

## THINKVERT TECHNOLOGY LIMITED

Add: Guangming Industrial Park No.21, Dongcheng Street, Dongguan, P.R.China  
Tel: +86-0769-33681702  
Email: [info@thinkvert.com](mailto:info@thinkvert.com)  
Web: [www.thinkvert.com](http://www.thinkvert.com)

## Variable Frequency Drive Catalog

THINKVERT TECHNOLOGY LIMITED

## What is Thinkvert?

Thinkvert Technology Limited was established in 2012 with a factory area of 15,000 square meters. The company is committed to independent research and development, production and sales of industrial motion control products such as variable frequency drive, servo drive, soft starter, ect.

## Why does Thinkvert devoted to motion control industry?

The R&D team of Thinkvert has more than 15 years experience in motion control industry. Thinkvert mission is to continuously making high quality, multifunctional and easy to use motion control with honest price to let everyone in the world enjoy a better life through innovative technology. So as to promote Chinese motion control industry healthy development.

## What do we stand for?

Rejecting shortcut and opportunism. Continuously create value for our customers. Let our staff proud and our customers satisfied with Thinkvert. Generous people are often blessed with good luck. Always believe good products will be proved by time.

## How Thinkvert provides the high-quality products?

More than 40% of the company's members are R&D center personnel. The company has passed the ISO9001 quality management system certification, has more than 100 invention and utility model patents, and its products have passed CCC, CE and other product certifications. The company pursues rigorous management. Thinkvert introduces international advanced management concepts and uses four major systems: Enterprise Resource Planning System, Manufacturing Execution System, Customer Relationship Management System and Office Automation System to operate the company.



*Think Drives The World*

## Catalog Contents

|  |    |
|--|----|
| Variety Series Overview.....   | 03 |
| Product Series Model Instruction.....  | 05 |
| Product Quality Overview.....  | 06 |
| T1120 Series Drive Technical Specification.....  | 07 |
| T1120 Series Appearance and Mounting Dimension.....                                      | 09 |
| T1120 Series Peripheral Device Selection Terminal Screw<br>And Wiring Specification..... | 10 |
| Standard Wiring Diagram.....   | 11 |
| Control Terminal Position and Function Description.....                                  | 12 |
| T1600 Series Appearance and Mounting Dimension.....                                      | 13 |
| T1600 Series Peripheral Device Selection Terminal Screw<br>And Wiring Specification..... | 13 |
| T110 Series Appearance and Mounting Dimension.....                                       | 14 |
| T110 Series Peripheral Device Selection Terminal Screw<br>And Wiring Specification.....  | 14 |
| Three Operation Panels Can be Selected.....  | 15 |
| Brake Resistance Selection.....  | 16 |
| Purchase of Accessories.....   | 16 |
| Typical Industry Applications.....   | 17 |



## Product Series Overview

### TI120 high performance series

Voltage Rating: 360~460V

Power Rating: 1.5~710kW

- Designed in accordance with EU CE standard: EN61800-5-1
- The new generation motor control algorithm is completely self-developed, and some high-end fields of application break the monopoly of European, American and Japanese brands
- With low frequency, high torque, stable operation at ultra-low frequency, it is especially suitable for the large inertia load, as well as the pursuit of high performance and high stability system, to boost the performance upgrade in the field of machinery and equipment
- Fast dynamic response and fast acceleration and deceleration can achieve optimal start-stop for multiple load types
- Motor operation is efficient with the precise flux following and optimization technology
- Fast current limiting technology allows the drive to run for a long time
- The modular design concept and high power density can save the installation space
- Can drive various types of AC motors, asynchronous motors, permanent magnet synchronous motors, special motors
- 160-450kW standard built-in DC reactor

Application Industries:

Lifting, CNC, Injection Molding Machines, Ceramics, Glass, Woodworking, Centrifuges, Food Processing, Textile Equipment, Printing and Packaging, Industrial Washing Machines, etc.



### TI600 high-end series

Voltage Rating: 360~460V

Power Rating: 55~400kW

- Designed according to UL standard UL508C
- Combination of light and heavy load (110% 120% light load, 150% heavy load), more flexible selection
- The whole series of products have built-in passive filters and DC reactors, which can more effectively suppress the influence of harmonics, challenge the adaptability of harsh grids, resist EMC electromagnetic interference, and strengthen the design of anti-lightning (EMC circuit boards add varistors)
- The chemical environment design standard reaches 3C3, the circuit board strengthens the layer processing, challenges the limit of the harsh environment, no longer fears chemical corrosion (H<sub>2</sub>S, Ozone, SO<sub>2</sub>, hydrochloric acid), bid farewell to the pollution troubles such as dust and oil
- 55° working temperature rated operation, no need to derating
- Long life design for more than 10 years  
The selection of materials are all international first-line quality components and materials to ensure long-term stable operation of the driver
- Perfect motor control performance, leading peers in the industry in terms of low-frequency torque, rapid acceleration and deceleration, and rapid over-current processing. It can drive various types of AC motors, asynchronous motors, permanent magnet synchronous motors, and special motors.
- Application Industries: Iron And Steel Metallurgy, Rail Transit, Shipbuilding, Petrochemical, Natural Gas, Coal Mines, Wind Power, Hydropower, Nuclear power, Air Ports and Sea Ports



### TI10 economic series

Voltage Rating: 360~460V

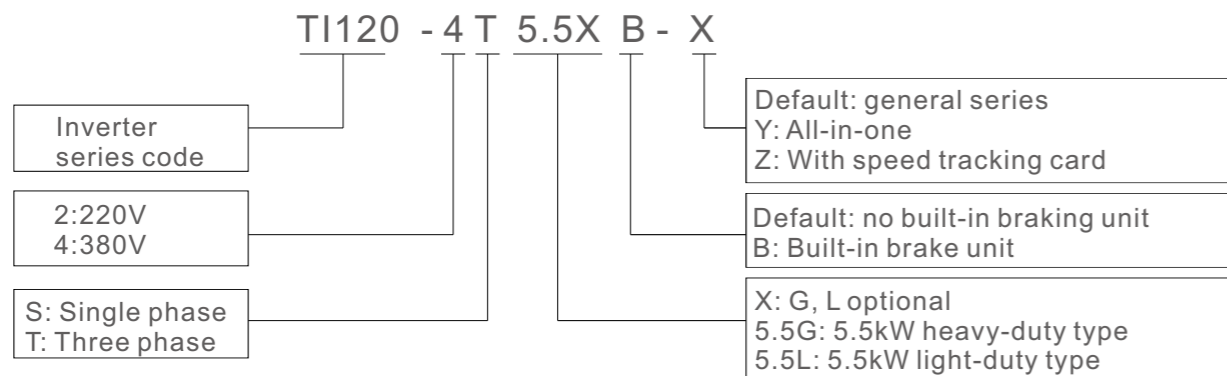
Power Rating: 0.75~3.7kW

- Motor operation is efficient with the precise flux following and optimization technology
- Fast current limiting technology allows the drive to run for a long time
- High power density can save the installation space
- Dual network port communication design
- Innovative drive design
- Application Industries: CNC, Woodworking, Fans, Pumps, Treadmills, etc.

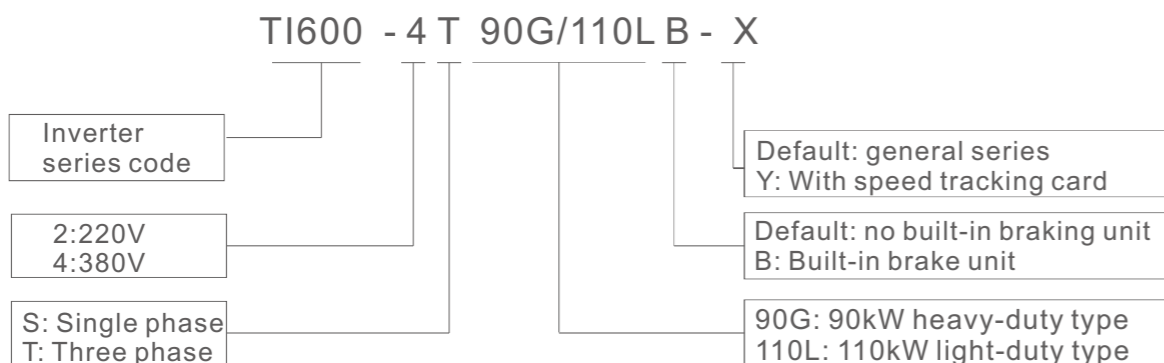


# Product series model description

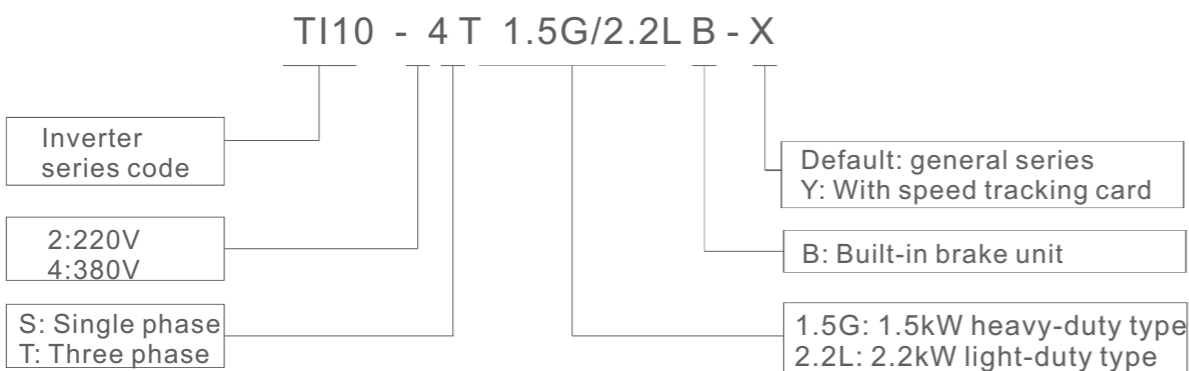
## TI120 high performance series description



## TI600 high end series description



## TI10 economic series description



## Product quality overview

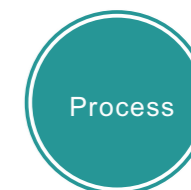
Thinkvert Technology Limited, which sees the product quality as the life of the company, cherishes and defends the product quality as much as they cherish and defend life. Our important mission is to provide our customers with high quality products and adhere to the following principles and directions:



Scheme design is the source of product quality, and since its inception, Thinkvert has insisted on the primary goal of impeccable quality, constantly designs better schemes and upgrades to ensure the stability of the source.



All important materials and core materials of the VFD are purchased from international suppliers with top quality, so as to ensure the consistency and long lifecycle of batch products.



Either for the supplier process or the in-house process, we are meticulous about every strict, keep strict control and continuously refine the process standards



German Infineon/Fuji Power IGBT



American Texas Instruments (TI) DSP and Analog Chips



American PELKO Fan



Taiwan CapXon Capacitor



Japanese KOHSHIN/TAMURA Hall Sensor

Note: The selection of the above components is only for TI120 and TI600 series

# TI120 Series High Performance VFD

## TI120 Series VFD Model and Specification

| Item   |  | Specification  |     |      |      |      |      |      |      |      |      |                   |      |       |       |     |     |
|--|--|--|-----|------|------|------|------|------|------|------|------|-------------------|------|-------|-------|-----|-----|
| TI120-4TXXXG(B)                                |  | 1.5  | 2.2 | 3.7  | 5.5  | 7.5  | 11   | 15   | 18.5 | 22   | 30   | 37                | 45   | 55    | 75    | 90  | 110 |
| Motor power (kW)                               |  | 1.5  | 2.2 | 3.7  | 5.5  | 7.5  | 11   | 15   | 18.5 | 22   | 30   | 37                | 45   | 55    | 75    | 90  | 110 |
| INPUT  | Rated input current(A)                   | 4.6  | 6.3 | 11.4 | 16.7 | 21.9 | 32.2 | 41.3 | 49.5 | 59.0 | 57.0 | 69.0              | 89.0 | 106.0 | 139.0 | 164 | 196 |
| OUTPUT   | Rated output current (A)                 | 3.8  | 5.1 | 9.0  | 13.0 | 17.0 | 24.0 | 32.0 | 37.0 | 45.0 | 60.0 | 75.0              | 90.0 | 112   | 150   | 180 | 210 |
|  | Output voltage                           | 3-phase 0V~rated input voltage   |     |      |      |      |      |      |      |      |      |                   |      |       |       |     |     |
|  | Maximum output frequency                 | 300.00Hz(changeable by parameters)   |     |      |      |      |      |      |      |      |      |                   |      |       |       |     |     |
|  | Carrier frequency                        | 1.0kHz~16.0kHz(carrier frequency adjustable according to the load characteristics) |     |      |      |      |      |      |      |      |      |                   |      |       |       |     |     |
|  | Overload capacity                        | 150% rated current 60s;180% rated current 10s; 200% rated current 0.5s             |     |      |      |      |      |      |      |      |      |                   |      |       |       |     |     |
| High frequency leakage current countermeasures | DC reactor                               | External option  |     |      |      |      |      |      |      |      |      |                   |      |       |       |     |     |
| Brake function                                 | Brake unit                               | Standard built-in  |     |      |      |      |      |      |      |      |      | Built-in optional |      |       |       |     |     |
| Power supply                                   | Rated frequency                          | AC three-phase 360V~460V<br>50Hz/60Hz  |     |      |      |      |      |      |      |      |      |                   |      |       |       |     |     |
|  | Permissible range of voltage fluctuation | -15%~10%, actual permissible range: AC 323V~528V                                   |     |      |      |      |      |      |      |      |      |                   |      |       |       |     |     |
|  | Permissible range of frequency           | ±5%  |     |      |      |      |      |      |      |      |      |                   |      |       |       |     |     |
|  | Power capacity (kVA)                     | 5.0  | 6.7 | 12   | 17.5 | 22.8 | 33.4 | 42.8 | 45   | 54   | 52   | 63                | 81   | 97    | 127   | 150 | 179 |

| Item   |  | Technical Specification   |          |     |     |     |     |                 |                 |     |     |     |     |      |      |      |  |
|--|--|---|----------|-----|-----|-----|-----|-----------------|-----------------|-----|-----|-----|-----|------|------|------|--|
| TI120-4TXXXG/XXXL(B)                           |  | 132   | 160      | 185 | 200 | 220 | 250 | 280             | 315             | 355 | 400 | 450 | 500 | 560  | 630  | 710  |  |
| Motor power (kW)                               |  | 132   | 160      | 185 | 200 | 220 | 250 | 280             | 315             | 355 | 400 | 450 | 500 | 560  | 630  | 710  |  |
| Input  | Rated input current (A)                  | 240   | 287      | 326 | 365 | 410 | 441 | 495             | 565             | 617 | 687 | 782 | 835 | 920  | 1050 | 1180 |  |
| Output   | Rated output current (A)                 | 260   | 305      | 350 | 377 | 426 | 465 | 520             | 585             | 650 | 725 | 810 | 900 | 1090 | 1100 | 1300 |  |
|  | Output voltage                           | 3-phase 0V~ rated input voltage   |          |     |     |     |     |                 |                 |     |     |     |     |      |      |      |  |
|  | Maximum output frequency                 | 300.00Hz(changeable by parameters)  |          |     |     |     |     |                 |                 |     |     |     |     |      |      |      |  |
|  | Carrier frequency                        | 1.0kHz~16.0kHz (carrier frequency adjustable according to the load characteristics) |          |     |     |     |     |                 |                 |     |     |     |     |      |      |      |  |
|  | Overload capacity                        | 150% rated current 60s; 180% rated current 10s; 200% rated current 0.5s             |          |     |     |     |     |                 |                 |     |     |     |     |      |      |      |  |
| High frequency leakage current countermeasures | DC reactor                               | External option   | Built-in |     |     |     |     |                 | External option |     |     |     |     |      |      |      |  |
| Brake function                                 | Brake unit                               | Built-in optional   |          |     |     |     |     | External option |                 |     |     |     |     |      |      |      |  |
| Power supply                                   | Rated voltage                            | AC three-phase 360V-460V  |          |     |     |     |     |                 |                 |     |     |     |     |      |      |      |  |
|  | Rated frequency                          | 50Hz/0Hz  |          |     |     |     |     |                 |                 |     |     |     |     |      |      |      |  |
|  | Permissible range of voltage fluctuation | 5%~10%, actual permissible range: AC323V~528V                                       |          |     |     |     |     |                 |                 |     |     |     |     |      |      |      |  |
|  | Permissible range of frequency           | ±5%   |          |     |     |     |     |                 |                 |     |     |     |     |      |      |      |  |
| Power capacity (kVA)                           | 220                                      | 263   | 304      | 334 | 375 | 404 | 453 | 517             | 565             | 629 | 716 | 769 | 861 | 969  | 1092 |      |  |

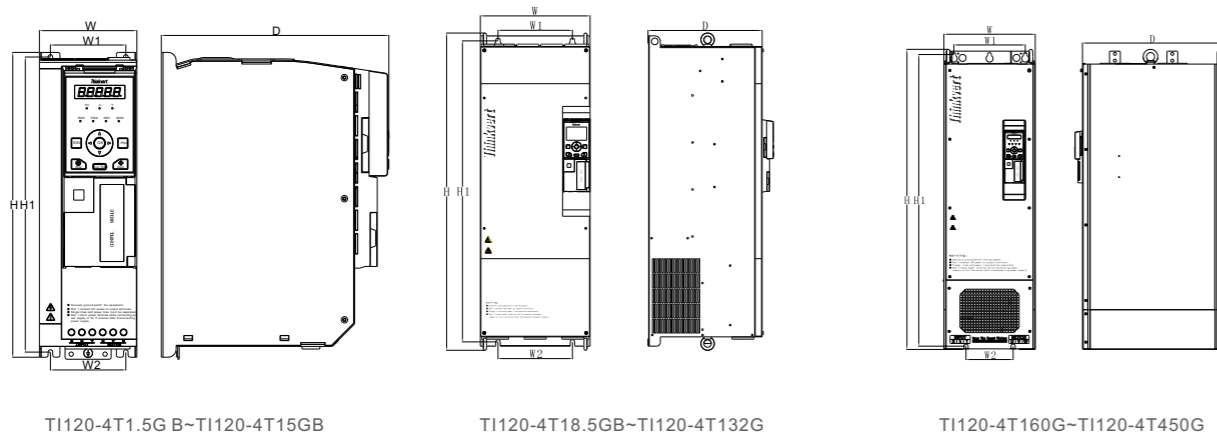
## Technical Specification of TI120 Series VFD

| Item            |   | Technical Specification  |                                   |
|-----------------|---|--|-----------------------------------|
| Basic functions | Input frequency resolution                | Digital setting:0.01Hz<br>Analog setting: maximum speed×0.025%   |                                   |
|                 | Control mode                              | Advanced scalar control<br>Without PG vector control (SVC)<br>With PG vector control (VC)  |                                   |
|                 | Starting torque                           | SVC:0.25Hz 150%<br>VC:0.00Hz 180%  |                                   |
|                 | Speed adjustable range                    | SVC:1:200  | VC:1:1000                         |
|                 | Steady speed accuracy                     | SVC:±0.5%  | VC±0.2%                           |
|                 | Torque control accuracy                   | SVC:Above 5Hz ±5%  | VC:Above 5Hz ±3%                  |
|                 | Torque reentry accuracy                   | <0.5% rated torque of motor  |                                   |
|                 | Torque response time                      | SVC: W 10ms (rated torque of motor)  | VC: W 5ms (rated torque of motor) |
|                 | Torque boost                              | automatic torque boost function; manual torque boost 0.1%~30.0%  |                                   |
|                 | V/F curves                                | Straight line, multi-power curve, multi-point curve, V/F separation  |                                   |
|                 | Acceleration and deceleration curves      | Straight line, fold line, S-curve  |                                   |
|                 | DC brake                                  | DC braking start frequency: 0.00~300.00Hz; DC braking current: constant torque 0.0~120.0%; variable torque 0.0~90.0%<br>DC braking time: 0.0~30.0s; no waiting time for DC braking start, fast braking |                                   |
|                 | Inching control                           | Inching frequency range:0.00Hz~50.00 Hz<br>Inching acceleration/deceleration time range:0.0s~3600.0s   |                                   |
|                 | Process closed loop PID                   | Easy realization of the closed loop process control system   |                                   |
|                 | Simple PLC multi-stage instructions       | Simple realization of at most 16-stage speed with built-in simple PLC or X terminal  |                                   |
|                 | Automatic voltage regulation              | Automatic output voltage stabilization in case of grid voltage fluctuations  |                                   |
|                 | Overcurrent and overvoltage stall control | Automatic limiting of current and voltage during running to prevent frequent tripping due to overcurrent and overvoltage   |                                   |
|                 | Automatic fast current limiting           | Minimize overcurrent fault and protect the normal drive operation  |                                   |
|                 | Torque limit and control                  | "Excavator" feature, automatic torque limit during running to prevent frequent tripping due to overcurrent; torque control can be achieved during vector control                                       |                                   |

| Item                     |   | Technical Specification   |   |  |
|--------------------------|---|---|---|--|
| Individualized functions | Nonstop at instantaneous power failure  | Compensate voltage reduction by load feedback energy upon instantaneous power failure to keep the drive running in a short period of time |   |  |
|                          | Fast current limiting   | Avoid frequent overcurrent failures of the drive  |   |  |
|                          | Timing function   | To achieve the timing control of the drive  |   |  |
|                          | Motor overheat protection   | Convenient motor temperature detection through external sensors   |   |  |
|                          | Parameter copying   | Upload and download of parameters, and quick setting of parameters  |   |  |
|                          | Dual-port Modbus  | Dual ports support the Modbus protocol to achieve the simple networking function  |   |  |
|                          | Power-on for short-to-ground detection  | Power on to automatically complete the short-to-ground detection  |   |  |
| Run                      | Magnetic flux brake   | Faster deceleration and stop with magnetic flux braking   |   |  |
|                          | Run commands  | Keypad command, terminal command, communication command; switching in many ways   |   |  |
|                          | Main speed commands   | 12 methods of giving main speed commands, switching in many ways  |   |  |
|                          | Auxiliary speed commands  | 9 methods of giving auxiliary speed commands, flexible to realize auxiliary speed fine-regulating, speed synthesis                        |   |  |
| Input terminals          | 7 X-terminals, One of them supports high-speed pulse input  |   |   |  |
|                          | 2 AI terminals, with one supporting only 0~10V voltage signals, and one supporting 0~10V voltage signals or 0~20mA current signals<br>One channel of 5V differential encoder interface                    |   |   |  |
| Output terminals         | 2 relay outputs   |   |   |  |
|                          | 2 transistor outputs, with one supporting the high-speed pulse output<br>2 AO outputs, with one supporting only 0~10V voltage signals, and one supporting 0~10V voltage signals or 0~20mA current signals |   |   |  |
| Human-machine            | LED display   | LED operation keypad  |   |  |
|                          | LCD display   | LCD operation keypad  |   |  |
|                          | Push button lock function   | Full or partial key locking to prevent wrong operation of the keypad  |   |  |
| Protection function      | Keypad emergency shutdown   | Reduce operation risks with the keypad shutdown keys that enable shutdown from any command source   |   |  |
|                          | Short-circuit protection  | Output phase short circuit protection, output-to-ground short circuit protection  |   |  |
|                          | Overcurrent protection  | Shutdown protection if more than 2.2x rated current of the drive  |   |  |
|                          | Overvoltage protection  | Shutdown if the DC bus voltage of the main circuit is greater than 800V   |   |  |
|                          | Undervoltage protection   | Shutdown if the DC bus voltage of the main circuit is smaller than 360V   |   |  |
|                          | Overload protection   | Shutdown after 60s of running at 150 rated current  |   |  |
|                          | Overheat protection   | Overheat protection of the IGBT module of the drive   |   |  |
|                          | Phase loss protection   | Three-phase input phase loss protection, three-phase output phase loss protection   |   |  |
|                          | Environment   | Places of use   | Indoors, free from direct sunlight, dust, corrosive gases, flammable gases, oil mist, water vapor, water droplets and salts, etc. |  |
|                          |   | Altitude  | No reduction for 1000m or below, 1% reduction for every 100m above 1000m, and the maximum altitude should not exceed 3000m.       |  |

# Tl120 series appearance and installation dimensions

# Tl120 series peripheral device selection, terminal screws and wiring specifications



Tl120-4T1.5G B~Tl120-4T15GB

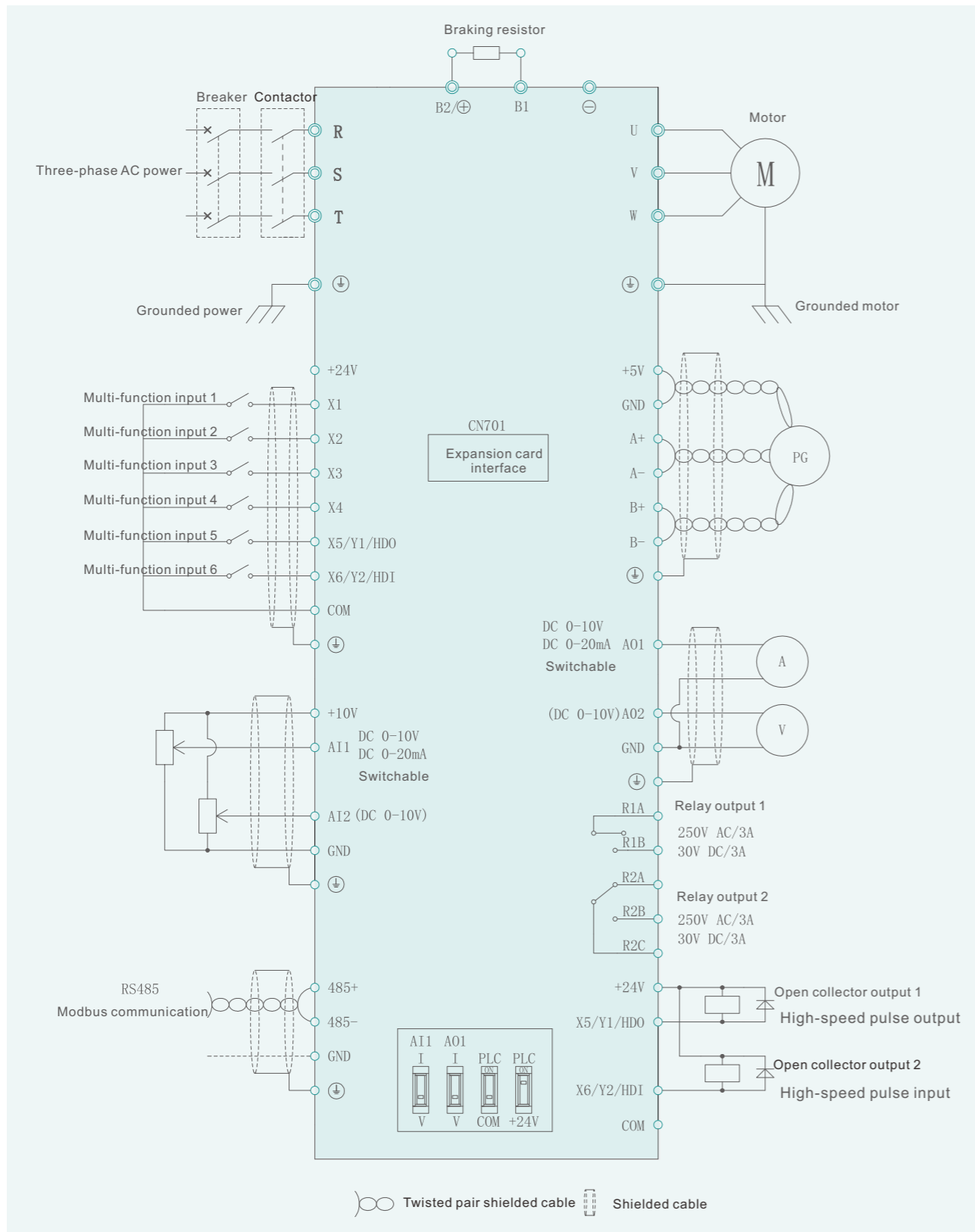
Tl120-4T18.5GB~Tl120-4T132G

Tl120-4T160G~Tl120-4T450G

| Drive model        | appearance and Mounting dimensions(mm) |       |       |      |       |        |                        |
|--------------------|--|-------|-------|------|-------|--------|------------------------|
|                    | W                                      | H     | D     | W1   | W2    | H1     | Mounting hole diameter |
| Tl120-4T1.5G/2.2LB | 81                                     | 237   | 173   | 67.5 | 57    | 224.5  | 4.5                    |
| Tl120-4T2.2G/3.7LB |  |       |       |      |       |        |                        |
| Tl120-4T3.7G/5.5LB |  |       |       |      |       |        |                        |
| Tl120-4T5.5G/7.5LB |  |       |       |      |       |        |                        |
| Tl120-4T7.5G/11LB  | 95                                     | 297   | 222   | 73.5 | 73.5  | 287.5  | 6                      |
| Tl120-4T11G/15LB   |  |       |       |      |       |        |                        |
| Tl120-4T15G/18.5LB |  |       |       |      |       |        |                        |
| Tl120-4T18.5G/22LB | 185                                    | 440   | 245   | 140  | 140   | 427.5  | 7                      |
| Tl120-4T22G/30LB   |  |       |       |      |       |        |                        |
| Tl120-4T30G/37LB   |  |       |       |      |       |        |                        |
| Tl120-4T37G/45L    |  |       |       |      |       |        |                        |
| Tl120-4T45G/55L    | 265                                    | 604.5 | 269.5 | 180  | 148.5 | 580    | 9.5                    |
| Tl120-4T55G        |  |       |       |      |       |        |                        |
| Tl120-4T75G/90L    | 265                                    | 690   | 323   | 200  | 200   | 674    | 9.5                    |
| Tl120-4T90G/110L   |  |       |       |      |       |        |                        |
| Tl120-4T110G/132L  | 295                                    | 833.5 | 338.5 | 200  | 200   | 810    | 12                     |
| Tl120-4T132G/160L  |  |       |       |      |       |        |                        |
| Tl120-4T160G/185L  |  |       |       |      |       |        |                        |
| Tl120-4T185G/200L  | 335                                    | 1070  | 418   | 265  | 265   | 1046.5 | 14                     |
| Tl120-4T200G/220L  |  |       |       |      |       |        |                        |
| Tl120-4T220G/250L  | 339                                    | 1113  | 546.5 | 265  | 175   | 1081.5 | 14                     |
| Tl120-4T250G/280L  |  |       |       |      |       |        |                        |
| Tl120-4T280G/315L  |  |       |       |      |       |        |                        |
| Tl120-4T315G/355L  |  |       |       |      |       |        |                        |
| Tl120-4T355G/400L  | 339                                    | 1300  | 546.5 | 265  | 175   | 1267.5 | 16                     |
| Tl120-4T400G/450L  |  |       |       |      |       |        |                        |
| Tl120-4T450G/500L  |  |       |       |      |       |        |                        |
| Tl120-4T500G/560L  |  |       |       |      |       |        |                        |
| Tl120-4T560G/630L  | 999                                    | 1300  | 500   | 750  | 750   | 1390   | 16                     |
| Tl120-4T630G/710L  |  |       |       |      |       |        |                        |
| Tl120-4T710G/800L  |  |       |       |      |       |        |                        |
| Tl120-4T800L       |  |       |       |      |       |        |                        |

| Drive model        | Circuit Breaker (A) | Contactor (A) | Power Terminal |                         |  | Grounding Terminal |                         |  |
|--------------------|---------------------|---------------|----------------|-------------------------|--|--------------------|-------------------------|--|
|                    |                     |               | Screw          | Tightening torque (N.m) | wiring specifications (mm <sup>2</sup> ) | Screw              | Tightening torque (N.m) | wiring specifications (mm <sup>2</sup> ) |
| Tl120-4T1.5G/2.2LB | 10                  | 9             | M4             | 1.2~1.5                 | 2.5                                      | M3                 | 0.5~0.6                 | 2.5                                      |
| Tl120-4T2.2G/3.7LB | 16                  | 12            | M4             | 1.2~1.5                 | 2.5                                      | M3                 | 0.5~0.6                 | 2.5                                      |
| Tl120-4T3.7G/5.5LB | 20                  | 18            | M4             | 1.2~1.5                 | 4  | M3                 | 0.5~0.6                 | 4  |
| Tl120-4T5.5G/7.5LB | 32                  | 32            | M5             | 2.5~3.0                 | 4  | M5                 | 2.5~3.0                 | 4  |
| Tl120-4T7.5G/11LB  | 32                  | 32            | M5             | 2.5~3.0                 | 6  | M5                 | 2.5~3.0                 | 6  |
| Tl120-4T11G/15LB   | 50                  | 50            | M5             | 2.5~3.0                 | 6  | M5                 | 2.5~3.0                 | 6  |
| Tl120-4T15G/18.5LB | 63                  | 50            | M5             | 2.5~3.0                 | 6  | M5                 | 2.5~3.0                 | 6  |
| Tl120-4T18.5G/22LB | 80                  | 65            | M6             | 4.0~5.0                 | 10                                       | M6                 | 4.0~5.0                 | 10                                       |
| Tl120-4T22G/30LB   | 100                 | 80            | M6             | 4.0~5.0                 | 16                                       | M6                 | 4.0~5.0                 | 16                                       |
| Tl120-4T30G/37LB   | 125                 | 95            | M6             | 4.0~5.0                 | 25                                       | M6                 | 4.0~5.0                 | 16                                       |
| Tl120-4T37G/45L    | 160                 | 125           | M8             | 9.0~10.0                | 25                                       | M8                 | 9.0~10.0                | 16                                       |
| Tl120-4T45G/55L    | 200                 | 150           | M8             | 9.0~10.0                | 35                                       | M8                 | 9.0~10.0                | 16                                       |
| Tl120-4T55G        | 225                 | 185           | M8             | 9.0~10.0                | 50                                       | M8                 | 9.0~10.0                | 25                                       |
| Tl120-4T75G/90L    | 250                 | 225           | M10            | 17.6~22.5               | 60                                       | M8                 | 9.0~10.0                | 35                                       |
| Tl120-4T90G/110L   | 315                 | 265           | M10            | 17.6~22.5               | 70                                       | M8                 | 9.0~10.0                | 35                                       |
| Tl120-4T110G/132L  | 350                 | 330           | M10            | 17.6~22.5               | 100                                      | M8                 | 9.0~10.0                | 50                                       |
| Tl120-4T132G/160L  | 400                 | 400           | M10            | 17.6~22.5               | 120                                      | M8                 | 9.0~10.0                | 70                                       |
| Tl120-4T160G/185L  | 500                 | 400           | M12            | 31.4~39.2               | 150                                      | M12                | 31.4~39.2               | 95                                       |
| Tl120-4T185G/200L  | 500                 | 500           | M12            | 31.4~39.2               | 150                                      | M12                | 31.4~39.2               | 95                                       |
| Tl120-4T200G/220L  | 630                 | 500           | M12            | 31.4~39.2               | 185                                      | M12                | 31.4~39.2               | 95                                       |
| Tl120-4T220G/250L  | 630                 | 630           | M12            | 31.4~39.2               | 185                                      | M12                | 31.4~39.2               | 120                                      |
| Tl120-4T250G/280L  | 800                 | 630           | M12            | 31.4~39.2               | 120×2                                    | M12                | 31.4~39.2               | 120                                      |
| Tl120-4T280G/315L  | 800                 | 800           | M12            | 31.4~39.2               | 150×2                                    | M12                | 31.4~39.2               | 150                                      |
| Tl120-4T315G/355L  | 800                 | 800           | M12            | 31.4~39.2               | 185×2                                    | M12                | 31.4~39.2               | 95×2                                     |
| Tl120-4T355G/400L  | 1000                | 800           | M12            | 31.4~39.2               | 240×2                                    | M12                | 31.4~39.2               | 120×2                                    |
| Tl120-4T400G/450L  | 1250                | 1000          | M12            | 31.4~39.2               | 240×2                                    | M12                | 31.4~39.2               | 120×2                                    |
| Tl120-4T450G/500L  | 1250                | 1000          | M12            | 31.4~39.2               | 300×2                                    | M12                | 31.4~39.2               | 150×2                                    |
| Tl120-4T500G/560L  | 1600                | 1250          | M12            | 31.4~39.2               | 300×2                                    | M12                | 31.4~39.2               | 150×2                                    |
| Tl120-4T560G/630L  | 1600                | 1250          | M12            | 31.4~39.2               | 400×2                                    | M12                | 31.4~39.2               | 185×2                                    |
| Tl120-4T630G/710L  | 2000                | 1600          | M12            | 31.4~39.2               | 400×2                                    | M12                | 31.4~39.2               | 185×2                                    |
| Tl120-4T710G/800L  | 2000                | 1600          | M12            | 31.4~39.2               | 400×2                                    | M12                | 31.4~39.2               | 185×2                                    |

# Standard wiring diagram



# Appearance and installation dimensions

|    |      |      |     |
|----|------|------|-----|
| PE | 485+ | 485- | GND |
|----|------|------|-----|

Direction: from left to right CN706

|     |     |     |     |     |     |    |    |
|-----|-----|-----|-----|-----|-----|----|----|
| R1A | R1B | R2A | R2B | R2C | COM | Y1 | Y2 |
|-----|-----|-----|-----|-----|-----|----|----|

Direction: from top to bottom CN703/CN704/CN705

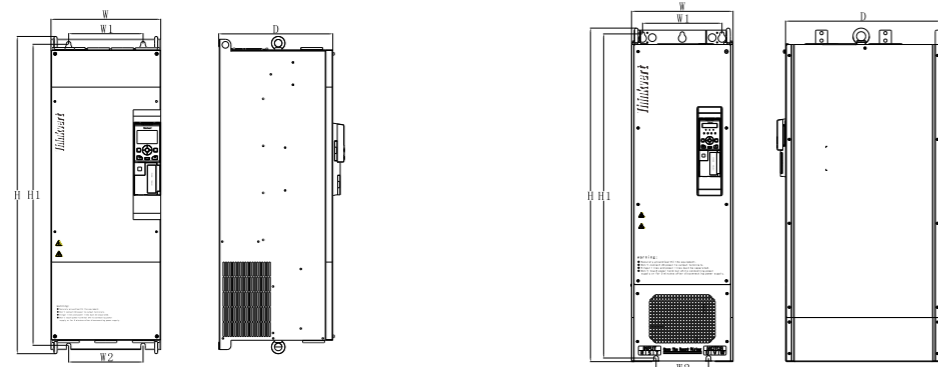
|      |     |     |     |     |     |     |    |    |    |    |     |    |    |    |    |      |
|------|-----|-----|-----|-----|-----|-----|----|----|----|----|-----|----|----|----|----|------|
| +10V | AI1 | AI2 | AO1 | AO2 | GND | +5V | A+ | A- | B+ | B- | COM | X1 | X2 | X3 | X4 | +24V |
|------|-----|-----|-----|-----|-----|-----|----|----|----|----|-----|----|----|----|----|------|

Direction: from top to bottom

CN702

|                          |               |                                       |   |
|--------------------------|---------------|---------------------------------------|---|
| Analog input             | +10V          | Analog input reference voltage        | 10V ±1%, internally isolated from COM<br>Maximum output current 20mA  |
|                          | GND           | Analog ground                         | Internally isolated from COM  |
|                          | AI1           | Analog input channel 1                | 0~10V: input impedance 22kΩ<br>0~20mA: input impedance 500Ω<br>To switch between 0~10V and 0~20mA analog input quantity through the DIP switch S300, and factory default voltage input              |
|                          | AI2           | Analog input channel 2                | 0~10V: input impedance 22kΩ   |
| Analog output            | AO1           | Analog output 1                       | 0~10V: impedance required >10kΩ<br>0~20mA: impedance required 200Ω~500Ω<br>To switch between 0~10V and 0~20mA analog output quantity through the DIP switch S300, and factory default voltage input |
|                          | AO2           | Analog output 2                       | 0~10V: impedance required >10kΩ   |
|                          | GND           | Analog ground                         | Internally isolated from COM  |
|                          | +24V          | +24V                                  | 24V±20%, internally isolated from GND<br>Maximum load 200mA   |
| Digital Input            | COM           | +24V ground                           | Internally isolated from GND  |
|                          | X1~X7         | Multi-function input terminals 1~7    | Input specification: 24VDC, 5mA<br>Frequency range: 0~200Hz<br>Voltage range: 24V±20%   |
|                          | X7/HDI        | Multifunctional input pulse input     | Multifunctional input: the same as X1~X7<br>Pulse input: 0.1Hz~50kHz; voltage range: 24V±20%  |
|                          | Y1/HDO        | Open collector output pulse output    | Open collector output: 1. voltage range: 0~24V; 2. current range: 0~50mA<br>Pulse output: 0~50kHz   |
| Digital Output           | Y2            | Open collector output                 | Open collector output: 1. voltage range: 0~24V; 2. current range: 0~50mA  |
|                          | COM           | Open collector output common terminal | Internally isolated from GND  |
|                          | R1A/R1B/R1C   | Relay output 1                        | R1B-R1C: normally open<br>R1A-R1C: normally closed<br>Contact capacity: 250VAC/3A, 30VDC/3A   |
| Relay 1 Output           | R1A/R1B/R1C   | Relay output 1                        | R2B-R2C: normally open<br>R2A-R2C: normally closed<br>Contact capacity: 250VAC/3A, 30VDC/3A   |
| Relay 2 output           | R2A/ R2B/ R2C | Relay output 2                        |   |
| Terminal 485             | 485+          | 485 differential signal positive      | rate: 4800/ 9600/ 19200/ 38400/ 57600/ 115200bps<br>Maximum distance of 500m (standard twisted pair shielded cable)   |
|                          | 485-          | 485 differential signal negative      |   |
|                          | GND           | 485 communication shield grounding    | Internally isolated from COM  |
| Expansion card interface | CN701         | Expansion card interface              |   |

## TI600 series appearance and installation dimensions



TI600-4T55G/75L~TI600-4T132G/160L

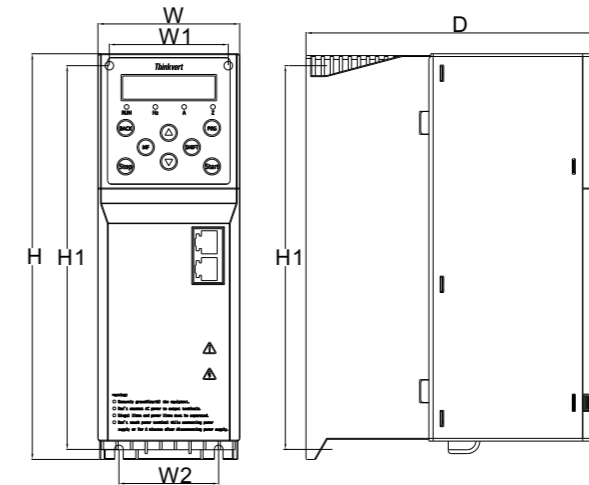
TI600-4T160G/185L~TI600-4T400G/450L

| Drive model       | appearance and Mounting dimensions(mm) |       |       |     |     |        |                        |
|-------------------|--|-------|-------|-----|-----|--------|------------------------|
|                   | W                                      | H     | D     | W1  | W2  | H1     | Mounting hole diameter |
| TI600-4T55G       | 265                                    | 690   | 323   | 200 | 200 | 674    | 9.5                    |
| TI600-4T75G/90L   |  |       |       |     |     |        |                        |
| TI600-4T90G/110L  |  |       |       |     |     |        |                        |
| TI600-4T110G/132L | 295                                    | 833.5 | 338.5 | 200 | 200 | 810    | 12                     |
| TI600-4T132G/160L |  |       |       |     |     |        |                        |
| TI600-4T160G/185L | 335                                    | 1070  | 418   | 265 | 265 | 1046.5 | 14                     |
| TI600-4T185G/200L |  |       |       |     |     |        |                        |
| TI600-4T200G/220L |  |       |       |     |     |        |                        |
| TI600-4T220G/250L | 339                                    | 1113  | 546.5 | 265 | 175 | 1081.5 | 14                     |
| TI600-4T250G/280L |  |       |       |     |     |        |                        |
| TI600-4T280G/315L |  |       |       |     |     |        |                        |
| TI600-4T315G/355L | 339                                    | 1300  | 546.5 | 265 | 175 | 1267.5 | 16                     |
| TI600-4T355G/400L |  |       |       |     |     |        |                        |
| TI600-4T400G/450L |  |       |       |     |     |        |                        |

### TI600 series peripheral device selection, terminal screws and wiring specifications

| Drive model       | Circuit Breaker (A) | Contactor (A) | Power Terminal |                         |  | Grounding Terminal |                         |  |
|-------------------|---------------------|---------------|----------------|-------------------------|--|--------------------|-------------------------|--|
|                   |                     |               | Screw          | Tightening torque (N.m) | wiring specifications (mm <sup>2</sup> ) | Screw              | Tightening torque (N.m) | wiring specifications (mm <sup>2</sup> ) |
| TI600-4T55G       | 225                 | 185           | M8             | 9.0~10.0                | 50                                       | M8                 | 9.0~10.0                | 25                                       |
| TI600-4T75G/90L   | 250                 | 225           | M10            | 17.6~22.5               | 60                                       | M8                 | 9.0~10.0                | 35                                       |
| TI600-4T90G/110L  | 315                 | 265           | M10            | 17.6~22.5               | 70                                       | M8                 | 9.0~10.0                | 35                                       |
| TI600-4T110G/132L | 350                 | 330           | M10            | 17.6~22.5               | 100                                      | M8                 | 9.0~10.0                | 50                                       |
| TI600-4T132G/160L | 400                 | 400           | M10            | 17.6~22.5               | 120                                      | M8                 | 9.0~10.0                | 70                                       |
| TI600-4T160G/185L | 500                 | 400           | M12            | 31.4~39.2               | 150                                      | M12                | 31.4~39.2               | 95                                       |
| TI600-4T185G/200L | 500                 | 500           | M12            | 31.4~39.2               | 150                                      | M12                | 31.4~39.2               | 95                                       |
| TI600-4T200G/220L | 630                 | 500           | M12            | 31.4~39.2               | 185                                      | M12                | 31.4~39.2               | 95                                       |
| TI600-4T220G/250L | 630                 | 630           | M12            | 31.4~39.2               | 185                                      | M12                | 31.4~39.2               | 120                                      |
| TI600-4T250G/280L | 800                 | 630           | M12            | 31.4~39.2               | 120×2                                    | M12                | 31.4~39.2               | 120                                      |
| TI600-4T280G/315L | 800                 | 800           | M12            | 31.4~39.2               | 150×2                                    | M12                | 31.4~39.2               | 150                                      |
| TI600-4T315G/355L | 800                 | 800           | M12            | 31.4~39.2               | 185×2                                    | M12                | 31.4~39.2               | 95×2                                     |
| TI600-4T355G/400L | 1000                | 800           | M12            | 31.4~39.2               | 240×2                                    | M12                | 31.4~39.2               | 120×2                                    |
| TI600-4T400G/450L | 1250                | 1000          | M12            | 31.4~39.2               | 240×2                                    | M12                | 31.4~39.2               | 120×2                                    |

## TI10 series appearance and installation dimensions



TI10-4T0.75G/1.5LB~TI10-4T3.7G/5.5LB

| Drive model        | appearance and Mounting dimensions(mm) |     |     |    |    |     |                        |
|--------------------|--|-----|-----|----|----|-----|------------------------|
|                    | W                                      | H   | D   | W1 | W2 | H1  | Mounting hole diameter |
| TI10-4T0.75G/1.5LB | 75                                     | 211 | 158 | 62 | 52 | 200 | 4.5                    |
| TI10-4T1.5G/2.2LB  |  |     |     |    |    |     |                        |
| TI10-4T2.2G/3.7LB  |  |     |     |    |    |     |                        |
| TI10-4T3.7G/5.5LB  |  |     |     |    |    |     |                        |

### TI10 series peripheral device selection, terminal screws and wiring specifications

| Drive model        | Circuit Breaker (A) | Contactor (A) | Power Terminal |                         |  | Grounding Terminal |                         |  |
|--------------------|---------------------|---------------|----------------|-------------------------|--|--------------------|-------------------------|--|
|                    |                     |               | Screw          | Tightening torque (N.m) | wiring specifications (mm <sup>2</sup> ) | Screw              | Tightening torque (N.m) | wiring specifications (mm <sup>2</sup> ) |
| TI10-4T0.75G/1.5LB | 10                  | 9             | M4             | 1.2~1.5                 | 2.5                                      | M3                 | 0.5~0.6                 | 2.5                                      |
| TI10-4T1.5G/2.2LB  | 10                  | 9             | M4             | 1.2~1.5                 | 2.5                                      | M3                 | 0.5~0.6                 | 2.5                                      |
| TI10-4T2.2G/3.7LB  | 16                  | 12            | M4             | 1.2~1.5                 | 2.5                                      | M3                 | 0.5~0.6                 | 2.5                                      |
| TI10-4T3.7G/5.5LB  | 20                  | 18            | M4             | 1.2~1.5                 | 4  | M3                 | 0.5~0.6                 | 4  |



## Three optional operation panels

- The same machine can be equipped with multiple operation panels, supports LED and LCD display, supports multiple operations of knobs and buttons, so that users have more diverse and precise choices
- The use of ergonomic button design and RJ45 connection make the operation more efficient



LED display operation panel



LED operation panel with knob



LCD operation panel

## Braking resistor selection

| Drive Model         | Braking unit         | Braking resistor  |                        |                          |
|---------------------|----------------------|-------------------|------------------------|--------------------------|
|                     |                      | Standard power    | Standard resistance    | Minimum limit resistance |
| T1120-4T0.75G/1.5LB | Standard built-in    | 110W              | 75Ω                    | 125Ω                     |
| T1120-4T1.5G/2.2LB  |                      | 260W              | 40Ω                    | 100Ω                     |
| T1120-4T2.2G/3.7LB  |                      | 320W              | 25Ω                    | 100Ω                     |
| T1120-4T3.7G/5.5LB  |                      | 800W              | 15Ω                    | 66.7Ω                    |
| T1120-4T5.5G/7.5LB  |                      | 1600W             | 10Ω                    | 40Ω                      |
| T1120-4T7.5G/11LB   |                      | 1600W             | 75Ω                    | 40Ω                      |
| T1120-4T11G/15LB    |                      | 2000W             | 50Ω                    | 25Ω                      |
| T1120-4T15G/18.5LB  |                      | 2000W             | 40Ω                    | 25Ω                      |
| T1120-4T18.5G/22LB  |                      | 4800W             | 32Ω                    | 20Ω                      |
| T1120-4T22G/30LB    |                      | 4800W             | 27.2Ω                  | 20Ω                      |
| T1120-4T30G/37LB    |                      | 6000W             | 20Ω                    | 14Ω                      |
| T1120-4T37G/45L     |                      | Built-in optional | 9600W (Total power)    | 15Ω (Total resistance)   |
| T1120-4T45G/55L     | 9600W (Total power)  |                   | 15Ω (Total resistance) | 12Ω                      |
| T1120-4T55G         | 15000W (Total power) |                   | 12Ω (Total resistance) | 10Ω                      |
| T1120-4T75G/90L     | 20000W (Total power) |                   | 8Ω (Total resistance)  | 5Ω                       |
| T1120-4T90G/110L    | 28800W (Total power) |                   | 5Ω (Total resistance)  | 4Ω                       |
| T1120-4T110G/132L   | 30000W (Total power) |                   | 5Ω (Total resistance)  | 4Ω                       |
| T1120-4T132G/160L   | 35000W (Total power) |                   | 5Ω (Total resistance)  | 4Ω                       |

## Optional Accessories

| Name           | Model         | Functional Description    |
|----------------|---------------|---------------------------|
| Keypad         | TI-LCD-H      | LCD keypad                |
|                | TI-LED-H      | LED keypad                |
| Expansion card | TI-PG-ABZ     | PG card standard edition  |
|                | TI-PG-UVW     | PG card UVW edition       |
|                | TI-PG-FP      | PG card split edition     |
|                | TI-TRA        | Speed tracking card       |
|                | TI-REL        | Expansion relay board     |
|                | TI-PROG       | Serial port monitor board |
|                | TI-ANA        | Analog capture card       |
| Brake unit     | TBU-1SA       | 50A brake unit            |
|                | TBU-3SA       | 100A brake unit           |
| Base           | T1164314-JXDZ | Chassis base 160~315kW    |
| Base           | T1354634-JXDZ | Chassis base 160~315kW    |

# Typical industry application

