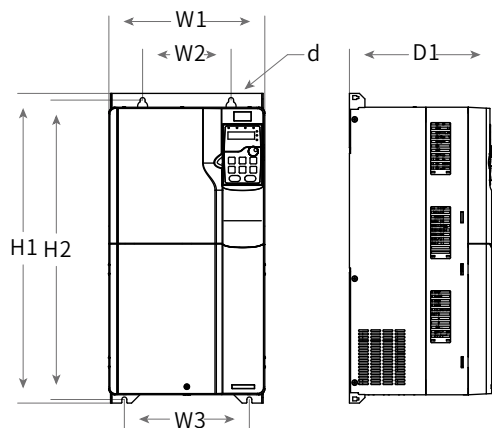


Wall mounting diagram for T3-T6 frames

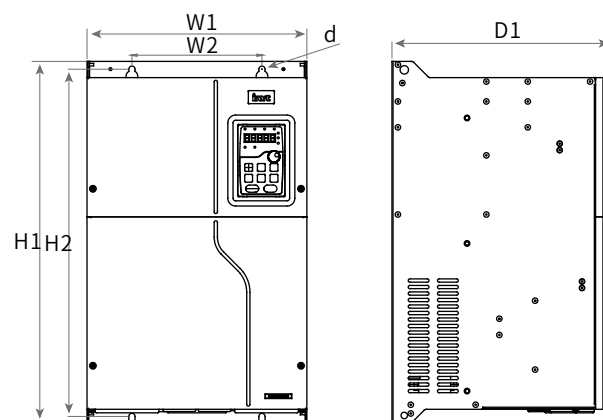
(unit: mm)

| Frame | VFD model             | Outline dimensions (mm) |     |       | Hole distance (mm) |     |    | Hole diameter (mm) | Screw |
|-------|-----------------------|-------------------------|-----|-------|--------------------|-----|----|--------------------|-------|
|       |                       | W1                      | H1  | D1    | H2                 | W2  | D2 |                    |       |
| T1    | GD290-0R7G/1R5P-4     | 89                      | 231 | 193   | 221                | 70  | /  | 5                  | M4    |
|       | GD290-1R5G/2R2P-4     |                         |     |       |                    |     |    |                    |       |
|       | GD290-2R2G/003P-4     |                         |     |       |                    |     |    |                    |       |
|       | GD290-003G/004P-4     |                         |     |       |                    |     |    |                    |       |
| T2    | GD290-004G/5R5P-4     | 89                      | 259 | 211.5 | 248                | 70  | /  | 6                  | M5    |
|       | GD290-5R5G/7R5P-4     |                         |     |       |                    |     |    |                    |       |
| T3    | GD290-7R5G/011P-4     | 145                     | 280 | 207   | 268                | 130 | /  | 6                  | M5    |
|       | GD290-011G/015P-4     |                         |     |       |                    |     |    |                    |       |
| T4    | GD290-015G/018P-4     | 169                     | 320 | 214   | 308                | 154 | /  | 6                  | M5    |
|       | GD290-018G/022P-4     |                         |     |       |                    |     |    |                    |       |
| T5    | GD290-022G/030P-4     | 200                     | 341 | 214   | 328.5              | 185 | /  | 6                  | M5    |
|       | GD290-030G/037P-4     |                         |     |       |                    |     |    |                    |       |
| T6    | GD290-037G/045P-4(-B) | 250                     | 400 | 228   | 380                | 230 | /  | 6                  | M5    |

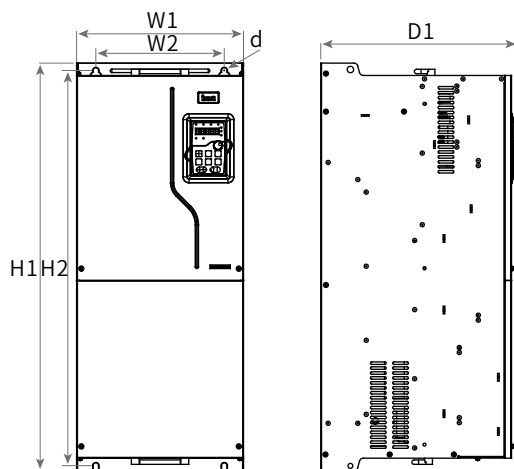
## Wall mounting >>>



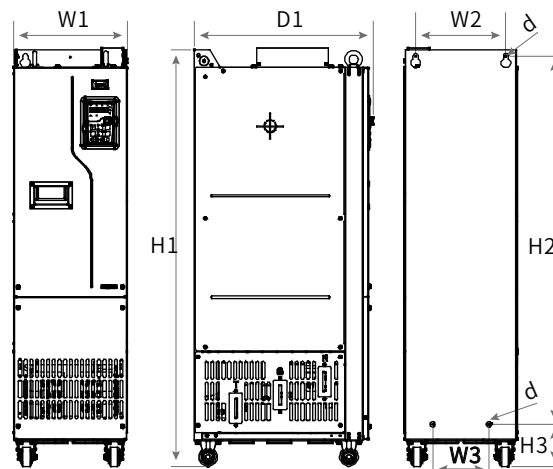
Wall mounting diagram for T7 frame



Wall mounting diagram for T8 frame



Wall mounting diagram for T9 frame

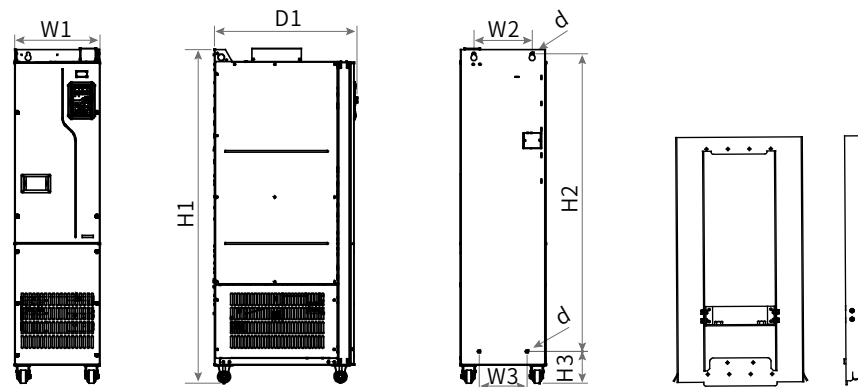


Wall mounting diagram for T10 frame

(unit: mm)

| Frame | VFD model             | Outline dimensions (mm) |      |     | Hole distance (mm) |     |     | Hole diameter (mm) | Screw |
|-------|-----------------------|-------------------------|------|-----|--------------------|-----|-----|--------------------|-------|
|       |                       | W1                      | H1   | D1  | H2                 | W2  | D2  |                    |       |
| T7    | GD290-045G/055P-4(-B) | 282                     | 560  | 264 | 542                | 160 | 226 | 9                  | M8    |
|       | GD290-055G/075P-4(-B) |                         |      |     |                    |     |     |                    |       |
|       | GD290-075G/090P-4(-B) |                         |      |     |                    |     |     |                    |       |
| T8    | GD290-090G/110P-4(-B) | 338                     | 554  | 338 | 534                | 200 | /   | 9.5                | M8    |
|       | GD290-110G/132P-4(-B) |                         |      |     |                    |     |     |                    |       |
| T9    | GD290-132G/160P-4     | 338                     | 825  | 398 | 800                | 260 | /   | 11                 | M10   |
|       | GD290-160G-4          |                         |      |     |                    |     |     |                    |       |
|       | GD290-185P-4          |                         |      |     |                    |     |     |                    |       |
|       | GD290-200P-4          |                         |      |     |                    |     |     |                    |       |
| T10   | GD290-185G-4          | 303                     | 1108 | 477 | 980                | 240 | 240 | 14                 | M12   |
|       | GD290-200G-4          |                         |      |     |                    |     |     |                    |       |
|       | GD290-220P-4          |                         |      |     |                    |     |     |                    |       |
|       | GD290-250P-4          |                         |      |     |                    |     |     |                    |       |

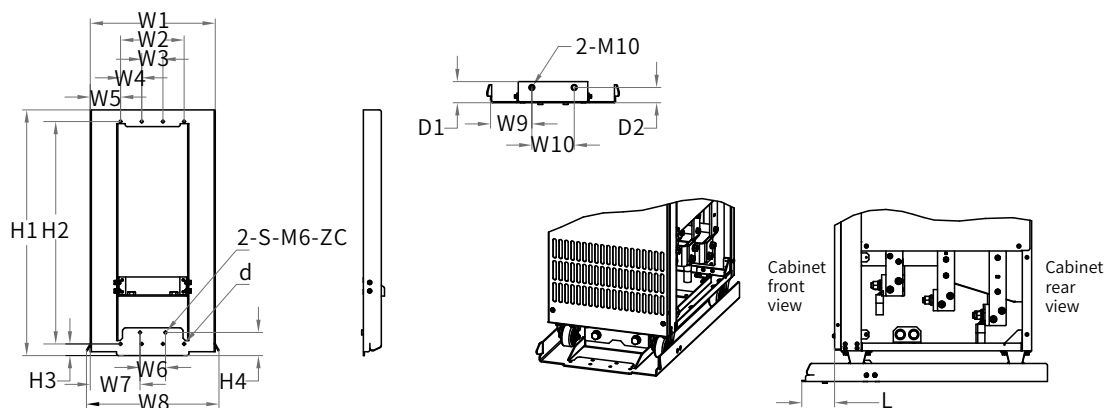
# Floor mounting >>>



Floor mounting diagram for T10-T13 frames

(unit: mm)

| Frame | VFD model    | Outline dimensions (mm) |      |     | Hole distance (mm) |     |     |     | Hole diameter (mm) | Screw |
|-------|--------------|-------------------------|------|-----|--------------------|-----|-----|-----|--------------------|-------|
|       |              | W1                      | H1   | D1  | H2                 | H3  | W2  | W3  |                    |       |
| T10   | GD290-185G-4 | 303                     | 1108 | 477 | 980                | 111 | 240 | 150 | 14                 | M12   |
|       | GD290-200G-4 |                         |      |     |                    |     |     |     |                    |       |
|       | GD290-220P-4 |                         |      |     |                    |     |     |     |                    |       |
|       | GD290-250P-4 |                         |      |     |                    |     |     |     |                    |       |
| T11   | GD290-220G-4 | 330                     | 1288 | 552 | 1150               | 122 | 225 | 185 | 13                 | M10   |
|       | GD290-250G-4 |                         |      |     |                    |     |     |     |                    |       |
|       | GD290-280G-4 |                         |      |     |                    |     |     |     |                    |       |
|       | GD290-280P-4 |                         |      |     |                    |     |     |     |                    |       |
|       | GD290-315P-4 |                         |      |     |                    |     |     |     |                    |       |
|       | GD290-355P-4 |                         |      |     |                    |     |     |     |                    |       |
| T12   | GD290-315G-4 | 330                     | 1398 | 552 | 1280               | 101 | 240 | 200 | 13                 | M10   |
|       | GD290-355G-4 |                         |      |     |                    |     |     |     |                    |       |
|       | GD290-400G-4 |                         |      |     |                    |     |     |     |                    |       |
|       | GD290-400P-4 |                         |      |     |                    |     |     |     |                    |       |
|       | GD290-450P-4 |                         |      |     |                    |     |     |     |                    |       |
|       | GD290-500P-4 |                         |      |     |                    |     |     |     |                    |       |
| T13   | GD290-450G-4 | 330                     | 1450 | 582 | 1320               | 112 | 240 | 200 | 14                 | M12   |
|       | GD290-500G-4 |                         |      |     |                    |     |     |     |                    |       |
|       | GD290-560P-4 |                         |      |     |                    |     |     |     |                    |       |
|       | GD290-630P-4 |                         |      |     |                    |     |     |     |                    |       |



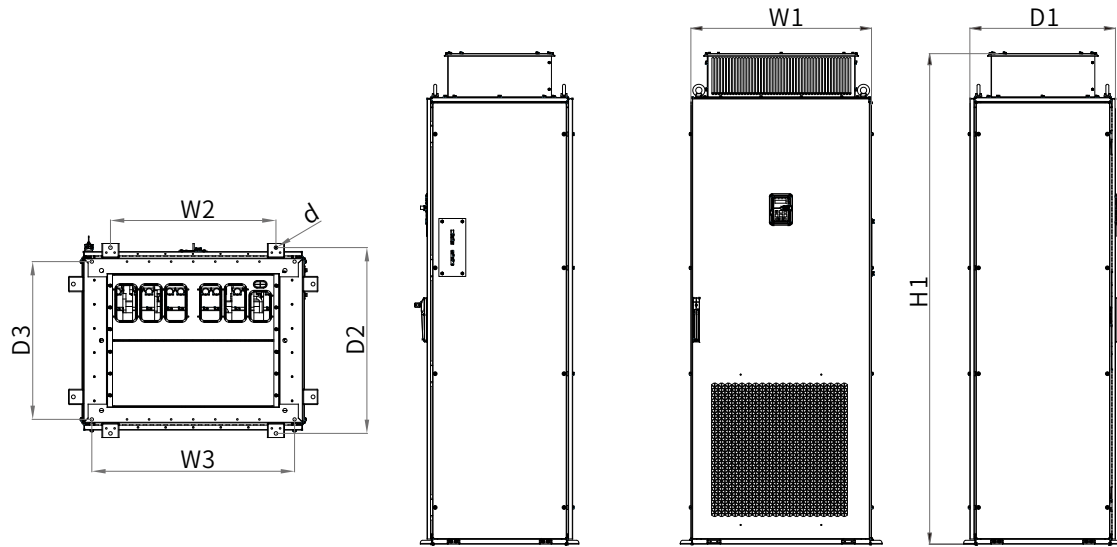
Base dimension drawing

Base-to-cabinet installation layout

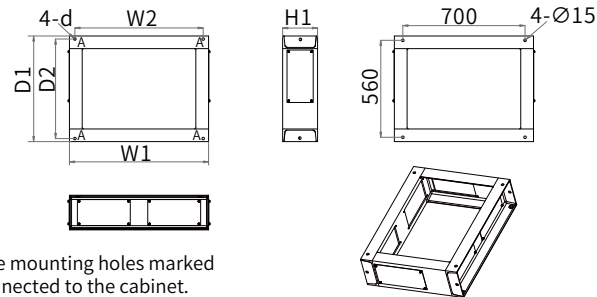
(unit: mm)

| Frame | W1  | W2  | W3 | W4 | W5   | W6 | W7    | W8  | W9    | W10 | H1  | H2  | H3   | H4   | D1   | D2   | d | Screw                 | L    |
|-------|-----|-----|----|----|------|----|-------|-----|-------|-----|-----|-----|------|------|------|------|---|-----------------------|------|
| T10   | 295 | 150 | 50 | 50 | 71.5 | 60 | 117.5 | 313 | 97.5  | 100 | 580 | 525 | 27.5 | 54.5 | 50   | 36   | 6 | M5 self-tapping screw | 77.5 |
| T11   | 321 | 150 | 50 | 50 | 84.5 | 60 | 130.5 | 339 | 110.5 | 100 | 580 | 525 | 27.5 | 54.5 | 46   | 33.5 | 6 |                       | 25.5 |
| T12   |     |     |    |    |      |    |       |     |       |     |     |     |      |      |      |      |   |                       | 25   |
| T13   | 380 | 150 | 50 | 50 | 115  | 60 | 160   | 398 | 140   | 100 | 615 | 575 | 25   | 55   | 48.5 | 32.5 | 6 |                       | 19   |

## Floor mounting for cabinet models >>>



Floor mounting diagram for T14 frame

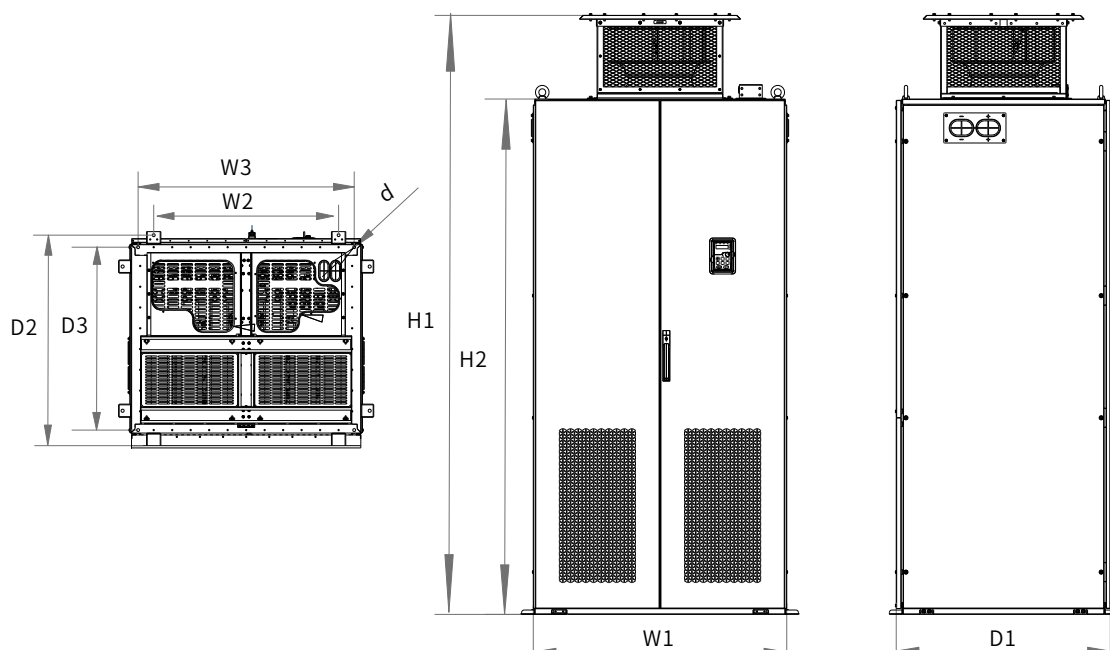


Note: The mounting holes marked A are connected to the cabinet.

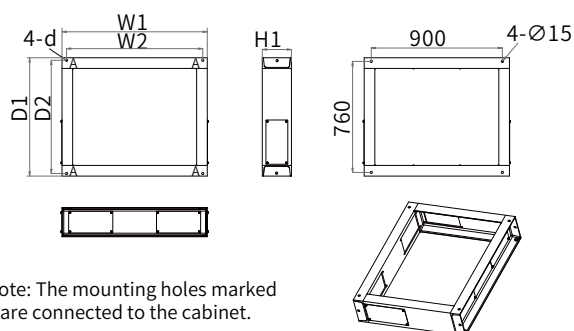
Base dimension drawing (optional)

(unit: mm)

| Frame | VFD model       | Outline dimensions (mm) |      |     | Hole distance (mm) |     |     |     | Hole diameter (mm) | Screw                              |
|-------|-----------------|-------------------------|------|-----|--------------------|-----|-----|-----|--------------------|------------------------------------|
|       |                 | W1                      | H1   | D1  | W2                 | W3  | W4  | D2  |                    |                                    |
| T14   | GD290-560G-4    | 806                     | 2200 | 650 | 600                | 735 | 677 | 575 | 13                 | M12                                |
|       | GD290-630G-4    |                         |      |     |                    |     |     |     |                    |                                    |
|       | GD290-710P-4    |                         |      |     |                    |     |     |     |                    |                                    |
|       | GD290-800P-4    |                         |      |     |                    |     |     |     |                    |                                    |
|       | GD290-560G-4-L3 |                         |      |     |                    |     |     |     |                    |                                    |
|       | GD290-630G-4-L3 |                         |      |     |                    |     |     |     |                    |                                    |
|       | GD290-710P-4-L3 |                         |      |     |                    |     |     |     |                    |                                    |
| T14   | Base            | 797                     | 200  | 610 | 735                | /   | 575 | /   | 15                 | M12×30 + spring and flat washer 12 |



Floor mounting diagram for T15 frame

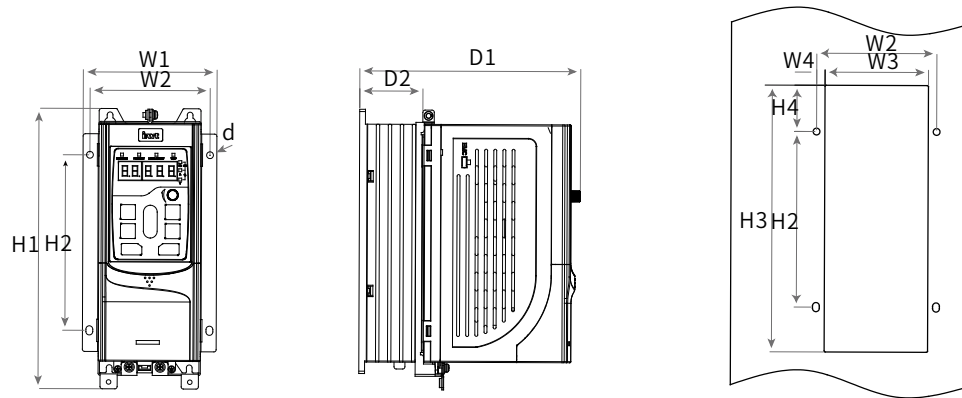


Base dimension drawing (optional)

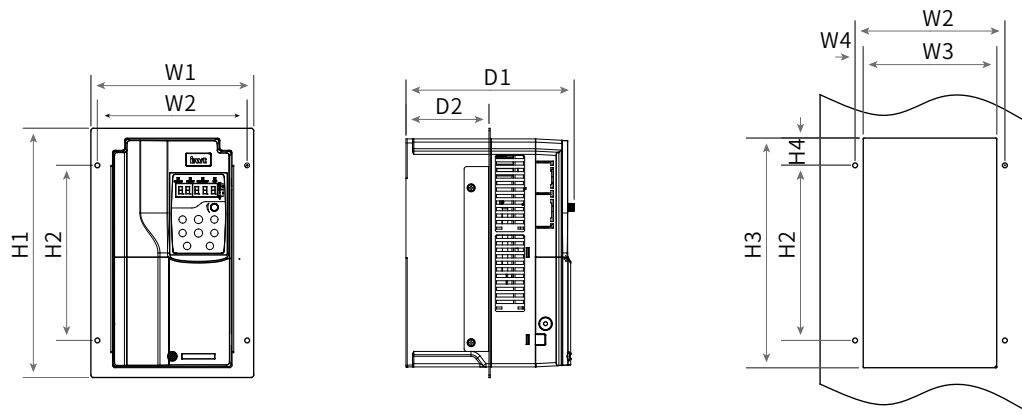
(unit: mm)

| Frame | VFD model     | Outline dimensions (mm) |      |      |     | Hole distance (mm) |     |     |     | Hole diameter (mm) | Screw                              |
|-------|---------------|-------------------------|------|------|-----|--------------------|-----|-----|-----|--------------------|------------------------------------|
|       |               | W1                      | H1   | H2   | D1  | W2                 | W3  | D2  | D3  |                    |                                    |
| T15   | GD290-710G-4  | 1006                    | 2329 | 2004 | 850 | 800                | 935 | 877 | 775 | 13                 | M12                                |
|       | GD290-800G-4  |                         |      |      |     |                    |     |     |     |                    |                                    |
|       | GD290-900G-4  |                         |      |      |     |                    |     |     |     |                    |                                    |
|       | GD290-1000G-4 |                         |      |      |     |                    |     |     |     |                    |                                    |
|       | GD290-900P-4  |                         |      |      |     |                    |     |     |     |                    |                                    |
|       | GD290-1000P-4 |                         |      |      |     |                    |     |     |     |                    |                                    |
|       | GD290-1120P-4 |                         |      |      |     |                    |     |     |     |                    |                                    |
| T15   | Base          | 997                     | 200  | /    | 810 | 935                | /   | 775 | /   | 15                 | M12×30 + spring and flat washer 12 |

## Flange mounting >>>



Flange mounting diagram for T1-T2 frames

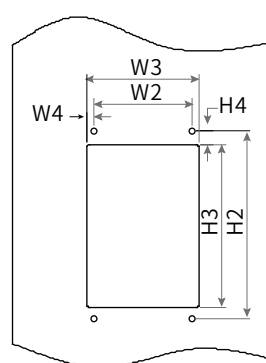
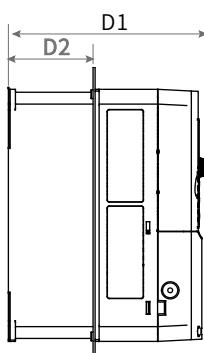
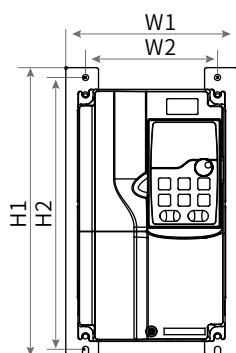


Flange mounting diagram for T3-T4 frames

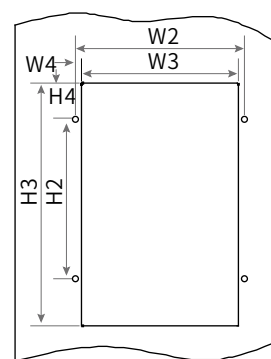
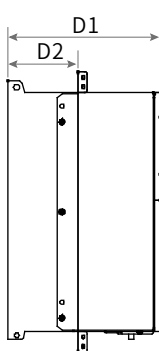
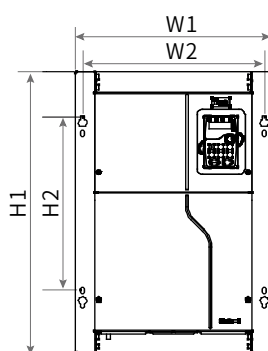
(unit: mm)

| Frame | VFD model         | Outline dimensions (mm) |     |     | Hole distance (mm) |     |      |     |      |     |     | Hole diameter (mm) | Screw |
|-------|-------------------|-------------------------|-----|-----|--------------------|-----|------|-----|------|-----|-----|--------------------|-------|
|       |                   | W1                      | H1  | D1  | H2                 | H3  | H4   | W2  | W3   | W4  | D2  |                    |       |
| T1    | GD290-0R7G/1R5P-4 | 117                     | 234 | 193 | 153.3              | 225 | 30   | 105 | 92.5 | 6.5 | 55  | 6                  | M5    |
|       | GD290-1R5G/2R2P-4 |                         |     |     |                    |     |      |     |      |     |     |                    |       |
|       | GD290-2R2G/003P-4 |                         |     |     |                    |     |      |     |      |     |     |                    |       |
|       | GD290-003G/004P-4 |                         |     |     |                    |     |      |     |      |     |     |                    |       |
| T2    | GD290-004G/5R5P-4 | 117                     | 261 | 212 | 180                | 220 | 30   | 105 | 92.5 | 6.5 | 75  | 6                  | M5    |
|       | GD290-5R5G/7R5P-4 |                         |     |     |                    |     |      |     |      |     |     |                    |       |
| T3    | GD290-7R5G/011P-4 | 200                     | 306 | 207 | 215                | 282 | 33.5 | 184 | 164  | 10  | 102 | 6                  | M5    |
|       | GD290-011G/015P-4 |                         |     |     |                    |     |      |     |      |     |     |                    |       |
| T4    | GD290-015G/018P-4 | 224                     | 346 | 214 | 255                | 322 | 33.5 | 208 | 189  | 9.5 | 108 | 6                  | M5    |
|       | GD290-018G/022P-4 |                         |     |     |                    |     |      |     |      |     |     |                    |       |

# Flange mounting



Flange mounting diagram for T5-T7 frames

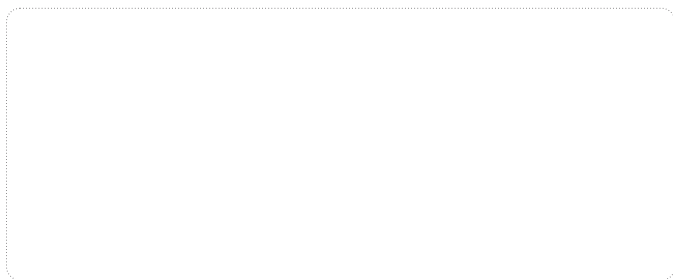


Flange mounting diagram for T8-T9 frames

(unit: mm)

| Frame | VFD model             | Outline dimensions (mm) |     |       | Hole distance (mm) |       |      |       |     |      |       | Hole diameter (mm) | Screw |
|-------|-----------------------|-------------------------|-----|-------|--------------------|-------|------|-------|-----|------|-------|--------------------|-------|
|       |                       | W1                      | H1  | D1    | H2                 | H3    | H4   | W2    | W3  | W4   | D2    |                    |       |
| T5    | GD290-022G/030P-4     | 266                     | 371 | 213   | 250                | 350.5 | 50.5 | 250   | 224 | 13   | 104   | 6                  | M5    |
|       | GD290-030G/037P-4     |                         |     |       |                    |       |      |       |     |      |       |                    |       |
| T6    | GD290-037G/045P-4(-B) | 316                     | 430 | 228   | 300                | 410   | 55   | 300   | 274 | 13   | 118.5 | 6                  | M5    |
| T7    | GD290-045G/055P-4(-B) | 352                     | 580 | 264   | 400                | 570   | 80.5 | 332   | 306 | 13   | 134   | 9                  | M8    |
|       | GD290-055G/075P-4(-B) |                         |     |       |                    |       |      |       |     |      |       |                    |       |
|       | GD290-075G/090P-4(-B) |                         |     |       |                    |       |      |       |     |      |       |                    |       |
| T8    | GD290-090G/110P-4(-B) | 419                     | 600 | 338   | 370                | 559   | 90   | 389.5 | 361 | 14   | 149.5 | 10                 | M8    |
|       | GD290-110G/132P-4(-B) |                         |     |       |                    |       |      |       |     |      |       |                    |       |
| T9    | GD290-132G/160P-4     | 428                     | 868 | 398.5 | 625                | 830   | 80   | 394   | 345 | 24.5 | 183   | 11                 | M10   |
|       | GD290-160G-4          |                         |     |       |                    |       |      |       |     |      |       |                    |       |
|       | GD290-185P-4          |                         |     |       |                    |       |      |       |     |      |       |                    |       |
|       | GD290-200P-4          |                         |     |       |                    |       |      |       |     |      |       |                    |       |

*Leading Smart Industry, Shaping Net-Zero Future*



E-mail:overseas@invt.com.cn

Website:www.invt.com

SHENZHEN INVT ELECTRIC CO.,LTD. INVT Guangming Technology Building, Songbai Road, Matian, Guangming District, Shenzhen, China

Industrial Automation: • HMI • PLC • VFD • Servo System • Elevator Intelligent Control System

Electric Power: • UPS • DCIM • Solar Inverter • New Energy Vehicle Powertrain System  
• New Energy Vehicle Charging System • New Energy Vehicle Motor

INVT Copyright.  
Information may be subject to change without notice during product improving.

66003-00418

202608(V2.1)