

**INSTRUCTION
MANUAL**
使用説明書

TECO
INVERTER

**200V Class 0.4~15KW
(0.5~20HP)**

**400V Class 0.75~18.5KW
(1~25HP)**



TECO INVERTER
E510 Series

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Chapter 0 Preface

0.1 Preface

To extend the performance of the product and ensure personnel safety, please read this manual thoroughly before using the inverter. Should there be any problem in using the product that cannot be solved with the information provided in the manual, contact Our's technical or sales representative who will be willing to help you.

※Precautions

The inverter is an electrical product. For your safety, there are symbols such as "Danger", "Caution" in this manual as a reminder to pay attention to safety instructions on handling, installing, operating, and checking the inverter. Be sure to follow the instructions for highest safety.



Danger

Indicates a potential hazard that could cause death or serious personal injury if misused.



Caution

Indicates that the inverter or the mechanical system might be damaged if misused.



Danger

- Risk of electric shock. The DC link capacitors remain charged for five minutes after power has been removed. It is not permissible to open the equipment until 5 minutes after the power has been removed.
- Do not make any connections when the inverter is powered on. Do not check parts and signals on circuit boards during the inverter operation.
- Do not disassemble the inverter or modify any internal wires, circuits, or parts.
- Ensure that the Inverter Ground terminal is connected correctly.



Caution

- Do not perform a voltage test on parts inside the inverter. High voltage can destroy the semiconductor components.
- Do not connect T1, T2, and T3 terminals of the inverter to any AC input power supply.
- CMOS ICs on the inverter's main board are susceptible to static electricity. Do not touch the main circuit board.

Chapter 1 Safety precautions

1.1 Before Power Up



Danger

- Make sure the main circuit connections are correct Single phase L1(L),L3(N), Three phase L1(L),L2,L3(N) are power-input terminals and must not be mistaken for T1,T2 and T3. Otherwise, inverter damage can result.



Caution

- The line voltage applied must comply with the inverter's specified input voltage.(See the nameplate)
- To avoid the front cover from disengaging, or other damage do not carry the inverter by its covers. Support the drive by the heat sink when transporting. Improper handling can damage the inverter or injure personnel and should be avoided.
- To avoid the risk of fire, do not install the inverter on a flammable object.Install on nonflammable objects such as metal.
- This product provides the 24V for internal use only, do not use as the power supply sources for other external components, such as sensors, electronic components ... etc., otherwise it will cause adverse situation.
- When disconnecting the remote keypad, turn the power off first to avoid any damage to the keypad or the inverter.



Caution

- This product is sold subject to EN 61800-3 and EN 61800-5-1. In a domestic environment this product may cause radio interference in which case the user may be required to apply corrective measures.
- Motor over temperature protection is not provided.



Caution

- Work on the device/system by unqualified personnel or failure to comply with warnings can result in severe personal injury or serious damage to material. Only suitably qualified personnel trained in the setup, installation, commissioning and operation of the product should carry out work on the device/system.
- Only permanently-wired input power connections are allowed.

1.2 During Power Up



Danger

- When the momentary power loss is longer than 2 seconds, the inverter will not have sufficient stored power for its control circuit. Therefore, when the power is re-applied, the run operation of the inverter will be based on the setup of following parameters:
 - Run parameters. 00-02 or 00-03.
 - Direct run on power up. Parameter. 07-04 and the status of external run switch.

Note- the start operation will be regardless of the settings for parameters 07-00/07-01/07-02.

⚠ Danger. Direct run on power up.

If direct run on power up is enabled and inverter is set to external run with the run FWD/REV switch closed then the inverter will restart.

⚠ Danger

Prior to use, ensure that all risks and safety implications are considered.

- When the momentary power loss ride through is selected and the power loss is short, the inverter will have sufficient stored power for its control circuits to function, therefore, when the power is resumed the inverter will automatically restart depending on the setup of parameters 07-00 & &- 7-01.

1.3 Before Operation



Caution

- Make sure the inverter model and rating are the same as that set in parameter 13-00.

Note :On power up the supply voltage set in parameter 01-01 will flash on the display for 2 seconds.

1.4 During Operation



Danger

- Do not connect or disconnect the motor during operation. Otherwise, It may cause the inverter to trip or damage the unit.




Danger

- To avoid electric shock, do not take the front cover off while power is on.
- The motor will restart automatically after stop when auto-restart function is enabled. In this case, care must be taken while working around the drive and associated equipment .
- The operation of the stop switch is different than that of the emergency stop switch. The stop switch has to be activated to be effective. Emergency stop has to be de-activated to become effective.



Caution

- Do not touch heat radiating components such as heat sinks and brake resistors. 
- The inverter can drive the motor from low speed to high speed. Verify the allowable speed ranges of the motor and the associated machinery.
- Risk of electric shock. The DC link capacitors remain charged for five minutes after power has been removed. It is not permissible to open the equipment until 5 minutes after the power has been removed.



Caution

- The Inverter should be used in environments with temperature range from (14-104°F) or (-10 to 50°C) * and relative humidity of 95%.

* IP20 : -10 ~ 50 °C without stick on type dust cover.

NEMA1 : -10 ~ 40 °C with stick on type dust cover.



Danger

- Make sure that the power is switched off before disassembling or checking any components.

1.5 Inverter Disposal



Caution

Please dispose of this unit with care as an industrial waste and according to your required local regulations.

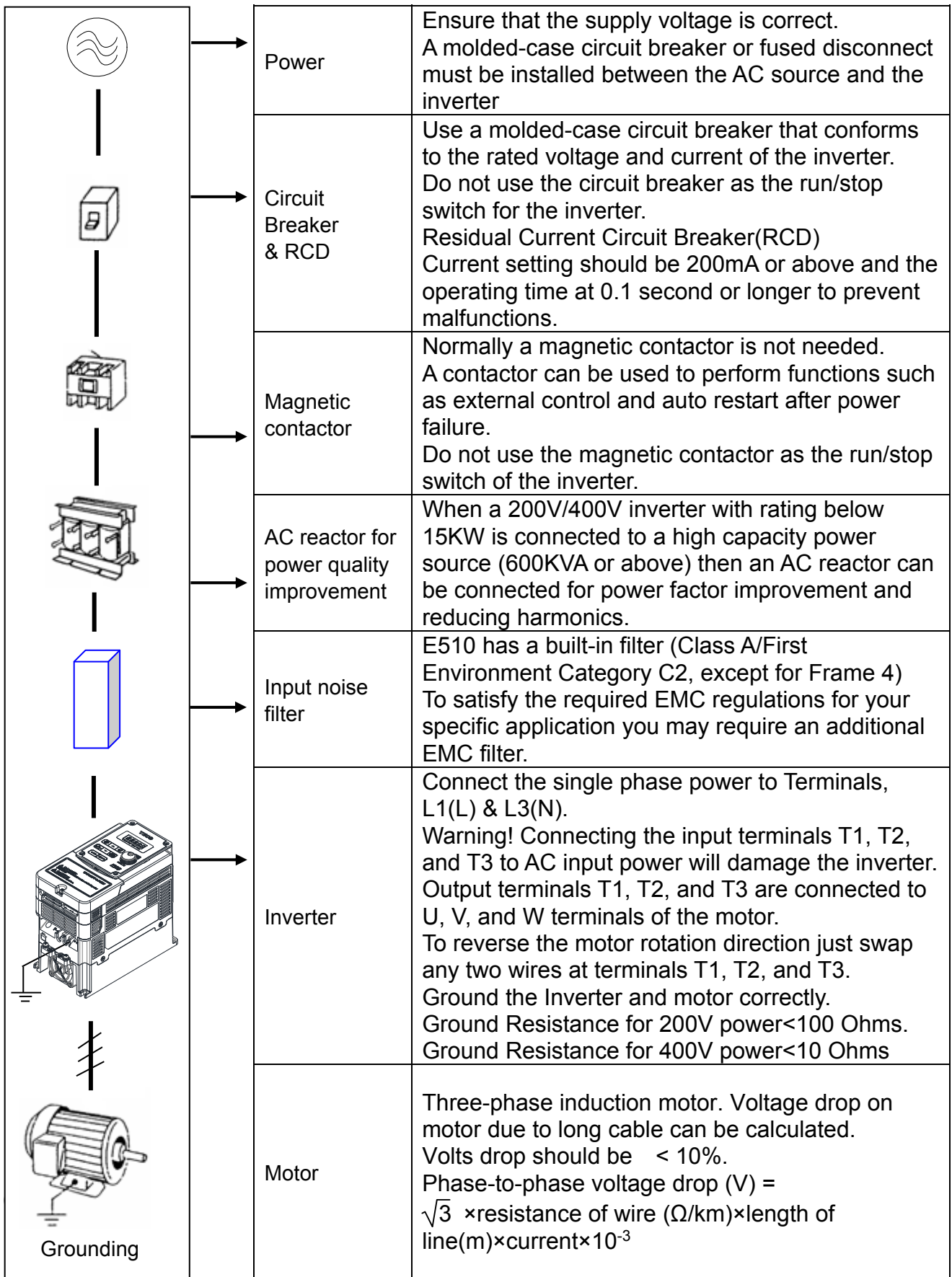
- The capacitors of inverter main circuit and printed circuit board are considered as hazardous waste and must not be burnt.
- The plastic enclosure and parts of the inverter such as the cover board will release harmful gases if burnt.



Equipment containing electrical components may not be disposed of together with domestic waste. It must be separately collected with electrical and electronic waste according to local and currently valid legislation.

Chapter 2 Environment & Installation

2.1 Considerations for peripheral equipment



2.2 Specifications

2.2.1 Product Specifications

200V Class:Single phase

| Model: E510-□□□- H1F(N4)(S) | 2P5 | 201 | 202 | 203 |
|---|-------------------------------|------|------|------|
| Horse power (HP) | 0.5 | 1 | 2 | 3 |
| Suitable motor capacity (KW) | 0.4 | 0.75 | 1.5 | 2.2 |
| Rated output current (A) | 3.1 | 4.5 | 7.5 | 10.5 |
| Rated capacity (KVA) | 1.2 | 1.7 | 2.90 | 4.00 |
| Input voltage range(V) | Single Phase:200~240V,50/60HZ | | | |
| Allowable voltage fluctuation | +10%-15% | | | |
| Output voltage range(V) | Three phase: 0~240V | | | |
| Input current (A)* | 8.5 | 12 | 16 | 23.9 |
| Inverter net weight (KG) | 1.65 | 1.65 | 2.5 | 2.5 |
| Allowable momentary power loss time (S) | 2.0 | 2.0 | 2.0 | 2.0 |
| Enclosure | IP20/NEMA1 & IP66/NEMA4X | | | |

200V Class:Single/Three phase

| Model: E510-□□□- H(N4R) | 2P5 | 201 | 202 | 203 |
|---|--------------------------------------|--------|-------|-----------|
| Horse power (HP) | 0.5 | 1 | 2 | 3 |
| Suitable motor capacity (KW) | 0.4 | 0.75 | 1.5 | 2.2 |
| Rated output current (A) | 3.1 | 4.5 | 7.5 | 10.5 |
| Rated capacity (KVA) | 1.2 | 1.7 | 2.90 | 4.00 |
| Input voltage range(V) | Single/Three Phase:200~240V, 50/60HZ | | | |
| Allowable voltage fluctuation | +10%-15% | | | |
| Output voltage range(V) | Three phase: 0~240V | | | |
| Input current (A)* | 8.5/4.5 | 12/6.5 | 16/11 | 23.9/12.5 |
| Inverter net weight (KG) | 1.6 | 1.6 | 2.5 | 2.5 |
| Allowable momentary power loss time (S) | 2.0 | 2.0 | 2.0 | 2.0 |
| Enclosure | IP20/NEMA1 & IP66/NEMA4X | | | |

200V Class:Three phase

| Model: E510-□□□- H3(N4) | 202 | 205 | 208 | 210 | 215 | 220 |
|---|-------------------------------|------|-----|------|------|------|
| Horse power (HP) | 2 | 5 | 7.5 | 10 | 15 | 20 |
| Suitable motor capacity (KW) | 1.5 | 3.7 | 5.5 | 7.5 | 11 | 15 |
| Rated output current (A) | 7.5 | 17.5 | 26 | 35 | 48 | 64 |
| Rated capacity (KVA) | 2.9 | 6.7 | 9.9 | 13.3 | 20.6 | 27.4 |
| Input voltage range(V) | Three phase :200~240V,50/60HZ | | | | | |
| Allowable voltage fluctuation | +10%-15% | | | | | |
| Output voltage range(V) | Three phase: 0~240V | | | | | |
| Input current (A)* | 11 | 20.5 | 33 | 42 | 57 | 70 |
| Inverter net weight (KG) | 1.6 | 2.5 | 6.5 | 6.5 | 10.1 | 10.4 |
| Allowable momentary power loss time (S) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Enclosure | IP20/NEMA1 & IP66/NEMA4X | | | | | |

*The input current is calculated value at full rated output current.

400VClass:Three phase

| Model: E510-□□□- H3(F)(N4)(S) | 401 | 402 | 403 | 405 |
|---|------------------------------|-----|-----|------|
| Horse power (HP) | 1 | 2 | 3 | 5 |
| Suitable motor capacity (KW) | 0.75 | 1.5 | 2.2 | 3.7 |
| Rated output current (A) | 2.3 | 3.8 | 5.2 | 8.8 |
| Rated capacity (KVA) | 1.7 | 2.9 | 4.0 | 6.7 |
| Input voltage range(V) | Three phase:380~480V,50/60HZ | | | |
| Allowable voltage fluctuation | +10%-15% | | | |
| Output voltage range(V) | Three phase:0~480V | | | |
| Input current (A)* | 4.2 | 5.6 | 7.3 | 11.6 |
| Inverter net weight (KG) | 1.7 | 1.7 | 2.5 | 2.5 |
| Allowable momentary power loss time (S) | 2.0 | 2.0 | 2.0 | 2.0 |
| Enclosure | IP20/NEMA1 & IP66/NEMA4X | | | |

| Model: E510-□□□- H3(F)(N4) (S) | 408 | 410 | 415 | 420 | 425 |
|---|------------------------------|------|------|------|------|
| Horse power (HP) | 7.5 | 10 | 15 | 20 | 25 |
| Suitable motor capacity (KW) | 5.5 | 7.5 | 11 | 15 | 18.5 |
| Rated output current (A) | 13.0 | 17.5 | 24 | 32 | 40 |
| Rated capacity (KVA) | 9.9 | 13.3 | 19.1 | 24 | 30.5 |
| Input voltage range(V) | Three phase:380~480V,50/60HZ | | | | |
| Allowable voltage fluctuation | +10%-15% | | | | |
| Output voltage range(V) | Three phase: 0~480V | | | | |
| Input current (A)* | 17 | 23 | 31 | 38 | 48 |
| Inverter net weight (KG) | 6.7 | 6.7 | 6.7 | 13.7 | 13.7 |
| Allowable momentary power loss time (S) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Enclosure | IP20/NEMA1 & IP66/NEMA4X | | | | |

*The input current is calculated value at full rated output current.

*N4S 400V series only up to 15HP.

F: Built-in filter

N4: Protection class IP66, without built-in power switches and VR.

N4R: Protection class IP66, with built-in VR, without power switches

N4S: Protection class IP66, with built-in power switches and VR

| Model: E510-□□□- H3(F)(PT) | 420 | 425 |
|---|---|------|
| Horse power (HP) | 20 | 25 |
| Suitable motor capacity (KW) | 15 | 18.5 |
| Rated output current (A) | 32 | 40 |
| Rated capacity (KVA) | 24 | 30.5 |
| Input voltage range(V) | three phase:380~480V (+10%-15%),50/60HZ | |
| Output voltage range(V) | three phase: 0~480V | |
| Input current (A)* | 38 | 48 |
| Allowable momentary power loss time (S) | 2.0 | 2.0 |
| Enclosure | IP20 | |

PT: footprint type filter

2.2.2 General Specifications

| Item | | E510 |
|---|--|---|
| Control Mode | | V/F Control, Vector Control |
| Frequency | Output Frequency | 0.01~599.00Hz |
| | Starting Torque | 150%/1Hz(Vector) |
| | Speed Control Range | 1:50 |
| | Setting resolution | Digital input: 0.01Hz |
| | | Analog input:0.06Hz/60Hz |
| | Setting | Keypad:Set directly with ▲ ▼ keys or the VR on the keypad |
| External Input Terminlas: AI1(0/2~10V), AI2(0/4~20mA)input Multifunction input up/down function(Group3) | | |
| Setting frequency by communication method. | | |
| Frequency limit | Lower and upper frequency limits 3 skip frequency settings. | |
| Run | Operation set | Keypad run, stop button |
| | | External terminals: Multi- operation-mode2 / 3 wire selection Jog operation |
| | | Run signal by communication method. |
| Main Control Features | V / F curve setting | 18 fixed curves and one customized curve |
| | Carrier frequency | 1~16KHz |
| | Acceleration and deceleration control | 2 off Acc / dec time parameters. 4 off S curve parameters. |
| | Multifunction input | 29 functions (refer to description on group3) |
| | Multifunction output | 21 functions (refer to description on group3) |
| | Multifunction analog output | 5 functions (refer to description on group4) |
| | Main features | Overload Detection, 16 preset speeds,Auto-run,Acc/Dec Switch (2 Stages),Main/Alt run Command select,Main/Alt Frequency Command select,PID control, torque boost, V/F start Frequency, Fault reset, Firemode. |
| Display | LED | Display :parameter / parameter value / frequency / line speed / DC voltage / output voltage / output current / PID feedback / input and output terminal status / Heat sink temperature / Program Version / Fault Log. |
| | LED Status Indicator | Run / Stop / Forward / Reverse ,and etc. |
| Protective Functions | Overload Protection | The relays to protect the motor and the inverter. (150%/1min) |
| | Over voltage | ·220V: >410V ,380V: >820V |
| | Under Voltage | ·220V: <190V ,380V: <380V |
| | Momentary Power Loss Restart | Inverter auto-restart after a momentary power loss. |
| | Stall Prevention | Stall prevention for Acceleration/ Deceleration/ Operation. |
| | Short-circuit output terminal | Electronic Circuit Protection |
| | Grounding Fault | Electronic Circuit Protection |

| | | |
|-------------------------------------|---------------------------|---|
| Item | | E510 |
| Control Mode | | V/F Control, Vector Control |
| | Other protection features | Protection for overheating of heat sink, The carrier frequency decreasing with the temperature function, fault output, reverse prohibit, prohibit for direct start after power up and error recovery ,parameter lock up |
| All frames include brake transistor | | |
| Communication control | | Standard built-in RS485 communication (Modbus), One to one or One to many control. |
| Environment | Operating temperature | -10~50°C (Note1) |
| | Storage temperature | -20~60°C |
| | Humidity | 95% RH or less (no condensation) (Compliance with IEC 60068 - 2-78) |
| | Shock | 20Hz or less 1G(9.8m/s ²)20~50Hz 0.6G(5.88m/s ²) (Compliance with IEC 60068 - 2-6) |
| | Protection class | IP20/NEMA1/IP66/NEMA4X (Depending on models) |

Note1:

IP20/NEMA 1 Type:

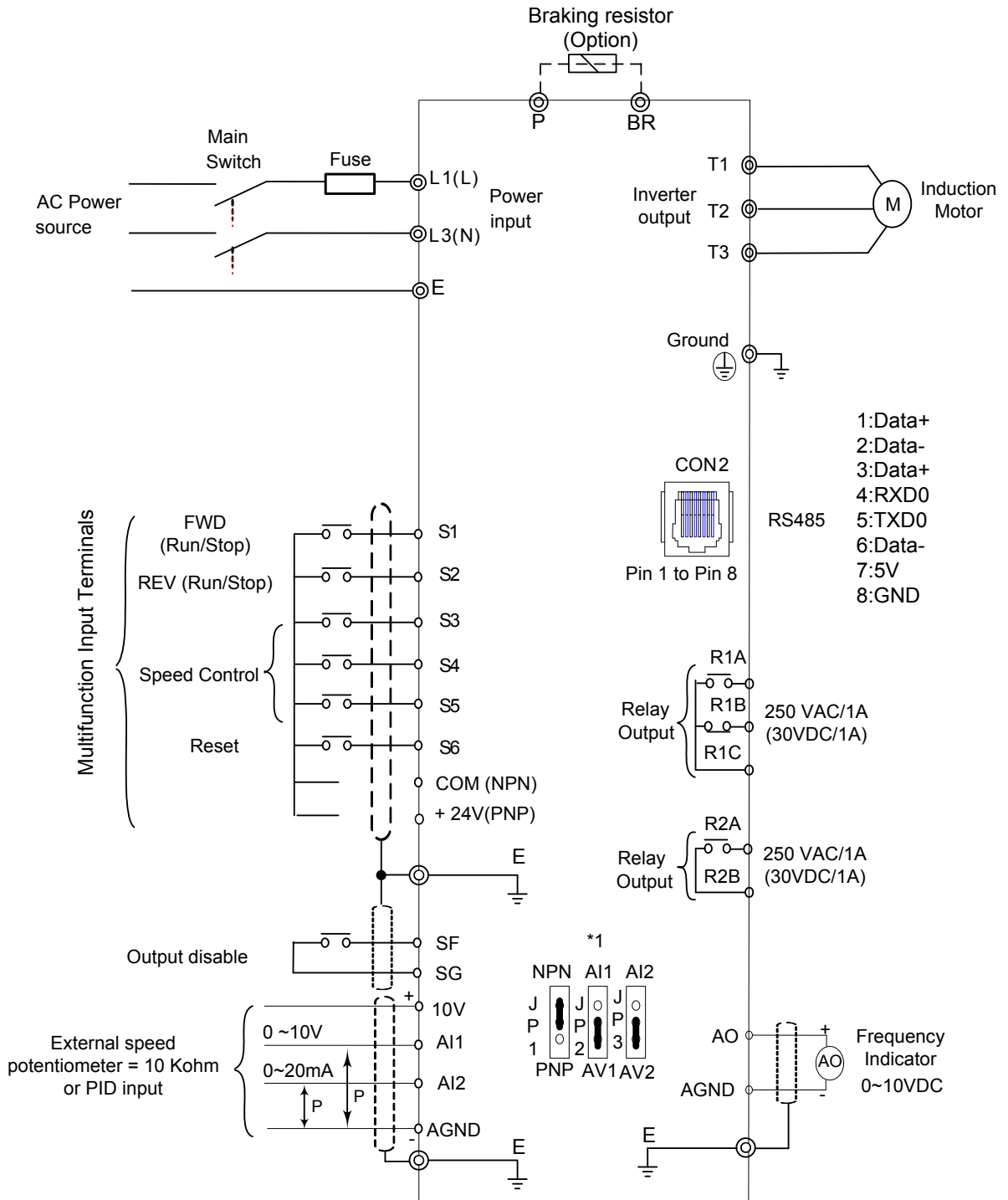
-10 ~ 50°C (without stick on type dust cover.)

-10 ~40°C (with stick on type dust cover.)

IP66/NEMA 4X Type: -10 ~ 50°C

2.3 Standard wiring

2.3.1 Single Phase:



Ⓜ Indicates shield wire ⓂP Indicates twisted-pair shield wire

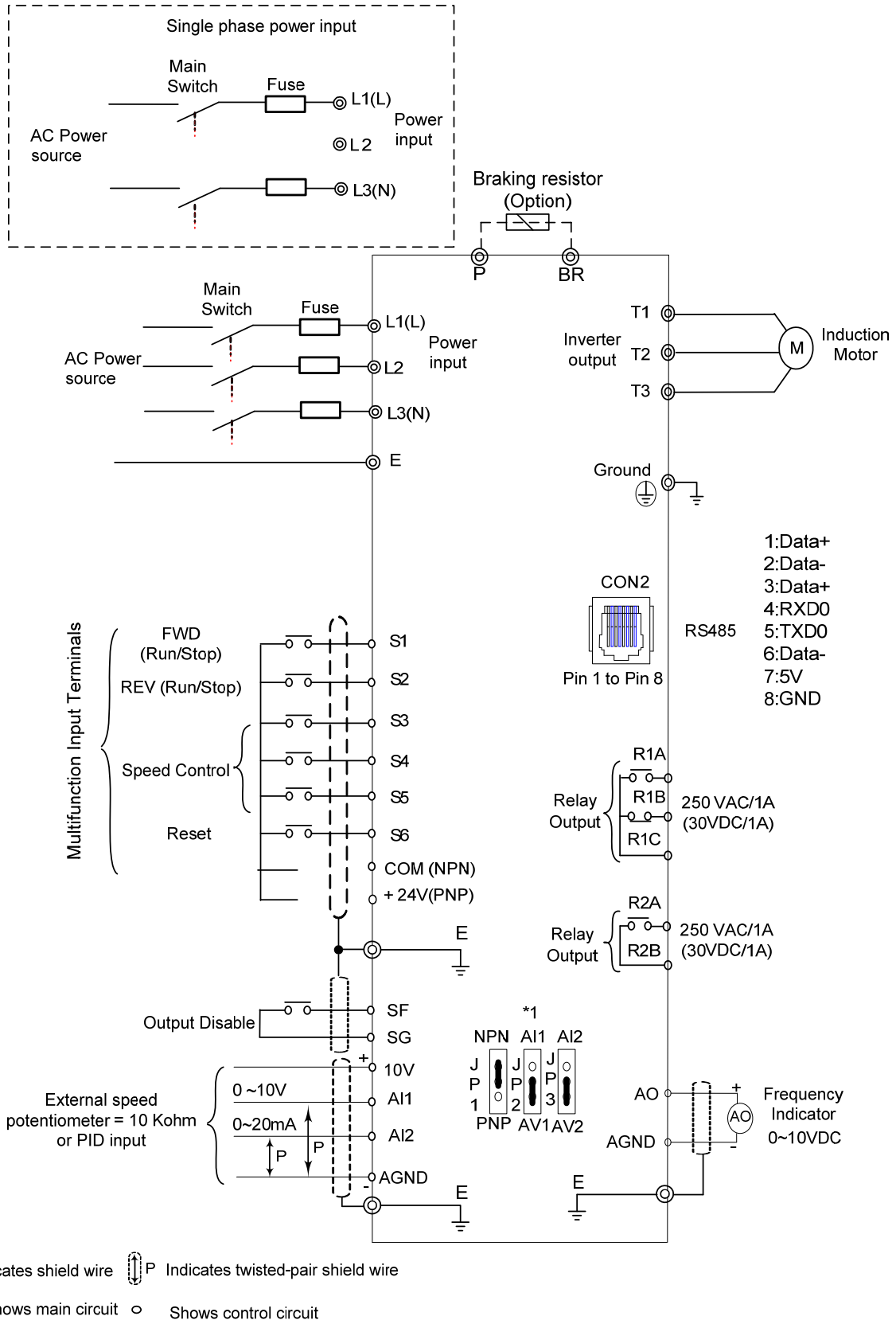
⊙ Shows main circuit ○ Shows control circuit

*1: JP1:NPN/PNP selection, JP2:AI1 0~10V/0~20mA selection, JP3:AI2 0~10V/0~20mA selection

Model:

200V:E510-2P5-H1(F)(N4S)/E510-201-H1(F)(N4S)/
E510-202-H1(F)(N4S)/E510-203-H1(F)(N4S)

2.3.2 Single/Three Phase

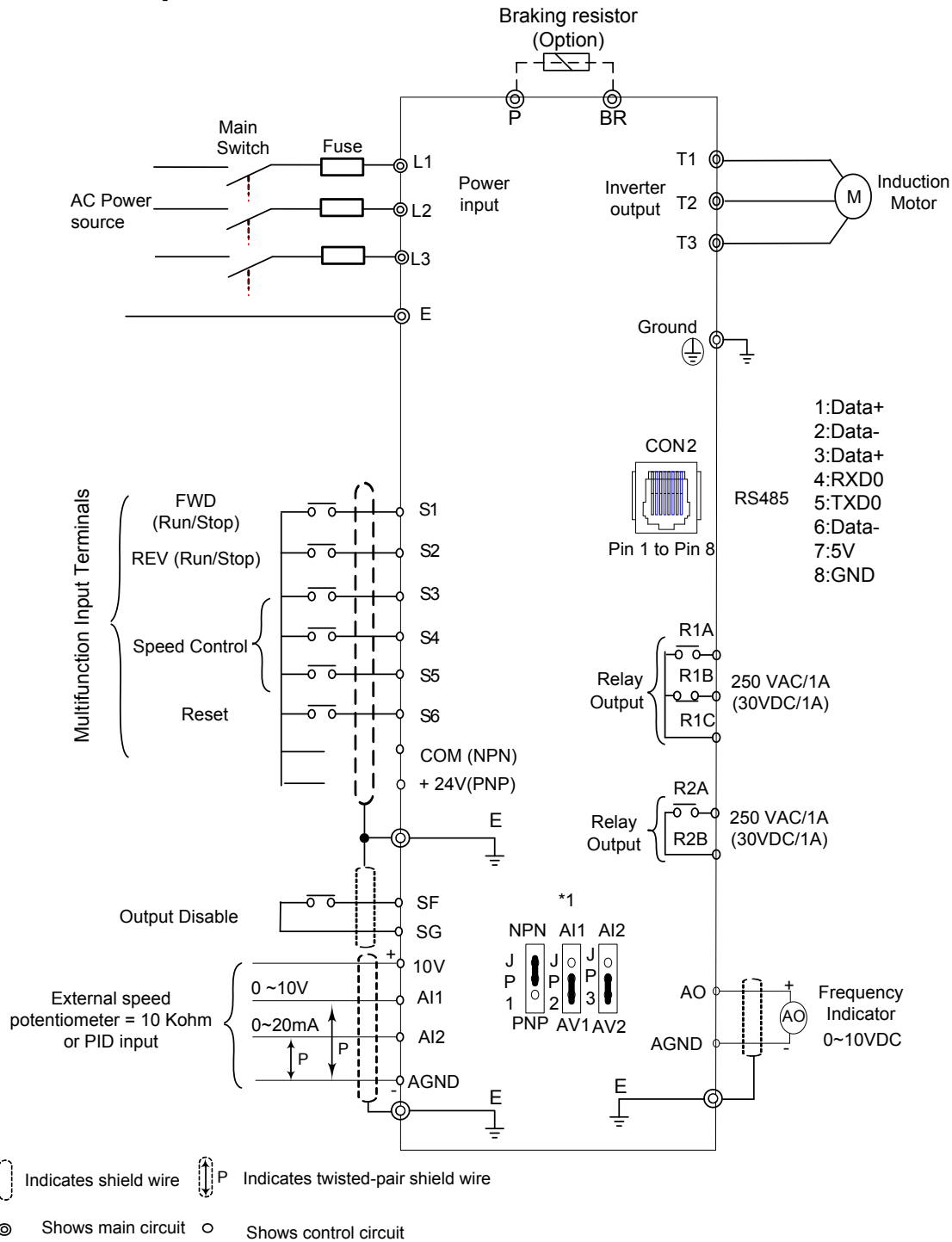


*1: JP1:NPN/PNP selection, JP2:AI1 0~10V/0~20mA selection, JP3:AI2 0~10V/0~20mA selection

Model:

200V: E510-2P5-H(N4R)/ E510-201-H(N4R)/ E510-202-H(N4R)/ E510-203-H(N4R)

2.3.3 Three phase



*1: JP1:NPN/PNP selection, JP2:AI1 0~10V/0~20mA selection, JP3:AI2 0~10V/0~20mA selection


Model:

200V: E510-202-H3(N4)/E510-205-H3(N4)/E510-208-H3(N4)/E510-210-H3(N4)/
E510-215-H3(N4)/E510-220-H3(N4)


400V: E510-401-H3(F)(N4)(S)/ E510-402-H3(F)(N4)(S)/ E510-403-H3(F)(N4)(S)/
E510-405-H3(F)(N4)(S)/ E510-408-H3(F)(N4)(S)/ E510-410-H3(F)(N4)(S)/
E510-415-H3(F)(N4)(S)/ E510-420-H3(F)(N4)/ E510-425-H3(F)(N4)/
E510-420-H3FPT/E510-425-H3FPT

2.4 Terminal Description

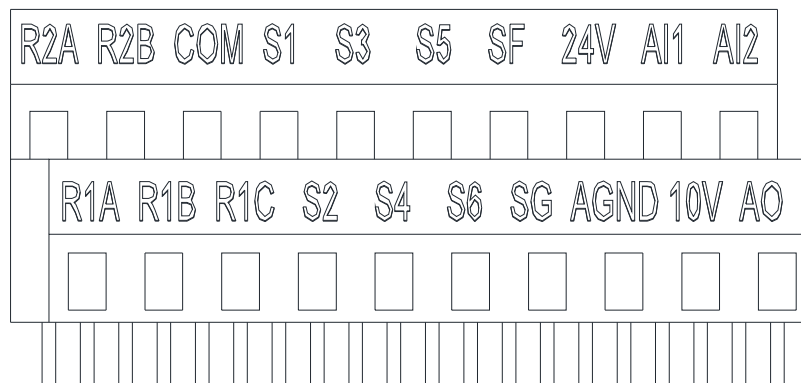
2.4.1 Description of main circuit terminals

| Terminal symbols | TM1 Function Description |
|---|---|
| L1(L) | Main power input:single phase: L1(L)/L3(N) single/three phase:L1(L)/L2/L3(N) three phase:L1/L2/L3 |
| L2 | |
| L3(N) | |
| T1 | Inverter output, connect to U/V/W terminals of motor |
| T2 | |
| T3 | |
| P | Braking resistor connection terminal: Used in applications when it is required to stop a high inertia load rapidly. (refer to specifications of the braking resistor) |
| BR | |
|  | Ground terminal |

2.4.2 Control circuit terminal description

| Type | Terminal | Terminal function | Signal level |
|--------------------------|---|--|--|
| Digital input signal | S1 | Forward—Stop (Preset), Multi function input terminal | 24 VDC, 8 mA, Optical coupling isolation(Max,voltage30 Vdc, Input impedance 3.3kΩ) |
| | S2 | Reverse—Stop (Preset), Multi function input terminal | |
| | S3 | Preset Speed0 (5-02),Multi function input terminal | |
| | S4 | Preset Speed1 (5-03), Multi function input terminal | |
| | S5 | Preset Speed2 (5-05), Multi function input terminal | |
| | S6 | Fault reset input, Multi function input terminal | |
| Relay output | R1A | NO(Normally open) | 250VAC/1A(30VDC/1A) |
| | R1B | NC(Normally closed) | |
| | R1C | COMMON | |
| | R2A | | |
| | R2B | | |
| 24VPower supply | COM | Digital signal common terminal (JP1 Switching NPN position) | ±15%,Max output current 60mA |
| | 24V | Digital signal common terminal (JP1 Switching PNP position) | |
| The analog input signal | 10V | Built in Power for an external speed potentiometer | 10V(Max current: 20mA) |
| | A11 | Multifunctional analog input: JP2 selects voltage or current input Voltage: JP2 in AV1 position Current: JP2 in A11 position | 0 ~ 10V,(Max current: 20mA) (Input impedance: 153KΩ) |
| | A12 | Multifunctional analog input: JP3 selects voltage or current input Voltage: JP3 in AV2 position Current: JP3 in A12 position | 0 ~ 10V,0 ~20mA (Input impedance: 153KΩ) |
| | AGND | The analog common terminal | ---- |
| |  | Shielding wire connecting terminal (The earth) | ---- |
| The analog output signal | AO | Multifunctional analog output terminal*3 | 0 ~10V,(Max current:2mA) |
| | AGND | The analog common terminal | ---- |
| Safety switch | SF | Terminal SF is for output disable | |
| | SG | | |

Control circuit terminal:



2.5 Outline Dimensions

mm(inch)

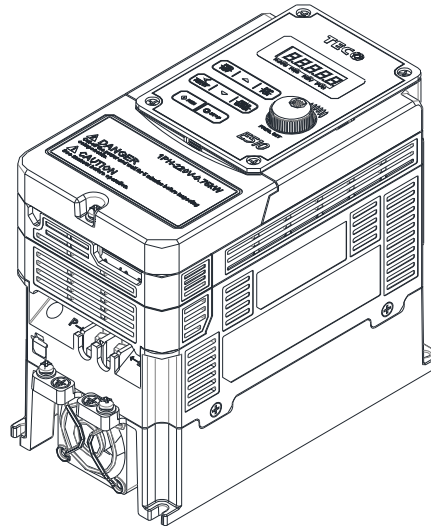
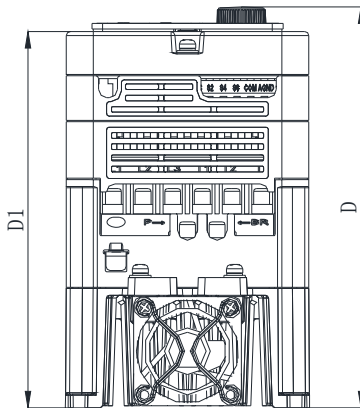
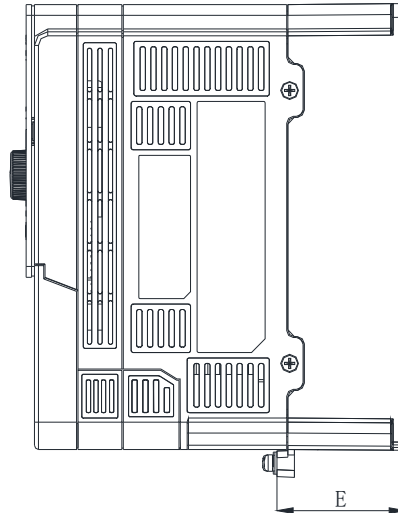
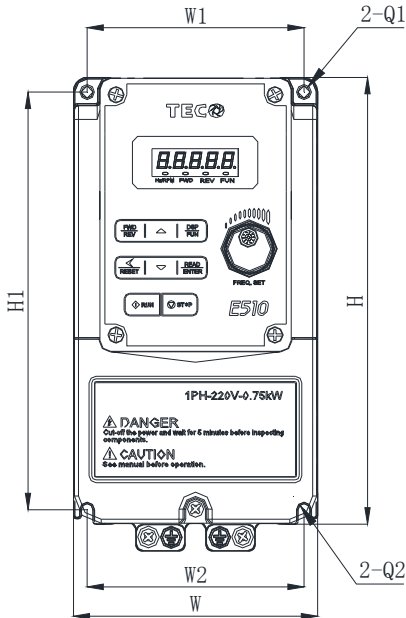
| Tolerance Table | | | | |
|-------------------------------------|-------------------------------------|-----------------------------------|------------------------------------|--|
| 1 ~ 10 ± 0.1 (0.04~0.40 ± 0.004) | 10 ~ 50 ± 0.2 (0.40~1.97 ± 0.01) | 50 ~ 100 ± 0.3 (1.97~4 ± 0.01) | 100 ~ 200 ± 0.5 (4~7.87 ± 0.02) | 200 ~ 400 ± 0.8 (7.87~15.75 ± 0.03) |

2.5.1 IP20/NEMA1 dimensions

Frame1 (IP20)

Single/Three phase: 200V 0.5~1HP ; Single phase: 200V 0.5~1HP

Three phase: 200V 2HP; 400V 1~2HP



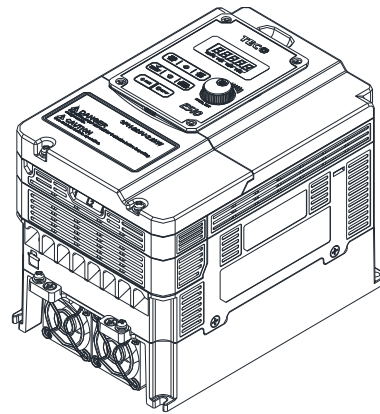
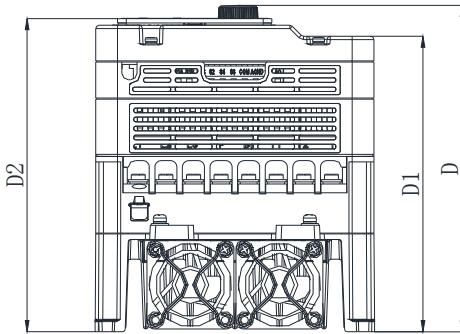
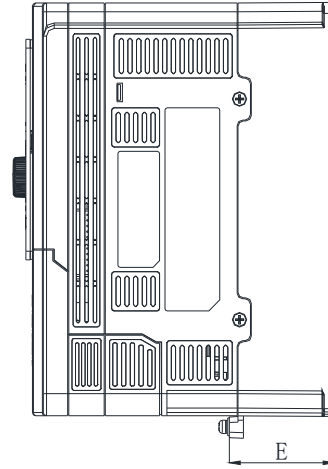
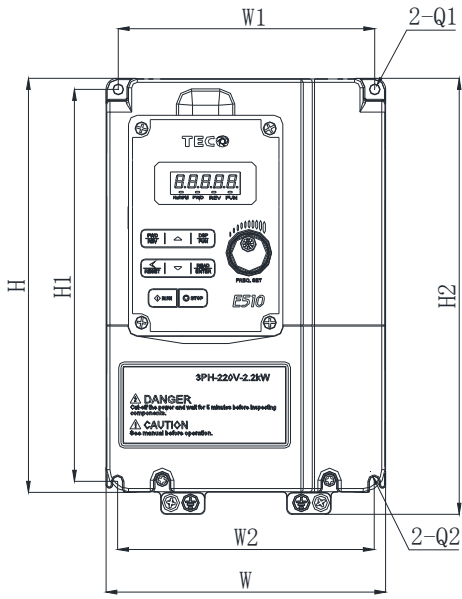
Unit : mm(inch)

| Model | Dimensions | | | | | | | | | | N.W (Kg) |
|--------------|----------------|----------------|----------------|-----------------|---------------|---------------|-----------------|--------------|---------------|---------------|-------------|
| | W | W1 | W2 | H | H1 | D | D1 | E | Q1 | Q2 | |
| E510-2P5-H | | | | | | | | | | | 1.6 |
| E510-201-H | | | | | | | | | | | 1.6 |
| E510-2P5-H1F | | | | | | | | | | | 1.7 |
| E510-201-H1F | | | | | | | | | | | 1.7 |
| E510-202-H3 | 90.6 (3.57) | 80.5 (3.17) | 80.5 (3.17) | 163.6 (6.44) | 153 (6.02) | 149 (5.87) | 137.8 (5.43) | 48 (1.89) | 4.3 (0.17) | 4.3 (0.17) | 1.7 |
| E510-401-H3 | | | | | | | | | | | 1.7 |
| E510-402-H3 | | | | | | | | | | | 1.7 |
| E510-401-H3F | | | | | | | | | | | 1.7 |
| E510-402-H3F | | | | | | | | | | | 1.7 |

Frame2 (IP20)

Single/Three phase: 200V 2~3HP ; Single phase: 200V 2~3HP

Three phase: 200V 5HP; 400V 3~5HP

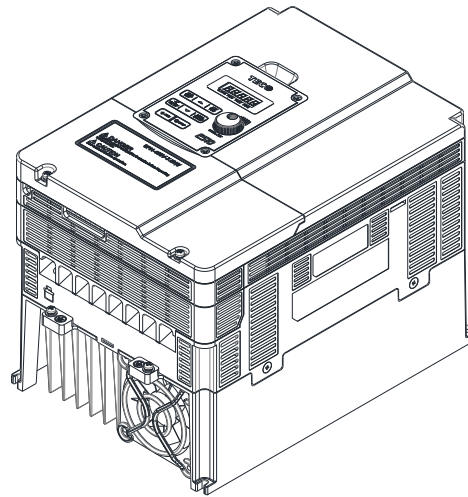
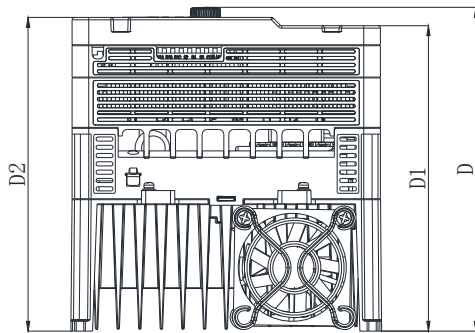
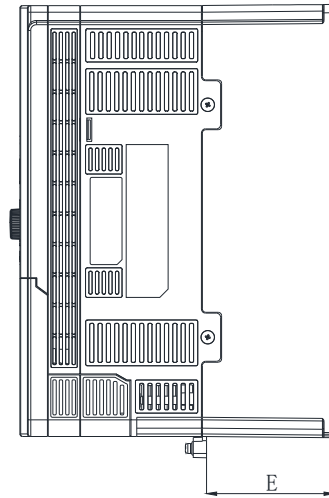
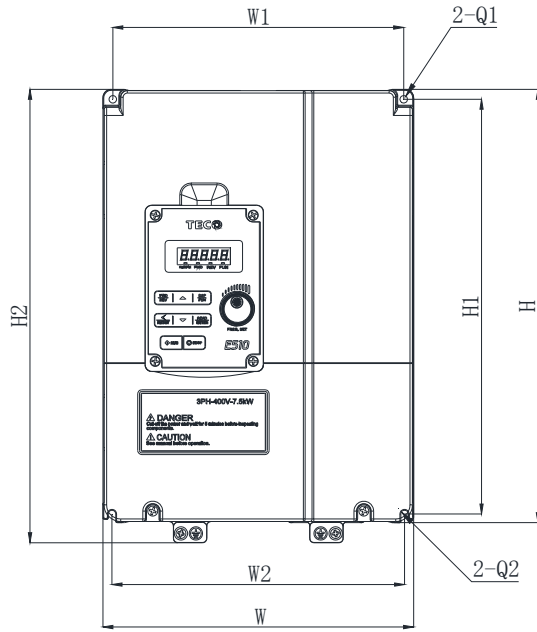


Unit : mm(inch)

| Model | Dimensions | | | | | | | | | | | N.W (Kg) | |
|--------------|-----------------|---------------|---------------|-----------------|-----------------|-----------------|---------------|-----------------|-----------------|---------------|---------------|---------------|-----|
| | W | W1 | W2 | H | H1 | H2 | D | D1 | D2 | E | Q1 | | Q2 |
| E510-202-H | | | | | | | | | | | | | 2.5 |
| E510-203-H | | | | | | | | | | | | | 2.5 |
| E510-202-H1F | | | | | | | | | | | | | 2.5 |
| E510-203-H1F | | | | | | | | | | | | | 2.5 |
| E510-205-H3 | 128.7 (5.07) | 118 (4.65) | 118 (4.65) | 187.6 (7.39) | 177.6 (6.99) | 197.5 (7.78) | 150 (5.91) | 133.8 (5.27) | 141.8 (5.58) | 48.2 (1.9) | 4.5 (0.18) | 4.5 (0.18) | 2.5 |
| E510-403-H3 | | | | | | | | | | | | | 2.5 |
| E510-405-H3 | | | | | | | | | | | | | 2.5 |
| E510-403-H3F | | | | | | | | | | | | | 2.5 |
| E510-405-H3F | | | | | | | | | | | | | 2.5 |

Frame3 (IP20)

Three phase: 200V 7.5~10HP; 400V 7.5~15HP

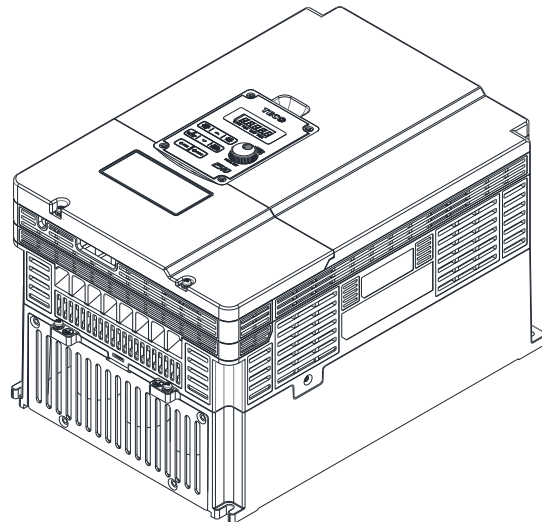
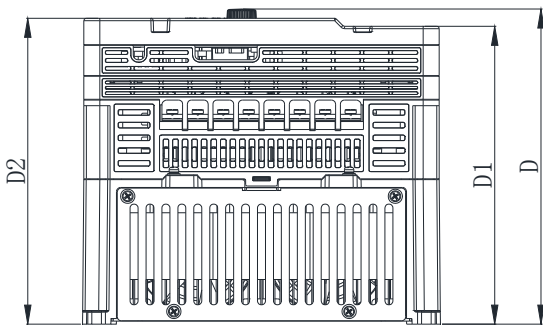
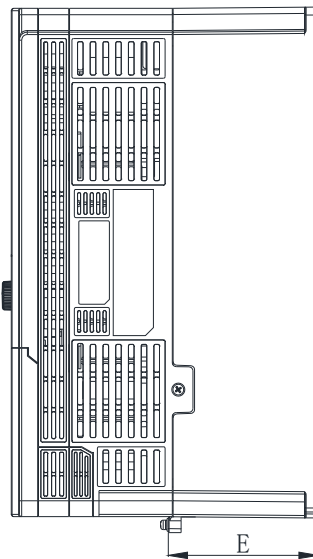
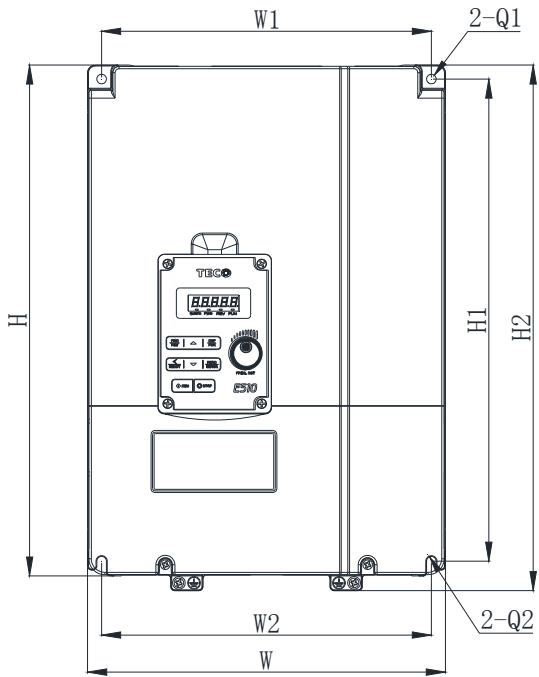


Unit : mm(inch)

| Model | Dimensions | | | | | | | | | | | N.W (Kg) | |
|--------------|------------|--------|--------|---------|--------|---------|--------|--------|--------|--------|--------|-------------|-----|
| | W | W1 | W2 | H | H1 | H2 | D | D1 | D2 | E | Q1 | | Q2 |
| E510-208-H3 | | | | | | | | | | | | | 6.5 |
| E510-210-H3 | | | | | | | | | | | | | 6.5 |
| E510-408-H3 | | | | | | | | | | | | | 6.5 |
| E510-410-H3 | 186.9 | 175 | 176 | 260.9 | 249.8 | 273 | 197.2 | 184 | 189 | 76.7 | 4.5 | 4.5 | 6.5 |
| E510-415-H3 | (7.36) | (6.89) | (6.93) | (10.27) | (9.83) | (10.75) | (7.76) | (7.24) | (7.44) | (3.02) | (0.18) | (0.18) | 6.5 |
| E510-408-H3F | | | | | | | | | | | | | 6.7 |
| E510-410-H3F | | | | | | | | | | | | | 6.7 |
| E510-415-H3F | | | | | | | | | | | | | 6.7 |

Frame4 (IP20)

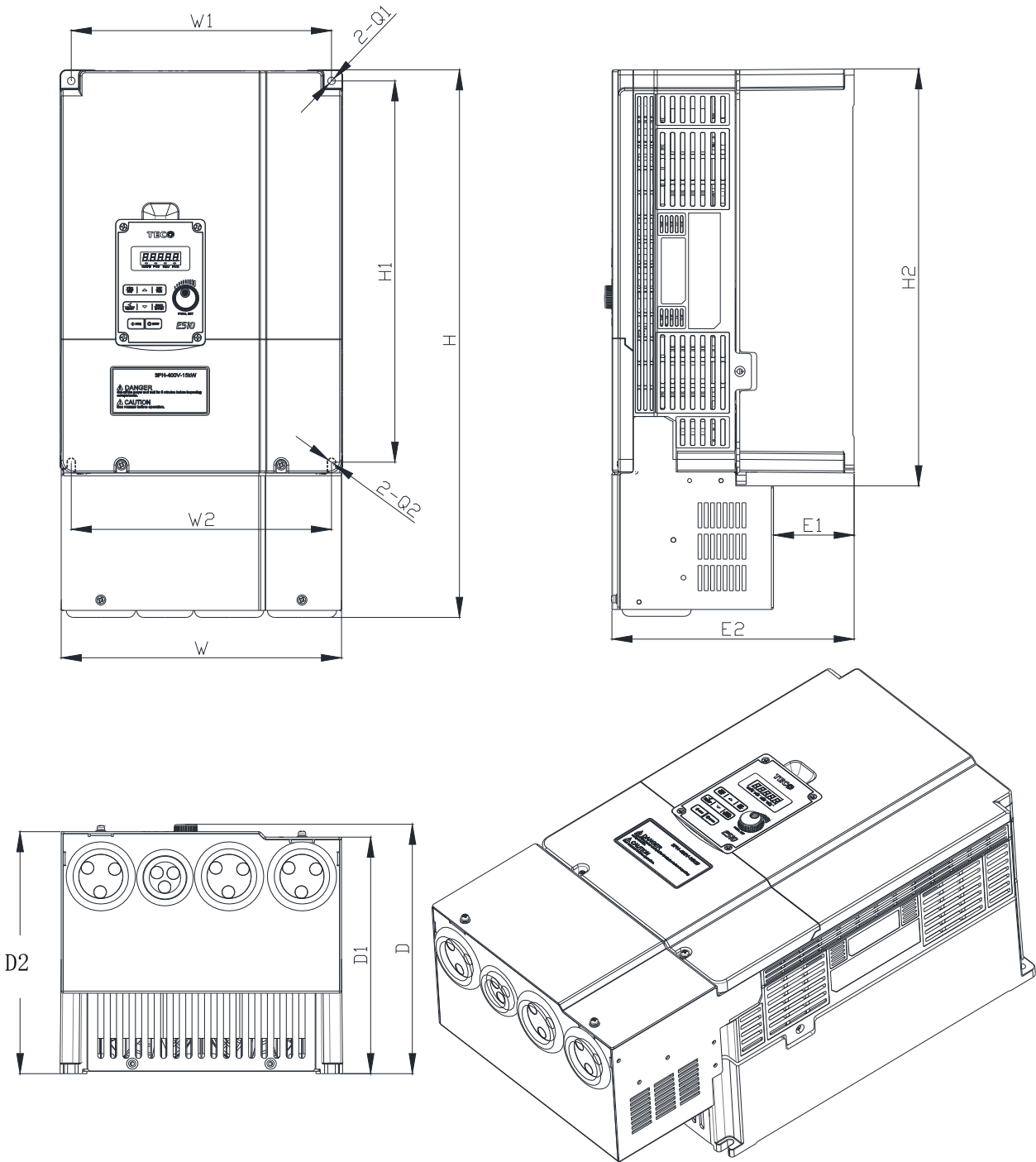
Three phase: 200V 15~20HP; 400V 20~25HP



Unit : mm(inch)

| Model | Dimensions | | | | | | | | | | | | N.W (Kg) |
|-------------|------------|--------|--------|---------|---------|---------|-------|--------|--------|-------|--------|--------|-------------|
| | W | W1 | W2 | H | H1 | H2 | D | D1 | D2 | E | Q1 | Q2 | |
| E510-215-H3 | | | | | | | | | | | | | 10.1 |
| E510-220-H3 | 224.6 | 207 | 207 | 321.6 | 303.5 | 330.9 | 200.7 | 187.5 | 192.5 | 94 | 6 | 6 | 10.4 |
| E510-420-H3 | (8.84) | (8.15) | (8.15) | (12.66) | (11.95) | (13.03) | (7.9) | (7.38) | (7.58) | (3.7) | (0.24) | (0.24) | 10.5 |
| E510-425-H3 | | | | | | | | | | | | | 10.5 |

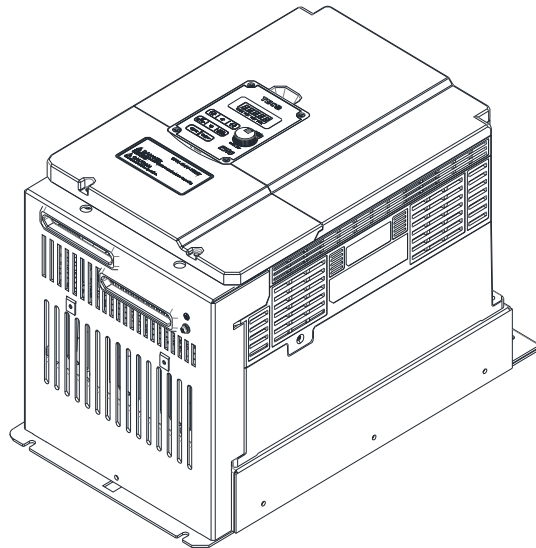
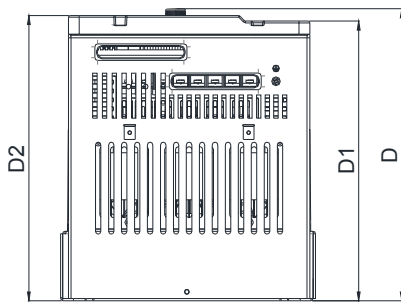
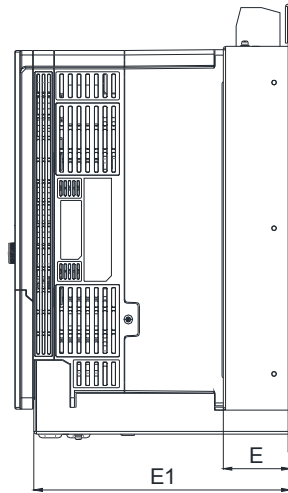
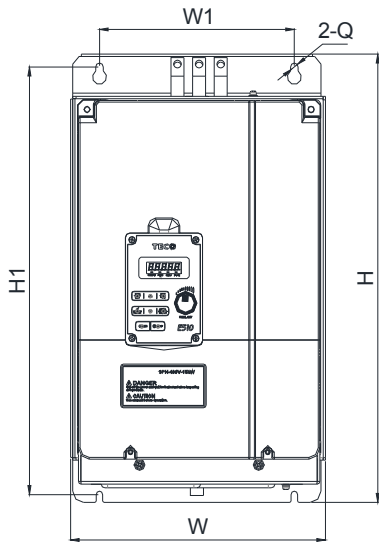
Frame4 (IP20) (With Filter)
Three phase: 400V 20~25HP



Unit : mm(inch)

| Model | Dimensions | | | | | | | | | | | | N.W (Kg) | |
|--------------|------------|--------|--------|---------|---------|---------|-------|--------|--------|--------|--------|--------|-------------|------|
| | W | W1 | W2 | H | H1 | H2 | D | D1 | D2 | E1 | E2 | Q1 | | Q2 |
| E510-420-H3F | 224.6 | 207 | 207 | 436 | 303.5 | 330.9 | 200.7 | 187.5 | 192.5 | 64 | 192.5 | 6 | 6 | 13.7 |
| E510-425-H3F | (8.84) | (8.15) | (8.15) | (17.17) | (11.95) | (13.03) | (7.9) | (7.38) | (7.58) | (2.52) | (7.58) | (0.24) | (0.24) | 13.7 |

Frame4 (IP20) (With Filter)
Three phase: 400V 20~25HP



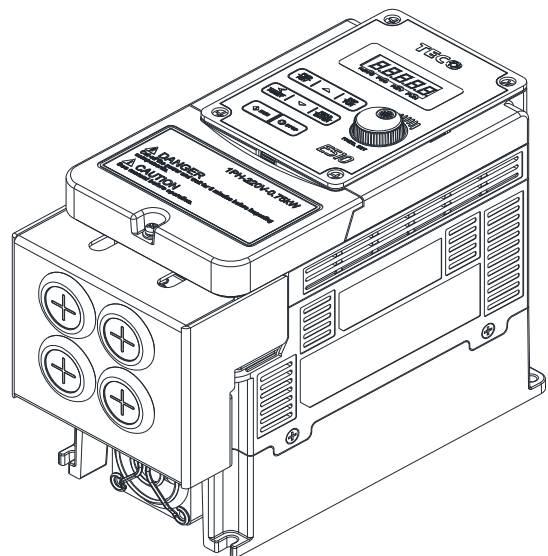
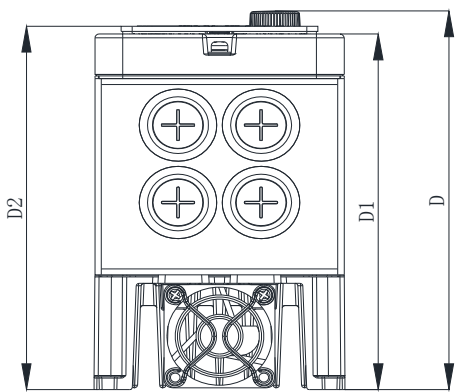
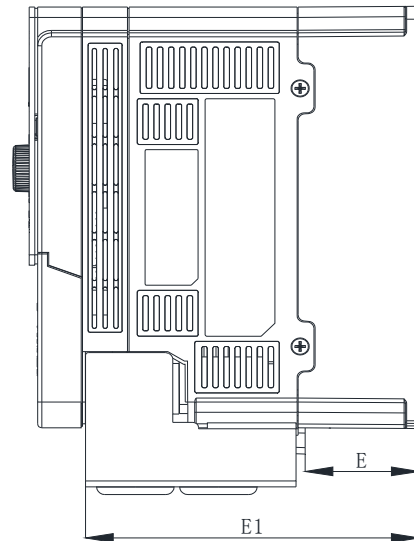
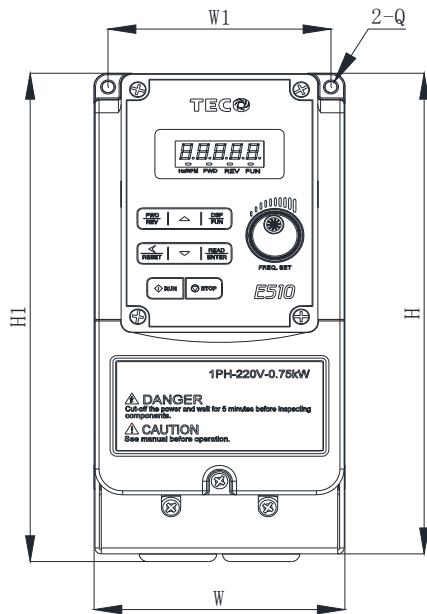
Unit: mm(inch)

| Model | Dimensions | | | | | | | | | | N.W (Kg) |
|----------------|------------|--------|---------|---------|---------|--------|---------|--------|--------|--------|-------------|
| | W | W1 | H | H1 | D | D1 | D2 | E | E1 | Q | |
| E510-420-H3FPT | 235.6 | 180 | 400 | 381.5 | 263 | 249.5 | 254.5 | 62 | 237 | 7 | 13.8 |
| E510-425-H3FPT | (9.28) | (7.09) | (15.75) | (15.02) | (10.35) | (9.82) | (10.02) | (2.44) | (9.33) | (0.28) | 13.8 |

Frame1 (NEMA1)

Single/Three phase: 200V 0.5~1HP; Single: 200V 0.5~1HP

Three phase: 200V 2HP; 400V 1~2HP



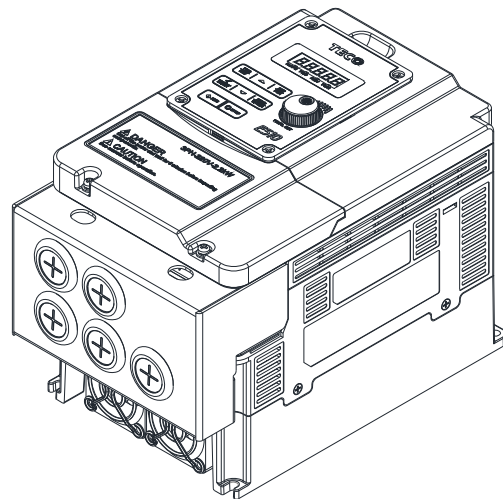
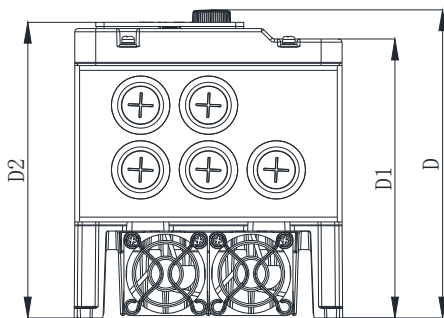
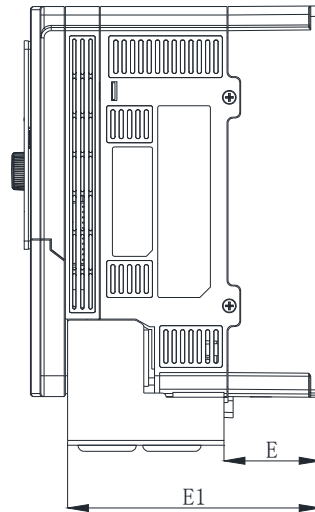
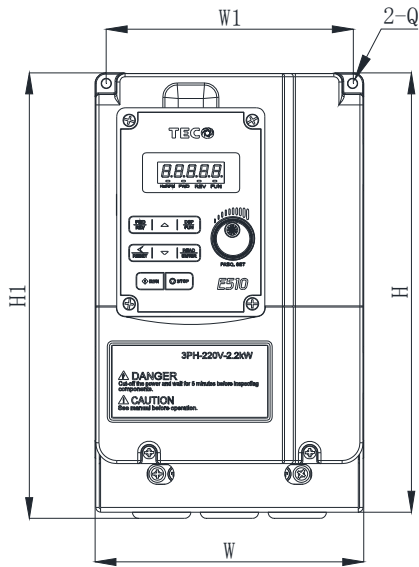
Unit : mm(inch)

| Model | Dimensions | | | | | | | | | | N.W (Kg) |
|--------------|----------------|----------------|-----------------|-----------------|---------------|-----------------|---------------|----------------|-----------------|----------------|----------|
| | W | W1 | H | H1 | D | D1 | D2 | E | E1 | Q | |
| E510-2P5-H | | | | | | | | | | | 1.8 |
| E510-201-H | | | | | | | | | | | 1.8 |
| E510-2P5-H1F | | | | | | | | | | | 1.9 |
| E510-201-H1F | | | | | | | | | | | 1.9 |
| E510-202-H3 | 90.6 (3.57) | 80.5 (3.17) | 186.2 (7.33) | 189.2 (7.45) | 149 (5.87) | 137.8 (5.42) | 141 (5.55) | 41.2 (1.62) | 120.5 (4.74) | 4.33 (0.17) | 1.9 |
| E510-401-H3 | | | | | | | | | | | 1.9 |
| E510-402-H3 | | | | | | | | | | | 1.9 |
| E510-401-H3F | | | | | | | | | | | 1.9 |
| E510-402-H3F | | | | | | | | | | | 1.9 |

Frame2 (NEMA1)

Single/Three phase: 200V 2~3HP; Single: 200V 2~3HP

Three phase: 200V 5HP; 400V 3~5HP

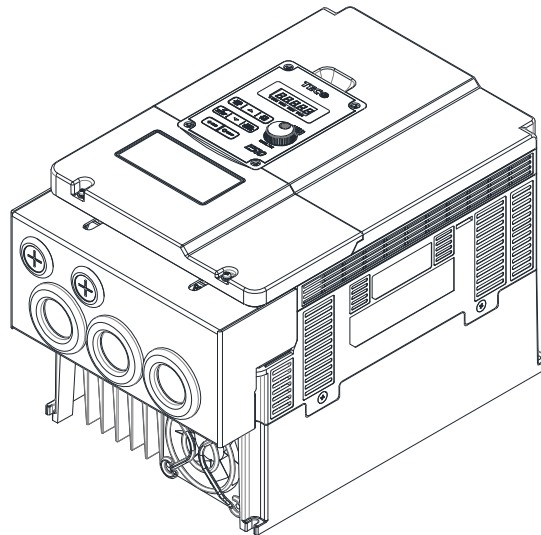
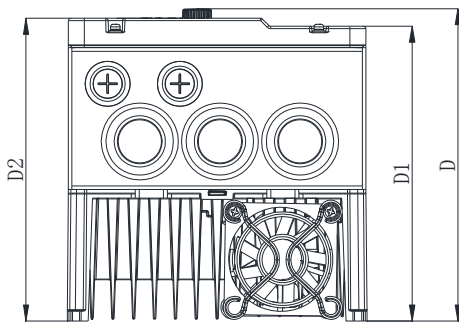
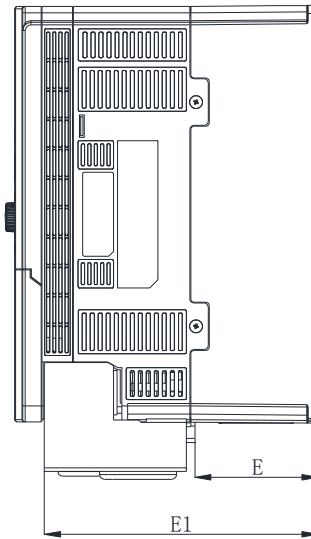
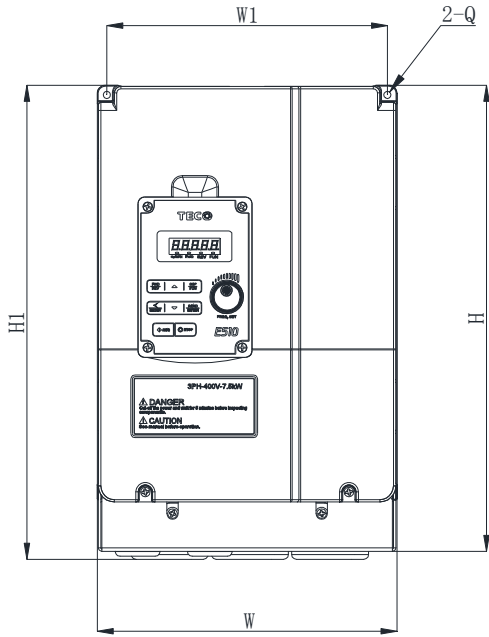


Unit : mm(inch)

| Model | Dimensions | | | | | | | | | | N.W (Kg) |
|--------------|-----------------|---------------|-----------------|-----------------|---------------|-----------------|-----------------|----------------|-----------------|---------------|----------|
| | W | W1 | H | H1 | D | D1 | D2 | E | E1 | Q | |
| E510-202-H | | | | | | | | | | | 2.7 |
| E510-203-H | | | | | | | | | | | 2.7 |
| E510-202-H1F | | | | | | | | | | | 2.8 |
| E510-203-H1F | | | | | | | | | | | 2.8 |
| E510-205-H3 | 128.7 (5.06) | 118 (4.65) | 210.6 (8.29) | 213.6 (8.41) | 150 (5.91) | 133.8 (5.27) | 141.8 (5.58) | 46.1 (1.81) | 121.1 (4.77) | 4.5 (0.18) | 2.8 |
| E510-403-H3 | | | | | | | | | | | 2.8 |
| E510-405-H3 | | | | | | | | | | | 2.8 |
| E510-403-H3F | | | | | | | | | | | 2.8 |
| E510-405-H3F | | | | | | | | | | | 2.8 |

Frame3 (NEMA1)

Three phase: 200V 7.5~10HP; 400V 7.5~15HP

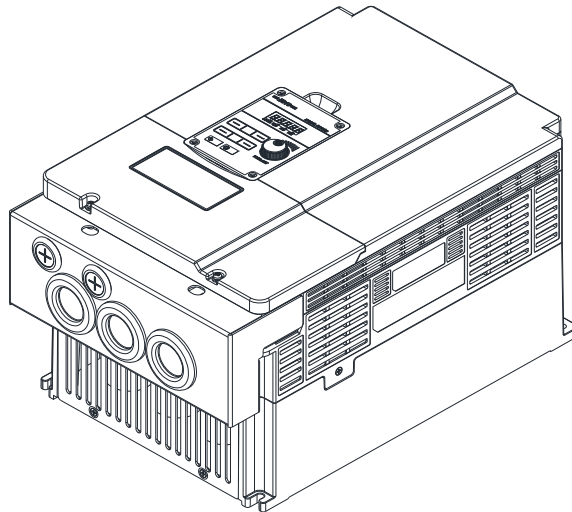
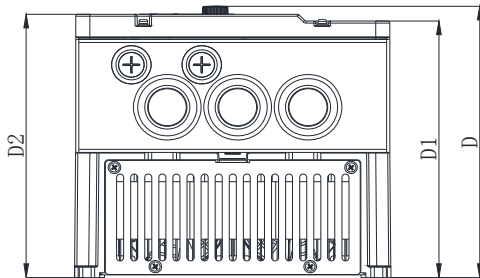
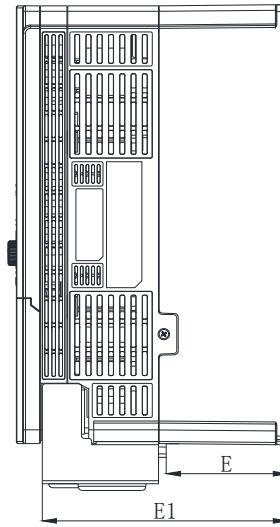
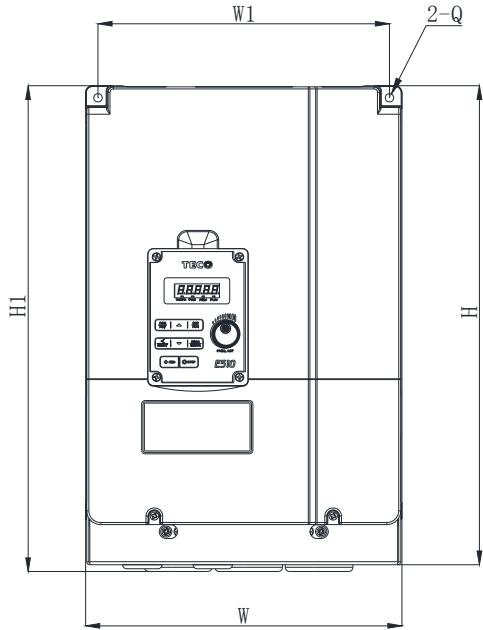


Unit : mm(inch)

| Model | Dimensions | | | | | | | | | | N.W (Kg) | |
|--------------|------------|--------|---------|---------|--------|--------|--------|--------|--------|--------|-------------|-----|
| | W | W1 | H | H1 | D | D1 | D2 | E | E1 | Q | | |
| E510-208-H3 | | | | | | | | | | | | 6.9 |
| E510-210-H3 | | | | | | | | | | | | 6.9 |
| E510-408-H3 | | | | | | | | | | | | 6.9 |
| E510-410-H3 | 187.5 | 176 | 291 | 293.5 | 197 | 184 | 189 | 76.7 | 170.6 | 4.5 | | 6.9 |
| E510-415-H3 | (7.38) | (6.92) | (11.47) | (11.56) | (7.76) | (7.24) | (7.44) | (3.02) | (6.72) | (0.18) | | 6.9 |
| E510-408-H3F | | | | | | | | | | | | 7.1 |
| E510-410-H3F | | | | | | | | | | | | 7.1 |
| E510-415-H3F | | | | | | | | | | | | 7.1 |

Frame4 (NEMA1)

Three phase: 200V 15~20HP; 400V 20~25HP



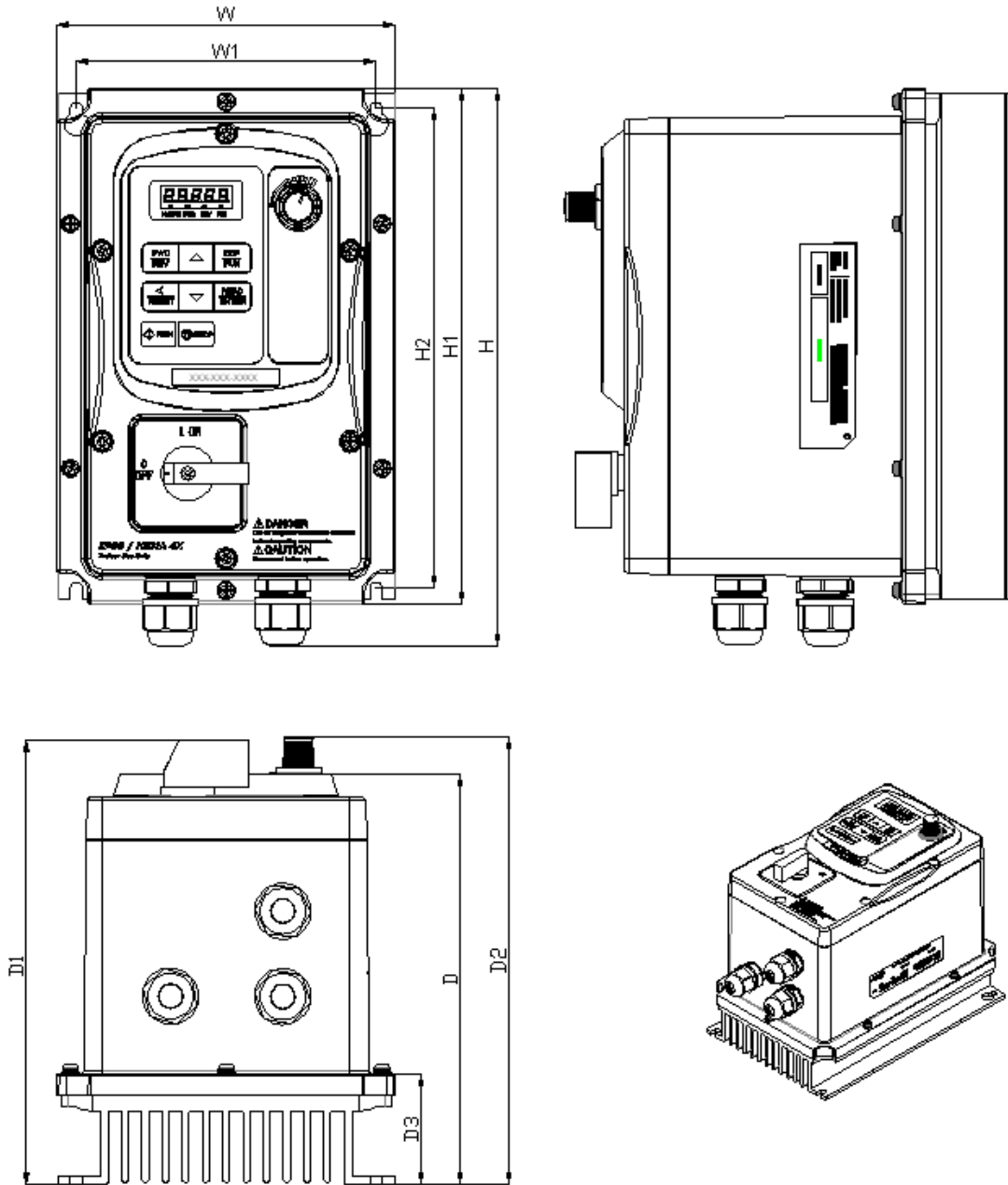
Unit : mm(inch)

| Model | Dimensions | | | | | | | | | | N.W (Kg) | |
|-------------|------------|--------|---------|---------|-------|--------|--------|--------|--------|--------|-------------|------|
| | W | W1 | H | H1 | D | D1 | D2 | E | E1 | Q | | |
| E510-215-H3 | | | | | | | | | | | | 10.5 |
| E510-220-H3 | 224.6 | 207 | 350.1 | 355.1 | 200.7 | 187.5 | 192.5 | 86 | 174 | 4.5 | | 10.5 |
| E510-420-H3 | (8.84) | (8.15) | (13.78) | (13.98) | (7.9) | (7.38) | (7.58) | (3.89) | (6.85) | (0.18) | | 10.9 |
| E510-425-H3 | | | | | | | | | | | | 11 |

2.5.2 IP66/NEMA4X dimensions

Frame 1 (IP66/NEMA4X)

Single/Three phase : 200V 0.5~1HP ; Single phase : 200V 0.5~1HP ; Three phase : 200V 2HP ; 400V 1~2HP

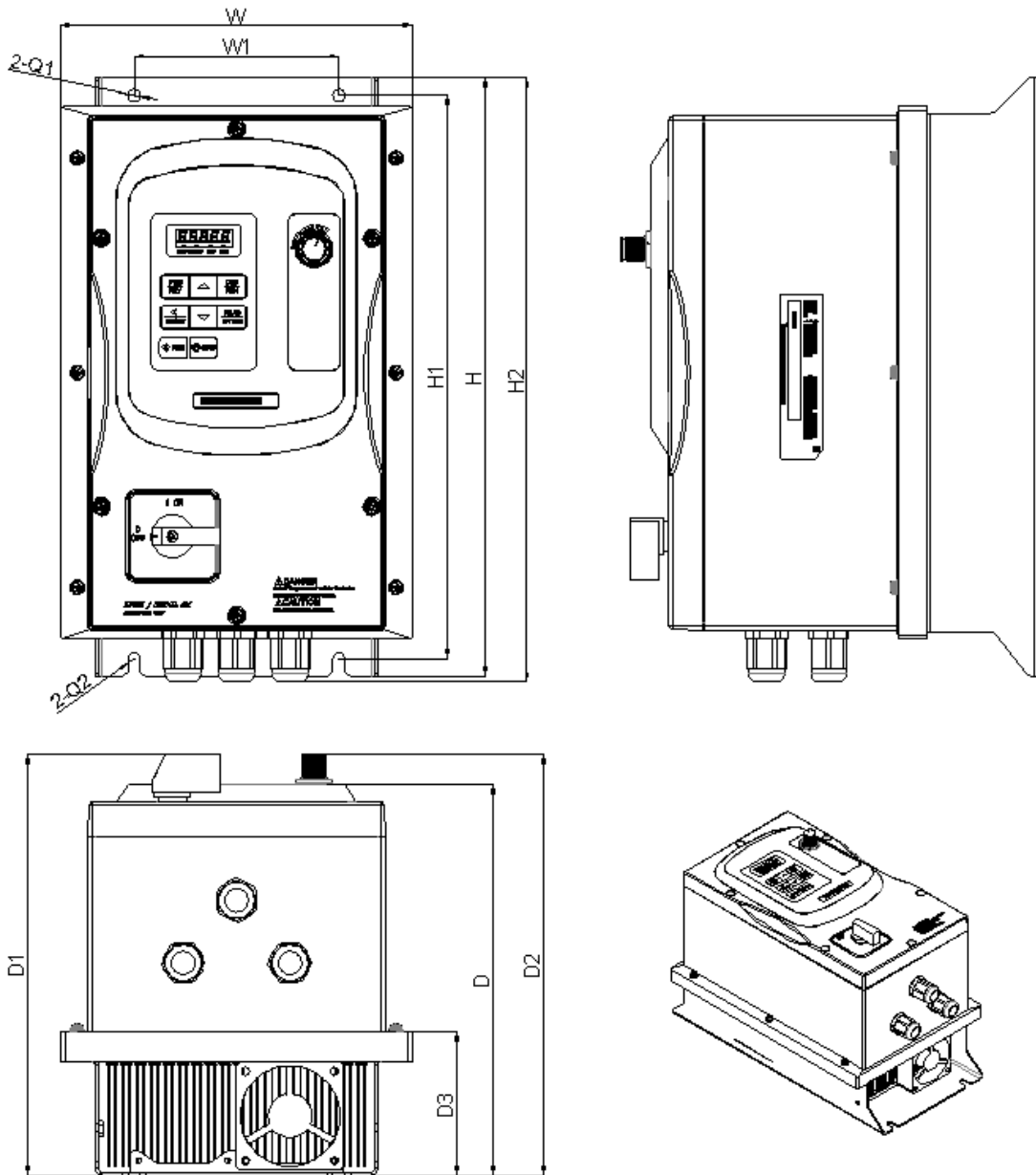


Unit: mm(inch)

| Model | Dimensions | | | | | | | | | | | | N.W (Kg) |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------------|---------------|---------------|----------------|---------------|---------------|----------------|-------------|
| | W | W1 | H | H1 | H2 | D | D1 | D2 | D3 | Q1 | Q2 | Q3 | |
| E510-2P5-HN4R | 150.8 (5.94) | 133.3 (5.25) | 248.7 (9.79) | 230.2 (9.06) | 214.2 (8.43) | 183 (7.20) | 200 (7.87) | 200 (7.87) | 49.5 (1.95) | 5.4 (0.21) | 5.4 (0.21) | 10.6 (0.42) | 2.9 |
| E510-2P5-H1FN4S | | | | | | | 200 (7.87) | 200 (7.87) | | | | | |
| E510-201-HN4R | | | | | | | 200 (7.87) | 200 (7.87) | | | | | |
| E510-201-H1FN4S | | | | | | | 200 (7.87) | 200 (7.87) | | | | | |
| E510-401-H3N4 | | | | | | | 200 (7.87) | 200 (7.87) | | | | | |
| E510-401-H3FN4S | | | | | | | 200 (7.87) | 200 (7.87) | | | | | |
| E510-402-H3N4 | | | | | | | 200 (7.87) | 200 (7.87) | | | | | |
| E510-402-H3FN4S | | | | | | | 200 (7.87) | 200 (7.87) | | | | | |

Frame 2 (IP66/NEMA4X)

Single/Three phase : 200V 2~3HP ; Single phase : 200V 2~3HP ; Three phase : 200V5HP ; 400V 3~5HP ;

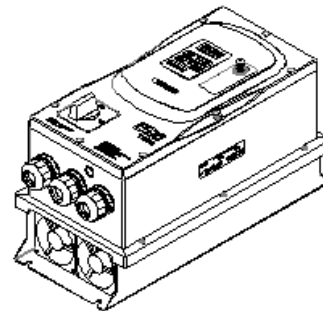
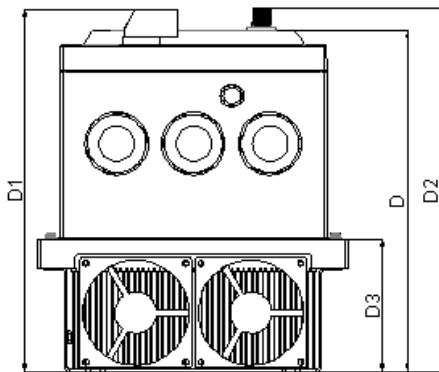
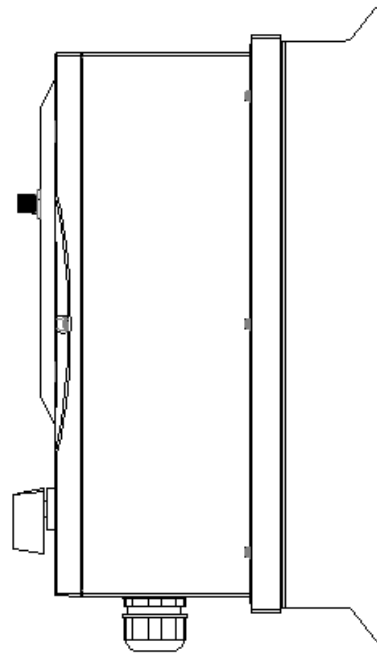
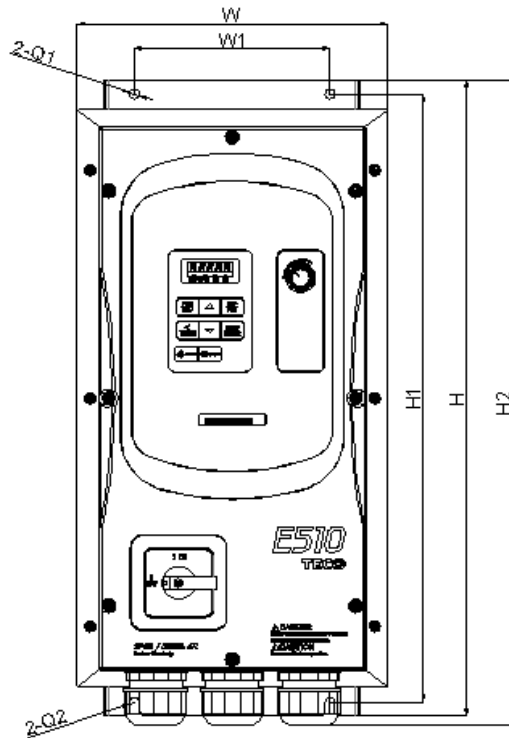


Unit: mm(inch)

| Model | dimensions | | | | | | | | | | | N.W (kg) | |
|-----------------|---------------|---------------|----------------|----------------|------------------|-----------------|-----------------|-----------------|----------------|-------------|-------------|-------------|-----------------|
| | W | W1 | H | H1 | H2 | D | D1 | D2 | D3 | Q1 | Q2 | | |
| E510-202-HN4R | 198 (7.80) | 115 (4.53) | 335 (13.19) | 315 (12.40) | 337.9 (13.30) | 218.4 (8.60) | 235.2 (9.26) | 235.2 (9.26) | 79.8 (3.14) | 7 (0.28) | 7 (0.28) | 5.98 | |
| E510-202-H1FN4S | | | | | | | | 235.2 (9.26) | | | | | |
| E510-203-HN4R | | | | | | | | 235.2 (9.26) | | | | | |
| E510-203-H1FN4S | | | | | | | | 235.2 (9.26) | | | | | |
| E510-205-H3N4 | | | | | | | | 235.2 (9.26) | | | | | 235.2 (9.26) |
| E510-403-H3N4 | | | | | | | | 235.2 (9.26) | | | | | 235.2 (9.26) |
| E510-403-H3FN4S | | | | | | | | 235.2 (9.26) | | | | | 235.2 (9.26) |
| E510-405-H3N4 | | | | | | | | 235.2 (9.26) | | | | | 235.2 (9.26) |
| E510-405-H3FN4S | | | | | | | | 235.2 (9.26) | | | | | 235.2 (9.26) |

Frame 3 (IP66/NEMA4X)

Three phase : 200V 7.5~20HP ; 400V 7.5~25HP



Unit: mm(inch)

| Model | Dimensions | | | | | | | | | | | N.W (kg) |
|-----------------|------------|--------|---------|---------|---------|--------|------------------|------------------|--------|--------|--------|-------------|
| | W | W1 | H | H1 | H2 | D | D1 | D2 | D3 | Q1 | Q2 | |
| E510-208-H3N4 | | | | | | | | | | | | |
| E510-210-H3N4 | | | | | | | | | | | | |
| E510-215-H3N4 | | | | | | | | | | | | |
| E510-220-H3N4 | | | | | | | | | | | | |
| E510-408-H3N4 | | | | | | | | | | | | |
| E510-408-H3FN4S | 222.8 | 140 | 460 | 440 | 466.3 | 246.6 | 266.5 (10.49) | 263.5 (10.37) | 96 | 7 | 7 | 12.68 |
| E510-410-H3N4 | (8.77) | (5.51) | (18.11) | (17.32) | (18.36) | (9.71) | | | (3.78) | (0.28) | (0.28) | |
| E510-410-H3FN4S | | | | | | | 266.5 (10.49) | 263.5 (10.37) | | | | |
| E510-415-H3N4 | | | | | | | | | | | | |
| E510-415-H3FN4S | | | | | | | 266.5 (10.49) | 263.5 (10.37) | | | | |
| E510-420-H3N4 | | | | | | | | | | | | |
| E510-425-H3N4 | | | | | | | | | | | | |

Chapter 3 Software Index

3.1 Keypad Description

3.1.1 Operator Panel Functions



| Type | Item | Function |
|----------------------------|---------------------------------|---|
| Digital display & LEDs | Main digital displays | Frequency Display, Parameter, voltage, Current, Temperature , Fault messages. |
| | LED Status | Hz/RPM: ON when the frequency or line speed is displayed. OFF when the parameters are displayed. FWD: ON while the inverter is running forward. Flashes while stopped. REV: ON while the inverter is running reverse. Flashes while stopped. FUN: ON when the parameters are displayed. OFF when the frequency is displayed. |
| Variable Resistor | FREQ SET | Used to set the frequency |
| Keys On Keypad (8 buttons) | RUN | RUN: Run at the set frequency. |
| | STOP | STOP: Decelerate or Coast to Stop. |
| | ▲ | Increment parameter number and preset values. |
| | ▼ | Decrement parameter number and preset values. |
| | FWD/REV (Dual function keys) | FWD: Forward Run REV: Reverse Run |
| | DSP/FUN (Dual function keys) | DSP: Switch between available displays FUN: Used to examine the parameter content |
| | READ/ENTER (Dual function keys) | READ: ENTER: Used to display the preset value of parameters and for saving the changed parameter values. |
| | </ RESET (Dual function keys) | <”Left Shift: used while changing the parameters or parameter values RESET: Use to Reset alarms or resettable faults |

3.2 Programmable Parameter Groups

| Parameter Group No. | Description |
|---------------------|---------------------------------------|
| Group 00 | Basic parameters |
| Group 01 | V/F Pattern selections & setup |
| Group 02 | Motor parameters |
| Group 03 | Multi function digital Inputs/Outputs |
| Group 04 | Analog signal inputs/ Analog output |
| Group 05 | Preset Frequency Selections. |
| Group 06 | Auto Run function (Auto Sequencer) |
| Group 07 | Start/Stop command setup |
| Group 08 | Drive and motor Protection |
| Group 09 | Communication function setup |
| Group 10 | PID function setup |
| Group 11 | Performance control functions |
| Group 12 | Digital Display & Monitor functions |
| Group 13 | Inspection & Maintenance functions |
| Group 14 | PLC Setting function |
| Group 15 | PLC Monitoring function |

| Parameter notes for Parameter Groups | |
|--------------------------------------|---|
| *1 | Parameter can be adjusted during running mode |
| *2 | Cannot be modified in communication mode |
| *3 | Does not change with factory reset |
| *4 | Read only |
| *5 | Available for above V1.1 |
| *6 | Available for above V1.3 |
| *7 | Available for above V1.7 |

| Group 00- Basic parameters | | | | | |
|----------------------------|--|--|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 00-00 | Control Mode Selection | 0:V/F Mode | 0 | - | |
| | | 1:Vector Mode | | | |
| 00-01 | Reserved | | | | |
| 00-02 | Main Run Command Source Selection | 0:Keypad | 1 | - | |
| | | 1:External Run/Stop Control | | | |
| | | 2:Communication | | | |
| | | 3:PLC | | | |
| 00-03 | Alternative Run Command Source Selection | 0:Keypad | 0 | - | |
| | | 1:External Run/Stop Control | | | |
| | | 2:Communication | | | |
| 00-04 | Operation Modes for External Terminals | 0:Forward/Stop-Reverse/Stop | 0 | - | |
| | | 1:Run/Stop- Reverse/Forward | | | |
| | | 2:3 Wire Control Mode-Run/Stop | | | |
| 00-05 | Main Frequency Command Source Selection | 0:UP/DOWN of Keypad | 2 | - | |
| | | 1:Potentiometer on Keypad | | | |
| | | 2:External AI1Analog Signal Input | | | |
| | | 3:External AI2 Analog Signal Input | | | |
| | | 4:External Up/Down Frequency Control | | | |
| | | 5:Communication Setting Frequency | | | |
| | | 6:PID Ouput Frequency | | | |
| | | 7:Pulse Input | | | |
| 00-06 | Alternative Frequency Command Source Selection | 0:UP/DOWN of Keypad | 4 | - | |
| | | 1:Potentiometer on Keypad | | | |
| | | 2:External AI1Analog Signal Input | | | |
| | | 3:External AI2 Analog Signal Input | | | |
| | | 4:External Up/Down Frequency Control | | | |
| | | 5:Communication Setting Frequency | | | |
| | | 6:PID Ouput Frequency | | | |
| | | 7:Pulse Input | | | |
| 00-07 | Main and Alternative Frequency Command Modes | 0:Main or Alternative Frequency 1:Main Frequency+ Alternative Frequency | 0 | - | |
| 00-08 | Communication Frequency Command | 0.00~599.00 | 0.00 | Hz | *4 |
| 00-09 | Frequency Command Save on Power Down | 0: Disable | 0 | - | |
| | | 1: Enable | | | |
| 00-10 | Initial Frequency Selection (keypad mode) | 0:by Current Frequency Command | 0 | - | |
| | | 1:by 0 Frequency Command | | | |
| | | 2:by 00-11 | | | |
| 00-11 | Initial Frequency Setpoint | 0.00~599.00 | 50.00/60.00 | Hz | |
| 00-12 | Frequency Upper Limit | 0.01~599.00 | 50.00/60.00 | Hz | |
| 00-13 | Frequency Lower Limit | 0.00~598.99 | 0.00 | Hz | |
| 00-14 | Acceleration Time 1 | 0.1~3600.0 | 10.0 | Sec | *1 |
| 00-15 | Deceleration Time 1 | 0.1~3600.0 | 10.0 | Sec | *1 |
| 00-16 | Acceleration Time 2 | 0.1~3600.0 | 10.0 | Sec | *1 |
| 00-17 | Deceleration Time 2 | 0.1~3600.0 | 10.0 | Sec | *1 |
| 00-18 | Jog Frequency | 0.00~599.00 | 2.00 | Hz | *1*7 |
| 00-19 | Jog Acceleration Time | 0.1~3600.0 | 0.5 | Sec | *1*7 |
| 00-20 | Jog Deceleration Time | 0.1~3600.0 | 0.5 | Sec | *1*7 |

| Group 01- V/F Pattern selection & Setup | | | | | |
|---|---|--------------------------------------|-------------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 01-00 | Volts/Hz Patterns | 0~18 | 0/9 | - | |
| 01-01 | V/F Max voltage | 200V:170.0~264.0 400V:323.0~528.0 | Based on 13-08 | Vac | |
| 01-02 | Base Frequency | 0.20 ~ 599.00 | 50.00/60.00 | Hz | |
| 01-03 | Max Frequency Voltage Ratio | 0.0 ~ 100.0 | 100.0 | % | |
| 01-04 | Mid Frequency 2 | 0.10 ~ 599.00 | 25.00/30.00 | Hz | |
| 01-05 | Mid Frequency Voltage Ratio 2 | 0.0 ~ 100.0 | 50.0 | % | |
| 01-06 | Mid Frequency 1 | 0.10 ~ 599.00 | 10.00/12.00 | Hz | |
| 01-07 | Mid Frequency Voltage Ratio 1 | 0.0 ~ 100.0 | 20.0 | % | |
| 01-08 | Min Frequency | 0.10 ~ 599.00 | 0.50/0.60 | Hz | |
| 01-09 | Min Frequency Voltage Ratio | 0.0 ~ 100.0 | 1.0 | % | |
| 01-10 | Volts/Hz Curve Modification (Torque Boost) | 0 ~ 10.0 | 0.0 | % | *1 |
| 01-11 | V/F start Frequency | 0.00~10.00 | 0.00 | Hz | |
| 01-12 | Slip compensation gain | 0.05~10.00 | 0.10 | S | |
| 01-13 | V/F Mode Select | 0 : Mode 0 1 : Mode 1 | by models | - | *7 |

| Group 02- Motor parameters | | | | | |
|----------------------------|----------------------------------|--|-----------------|----------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 02-00 | Motor No Load Current | 0~[(Parameter 02-01)-0.1] | - | Amps(AC) | *3 |
| 02-01 | Motor Rated Current (OL1) | 0.2~100 | - | A | *3 |
| 02-02 | Motor rated Slip Compensation | 0.0 ~ 200.0 | 0.0 | % | *1 |
| 02-03 | Motor rated speed | 0~39000 | - | Rpm | *3 |
| 02-04 | Motor rated voltage | 200V: 170.0~264.0 400V: 323.0~528.0 | 220.0/440.0 | V | |
| 02-05 | Motor rated power | 0.1~37.0 | - | KW | |
| 02-06 | Motor rated frequency | 0~599.0 | 50.0/60.0 | Hz | |
| 02-07 | Motor pole number | 2 ~16 | 4 | - | |
| 02-08 ~ 02-13 | Reserved | | | | |
| 02-14 | Auto Tune | 0: Disable 1: Start Auto tune function. | 0 | | |
| 02-15 | Stator resistance gain | ---- | | | *3*4 |
| 02-16 | Rotor resistance gain | ---- | | | *3*4 |

| Group 03- External Digital Inputs and Relay Output Functions | | | | | |
|--|--|---|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 03-00 | Multifunction Input Term. S1 | 0:Forward/Stop Command | 0 | - | |
| 03-01 | Multifunction Input Term. S2 | 1:Reverse/Stop Command | 1 | - | |
| 03-02 | Multifunction Input Term. S3 | 2:Speed Selection 1 | 2 | - | |
| 03-03 | Multifunction Input Term. S4 | 3:Speed Selection 2 | 3 | - | |
| 03-04 | Multifunction Input Term. S5 | 4:Speed Selection 3 | 4 | - | |
| 03-05 | Multifunction Input Term. S6 | 5:Speed Selection 4 | 17 | | |
| | | 6:Jog Forward Command | | | |
| | | 7:Jog Reverse Command | | | |
| | | 8:Up Command | | | |
| | | 9:Down Command | | | |
| | | 10:Acc/Dec 2 | | | |
| | | 11:Acc/Dec Disabled | | | |
| | | 12:Main/Alternative run source select | | | |
| | | 13:Main/ Alternative Frequency Command select | | | |
| | | 14: Rapid Stop (Decel to stop) | | | |
| | | 15: Base Block | | | |
| | | 16: Disabl PID Function | | | |
| | | 17: Fault Reset | | | |
| | | 18:Auto Run Mode Enable | | | |
| | | 19:Speed Search | | | |
| | | 20:Energy Saving (only V/F) | | | |
| 21:Reset PID integral value to Zero | | | | | |
| 22:Counter Input | | | | | |
| 23:Counter Reset | | | | | |
| 24:PLC Input | | | | | |
| 25:Pulse Input-Width Measure (S3) | | *6 | | | |
| 26:Pulse Input-Frequenct Measure (S3) | | *6 | | | |
| 27:Enable KEB Function | | | | | |
| 28:Fire mode function | | *5 | | | |
| 03-06 | Up/Down frequency step | 0.00~5.00 | 0.00 | Hz | |
| 03-07 | Up/Down Keep Frequency Status after Stop Command | 0: When Up/Down is used, the preset frequency is held as the inverter stops, and the UP/Down function is disabled | 0 | | |
| | | 1:When Up/Down is used, the preset frequency is reset to 0 Hz as the inverter stops. | | | |
| | | 2:When Up/Down is used, the preset frequency is held as the inverter stops, and the UP/Down is available. | | | |
| 03-08 | S1~S6 scan confirmation | 1~200 Number of Scan cycles | 10 | 2ms | |
| 03-09 | S1~S5 switch type select | xxxx0:S1 NO xxx1:S1 NC | 00000 | | |
| | | xxx0x:S2 NO xxx1x:S2 NC | | | |
| | | xx0xx:S3 NO xx1xx:S3 NC | | | |
| | | x0xxx:S4 NO x1xxx:S4 NC | | | |
| | | 0xxxx:S5 NO 1xxxx:S5 NC | | | |
| 03-10 | S6 switch type select | xxxx0:S6 NO xxxx1:S6 NC | 00000 | | - |
| 03-11 | Output Relay RY1 (Terminals R1A,R1B, R1C) | 0:Run | 0 | | - |
| 03-12 | Output Relay RY2. | 1: Fault | 1 | | |

| Group 03- External Digital Inputs and Relay Output Functions | | | | | |
|--|---|---|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| | (Terminals R2A, R2B) | 2: Output Frequency Reached | | | |
| | | 3: Output Frequency Reached within Preset Range (3-13±3-14) | | | |
| | | 4: Output Frequency Detection1 (> 3-13) | | | |
| | | 5: Output Frequency Detection2 (< 3-13) | | | |
| | | 6: Auto Restart | | | |
| | | 7: Momentary AC Power Loss | | | |
| | | 8: Rapid Stop | | | |
| | | 9: Base Block | | | |
| | | 10: Motor Overload Protection(OL1) | | | |
| | | 11: Drive Overload Protection(OL2) | | | |
| | | 12: Over-torque Threshold Level (OL3) | | | |
| | | 13: Preset Output Current Reached (03-15~16) | | | |
| | | 14: Brake Control (03-17~18) | | | |
| | | 15: PID Feedback Signal Loss | | | |
| | | 16: Single pre-set count (3-22) | | | |
| | | 17: Dual pre-set count (3-22~23) | | | |
| | | 18: PLC Status Indicator (00-02) | | | |
| | | 19: PLC control | | | |
| | | 20: Zero Speed | | | *6 |
| | | 21: Low current | | | |
| 03-13 | Preset Frequency Reached Level | 0.00~599.00 | 0.00 | Hz | *1 |
| 03-14 | Frequency Reached Detection Range (±) | 0.00~30.00 | 2.00 | Hz | *1 |
| 03-15 | Preset output current reached | 0.1~999.9 | 0.1 | A | |
| 03-16 | Preset output Current detection delay Time | 0.1~10.0 | 0.1 | Sec | |
| 03-17 | Brake Release level | 0.00~20.00 | 0.00 | Hz | |
| 03-18 | Brake Engage Level | 0.00~20.00 | 0.00 | Hz | |
| 03-19 | Relay Output function type | 0:A (Normally open) 1:B (Normally close) | 0 | - | |
| 03-20 | Internal / external multi-function input terminal selection | 0~63 | 0 | - | |
| 03-21 | Action to set the internal multi-function input terminals | 0~63 | 0 | - | |
| 03-22 | Pre-set count 1 | 0~9999 | 0 | - | |
| 03-23 | Pre-set count 2 | 0~9999 | 0 | - | |
| 03-24 | Output under current detection | 0:Disable 1:Enable | 0 | - | |
| 03-25 | Output under current detection level | 5%~100% | 20% | % | |
| 03-26 | Output under current detection delay time | 0.0~50.0s | 20.0 | Sec | |
| 03-27 | Pulse Frequency | 0.01~0.20 | 0.1 | kHz | *7 |
| 03-28 | Pulse Frequency Gain | 0.01~9.99 | 1.00 | | *6 |
| 03-29 | Low current detection mode | 0: Operate while in RUN mode 1: Operate once power on | 0 | | |
| 03-30 | Low current detection level | 0~100 | 0 | % | |

| Group 03- External Digital Inputs and Relay Output Functions | | | | | |
|--|----------------------------|----------|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 03-31 | Low current detection time | 0.0~50.0 | 0 | Sec | |

※ “NO” indicates normally open, “NC” indicates normally closed.

| Group 04- Analog signal inputs / Analog output | | | | | |
|--|--|---|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 04-00 | Analog Input Signal Type Select (AI1/AI2) | AI1 AI2 | 1 | - | *7 |
| | | (0): 0~10V (0~20mA) 0~10V (0~20mA) | | | |
| | | (1): 0~10V (0~20mA) 2~10V (4~20mA) | | | |
| | | (2): 2~10V (4~20mA) 0~10V (0~20mA) | | | |
| | (3): 2~10V (4~20mA) 2~10V (4~20mA) | | | | |
| 04-01 | AI1 Signal Verification Scan Rate | 1~200 | 50 | 2ms | |
| 04-02 | AI1 Gain | 0 ~ 1000 | 100 | % | *1 |
| 04-03 | AI1 Bias | 0 ~ 100 | 0 | % | *1 |
| 04-04 | AI1 Bias Selection | 0: Positive 1: Negative | 0 | - | *1 |
| 04-05 | AI1 Slope | 0: Positive 1: Negative | 0 | - | *1 |
| 04-06 | AI2 Signal Verification Scan Rate | 1~200 | 50 | 2ms | |
| 04-07 | AI2 Gain | 0 ~ 1000 | 100 | % | *1 |
| 04-08 | AI2 Bias | 0 ~ 100 | 0 | % | *1 |
| 04-09 | AI2 Bias Selection | 0: Positive 1: Negative | 0 | - | *1 |
| 04-10 | AI2 Slope | 0: Positive 1: Negative | 0 | - | *1 |
| 04-11 | Analog Output (AO) Mode | 0: Output Frequency 1: Frequency Command 2: Output Voltage 3: DC Bus Voltage 4: Motor Current (100% rated current) | 0 | - | *1 |
| 04-12 | Analog Output (AO) Gain | 0 ~ 1000 | 100 | % | *1 |
| 04-13 | Analog Output (AO) Bias | 0 ~ 100 | 0 | % | *1 |
| 04-14 | AO Bias Selection | 0: Positive 1: Negative | 0 | - | *1 |
| 04-15 | AO Slope | 0: Positive 1: Negative | 0 | - | *1 |
| 04-16 | F-Gain Function | 0: Invalid 1: Effective | 0 | - | *1 |
| 04-17 | Keypad VR Gain | 0~1000 | 100 | % | *1 |
| 04-18 | Keypad VR Bias | 0~100 | 0 | % | *1 |
| 04-19 | Keypad VR Bias Positive/Negative Selection | 0: Positive 1: Negative | 0 | - | *1 |
| 04-20 | Keypad VR Signal Direction Control Selection | 0: Positive 1: Negative | 0 | - | *1 |

| Group 05- Preset Frequency Selections | | | | | |
|---------------------------------------|-------------------------------------|--|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 05-00 | Preset Speed Control Mode Selection | 0: Common Accel/Decel Accel/Decel 1 or 2 apply to all speeds | 0 | - | |
| | | 1: Individual Accel/Decel for each preset speed 0-15 apply to the selected preset speeds (Acc0/Dec0~Acc15/Dec15) | | | |
| 05-01 | Preset Speed 0 (Keypad Freq) | 0.00 ~ 599.00 | 5.00 | Hz | |
| 05-02 | Preset Speed1 (Hz) | | 5.00 | Hz | *1 |
| 05-03 | Preset Speed2 (Hz) | | 10.00 | Hz | *1 |
| 05-04 | Preset Speed3 (Hz) | | 20.00 | Hz | *1 |
| 05-05 | Preset Speed4 (Hz) | | 30.00 | Hz | *1 |
| 05-06 | Preset Speed5 (Hz) | | 40.00 | Hz | *1 |
| 05-07 | Preset Speed6 (Hz) | | 50.00 | Hz | *1 |
| 05-08 | Preset Speed7 (Hz) | | 50.00 | Hz | *1 |
| 05-09 | Preset Speed8 (Hz) | | 0.00 | Hz | *1 |
| 05-10 | Preset Speed9 (Hz) | | 0.00 | Hz | *1 |
| 05-11 | Preset Speed10 (Hz) | | 0.00 | Hz | *1 |
| 05-12 | Preset Speed11 (Hz) | | 0.00 | Hz | *1 |
| 05-13 | Preset Speed12 (Hz) | | 0.00 | Hz | *1 |
| 05-14 | Preset Speed13 (Hz) | | 0.00 | Hz | *1 |
| 05-15 | Preset Speed14 (Hz) | | 0.00 | Hz | *1 |
| 05-16 | Preset Speed15 (Hz) | | 0.00 | Hz | *1 |
| 05-17 | Preset Speed0-Acctime | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-18 | Preset Speed0-Dectime | | 10.0 | Sec | *1 |
| 05-19 | Preset Speed1-Acctime | | 10.0 | Sec | *1 |
| 05-20 | Preset Speed1-Dectime | | 10.0 | Sec | *1 |
| 05-21 | Preset Speed2-Acctime | | 10.0 | Sec | *1 |
| 05-22 | Preset Speed2-Dectime | | 10.0 | Sec | *1 |
| 05-23 | Preset Speed3-Acctime | | 10.0 | Sec | *1 |
| 05-24 | Preset Speed3-Dectime | | 10.0 | Sec | *1 |
| 05-25 | Preset Speed4-Acctime | | 10.0 | Sec | *1 |
| 05-26 | Preset Speed4-Dectime | | 10.0 | Sec | *1 |
| 05-27 | Preset Speed5-Acctime | | 10.0 | Sec | *1 |
| 05-28 | Preset Speed5-Dectime | | 10.0 | Sec | *1 |
| 05-29 | Preset Speed6-Acctime | | 10.0 | Sec | *1 |
| 05-30 | Preset Speed6-Dectime | | 10.0 | Sec | *1 |
| 05-31 | Preset Speed7-Acctime | | 10.0 | Sec | *1 |
| 05-32 | Preset Speed7-Dectime | | 10.0 | Sec | *1 |
| 05-33 | Preset Speed8-Acctime | | 10.0 | Sec | *1 |
| 05-34 | Preset Speed8-Dectime | 10.0 | Sec | *1 | |
| 05-35 | Preset Speed9-Acctime | 10.0 | Sec | *1 | |
| 05-36 | Preset Speed9-Dectime | 10.0 | Sec | *1 | |
| 05-37 | Preset Speed10-Acctime | 10.0 | Sec | *1 | |
| 05-38 | Preset Speed10-Dectime | 10.0 | Sec | *1 | |
| 05-39 | Preset Speed11-Acctime | 10.0 | Sec | *1 | |
| 05-40 | Preset Speed11-Dectime | 10.0 | Sec | *1 | |
| 05-41 | Preset Speed12-Acctime | 10.0 | Sec | *1 | |
| 05-42 | Preset Speed12-Dectime | 10.0 | Sec | *1 | |
| 05-43 | Preset Speed13-Acctime | 10.0 | Sec | *1 | |

| Group 05- Preset Frequency Selections | | | | | |
|---------------------------------------|------------------------|-------|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 05-44 | Preset Speed13-Dectime | | 10.0 | Sec | *1 |
| 05-45 | Preset Speed14-Acctime | | 10.0 | Sec | *1 |
| 05-46 | Preset Speed14-Dectime | | 10.0 | Sec | *1 |
| 05-47 | Preset Speed15-Acctime | | 10.0 | Sec | *1 |
| 05-48 | Preset Speed15-Dectime | | 10.0 | Sec | *1 |

| Group 06- Auto Run Function (Auto Sequencer) | | | | | |
|--|--------------------------------------|--|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 06-00 | Auto Run Mode Selection (Sequencer) | 0: Disabled. 1: Single cycle. (Continues to run from the Unfinished step if restarted). 2: Periodic cycle. (Continues to run from the unfinished step if restarted). 3: Single cycle, then holds the speed Of final step to run. (Continues to run from the unfinished step if restarted). 4: Single cycle. (Starts a new cycle if restarted). 5: Periodic cycle. (Starts a new cycle if restarted). 6: Single cycle, then hold the speed of final step to run. (Starts a new cycle if restarted). | 0 | - | |
| 06-01 | Auto _ Run Mode Frequency Command 1 | 0.00~599.00 | 0.00 | Hz | *1 |
| 06-02 | Auto _ Run Mode Frequency Command 2 | | 0.00 | Hz | *1 |
| 06-03 | Auto _ Run Mode Frequency Command 3 | | 0.00 | Hz | *1 |
| 06-04 | Auto _ Run Mode Frequency Command 4 | | 0.00 | Hz | *1 |
| 06-05 | Auto _ Run Mode Frequency Command 5 | | 0.00 | Hz | *1 |
| 06-06 | Auto _ Run Mode Frequency Command 6 | | 0.00 | Hz | *1 |
| 06-07 | Auto _ Run Mode Frequency Command 7 | | 0.00 | Hz | *1 |
| 06-08 | Auto _ Run Mode Frequency Command 8 | | 0.00 | Hz | *1 |
| 06-09 | Auto _ Run Mode Frequency Command 9 | | 0.00 | Hz | *1 |
| 06-10 | Auto _ Run Mode Frequency Command10 | | 0.00 | Hz | *1 |
| 06-11 | Auto _ Run Mode Frequency Command 11 | | 0.00 | Hz | *1 |

| Group 06- Auto Run Function (Auto Sequencer) | | | | | |
|--|--|--------------|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 06-12 | Auto _ Run Mode Frequency Command 12 | | 0.00 | Hz | *1 |
| 06-13 | Auto _ Run Mode Frequency Command 13 | | 0.00 | Hz | *1 |
| 06-14 | Auto _ Run Mode Frequency Command 14 | | 0.00 | Hz | *1 |
| 06-15 | Auto _ Run Mode Frequency Command 15 | | 0.00 | Hz | *1 |
| 06-16 | Auto_ Run Mode Running Time Setting 0 | 0.0 ~ 3600.0 | 0.0 | Sec | |
| 06-17 | Auto_ Run Mode Running Time Setting 1 | | 0.0 | Sec | |
| 06-18 | Auto_ Run Mode Running Time Setting 2 | | 0.0 | Sec | |
| 06-19 | Auto_ Run Mode Running Time Setting 3 | | 0.0 | Sec | |
| 06-20 | Auto_ Run Mode Running Time Setting 4 | | 0.0 | Sec | |
| 06-21 | Auto_ Run Mode Running Time Setting 5 | | 0.0 | Sec | |
| 06-22 | Auto_ Run Mode Running Time Setting 6 | | 0.0 | Sec | |
| 06-23 | Auto_ Run Mode Running Time Setting 7 | | 0.0 | Sec | |
| 06-24 | Auto_ Run Mode Running Time Setting 8 | | 0.0 | Sec | |
| 06-25 | Auto_ Run Mode Running Time Setting 9 | | 0.0 | Sec | |
| 06-26 | Auto_ Run Mode Running Time Setting 10 | | 0.0 | Sec | |
| 06-27 | Auto_ Run Mode Running Time Setting 11 | | 0.0 | Sec | |
| 06-28 | Auto_ Run Mode Running Time Setting 12 | | 0.0 | Sec | |
| 06-29 | Auto_ Run Mode Running Time Setting 13 | | 0.0 | Sec | |
| 06-30 | Auto_ Run Mode Running Time Setting 14 | | 0.0 | Sec | |
| 06-31 | Auto_ Run Mode Running Time Setting 15 | | 0.0 | Sec | |

| Group 06- Auto Run Function (Auto Sequencer) | | | | | |
|--|-------------------------------------|-------------------------------------|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 06-32 | Auto_ Run Mode Running Direction 0 | 0: Stop 1: Forward 2: Reverse | 0 | - | |
| 06-33 | Auto_ Run Mode Running Direction 1 | | 0 | - | |
| 06-34 | Auto_ Run Mode Running Direction 2 | | 0 | - | |
| 06-35 | Auto_ Run Mode Running Direction 3 | | 0 | - | |
| 06-36 | Auto_ Run Mode Running Direction 4 | | 0 | - | |
| 06-37 | Auto_ Run Mode Running Direction 5 | | 0 | - | |
| 06-38 | Auto_ Run Mode Running Direction 6 | | 0 | - | |
| 06-39 | Auto_ Run Mode Running Direction 7 | | 0 | - | |
| 06-40 | Auto_ Run Mode Running Direction 8 | | 0 | - | |
| 06-41 | Auto_ Run Mode Running Direction 9 | | 0 | - | |
| 06-42 | Auto_ Run Mode Running Direction10 | | 0 | - | |
| 06-43 | Auto_ Run Mode Running Direction 11 | | 0 | - | |
| 06-44 | Auto_ Run Mode Running Direction12 | | 0 | - | |
| 06-45 | Auto_ Run Mode Running Direction13 | | 0 | - | |
| 06-46 | Auto_ Run Mode Running Direction 14 | | 0 | - | |
| 06-47 | Auto_ Run Mode Running Direction 15 | 0 | - | | |

※ Frequency of the step 0 is set by parameter 05-01, keypad frequency.

| Group 07- Start/Stop Command Setup | | | | | |
|------------------------------------|----------------------------------|---|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 07-00 | Momentary Power Loss and Restart | 0: Momentary Power Loss and Restart Disable 1: Momentary Power Loss and Restart Enable | 0 | - | |
| 07-01 | Auto Restart Delay Time | 0.0~800.0 | 0.0 | Sec | |
| 07-02 | Number of Auto Restart Attempts | 0~10 | 0 | - | |
| 07-03 | Reset Mode Setting | 0: Enable Reset Only when Run Command is Off 1: Enable Reset when Run Command is On or Off | 0 | - | |
| 07-04 | Direct Running on Power Up | 0: Enable Direct run on power up 1: Disable Direct run on power up | 1 | - | |

| Group 07- Start/Stop Command Setup | | | | | |
|------------------------------------|--|---|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 07-05 | Delay-ON Timer | 1.0~300.0 | 1.0 | Sec | |
| 07-06 | DC Injection Brake Start Frequency | 0.10 ~ 10.00 | 1.5 | Hz | |
| 07-07 | DC Injection Brake Level (Current Mode) | 0.0 ~ 150.0 | 50.0 | % | |
| 07-08 | DC Injection Brake Time | 0.0 ~ 25.5 | 0.5 | Sec | |
| 07-09 | Stopping Method | 0: Deceleration to stop 1: Coast to stop | 0 | - | |
| 07-10 | Starting Methods | 0: Normal Start 1: Speed Search | 0 | - | |
| 07-11 | Starting method for auto restart after fault | 0: Speed Search 1: Normal start | 0 | - | |
| 07-12 | Power Loss Ride Through Time | 0.0 ~ 2.0 | 0.5 | Sec | |
| 07-13 | Main Circuit Low Voltage Detection Level | 150.0~210.0 300.0~420.0 | 190.0/3 80.0 | Vac | |
| 07-14 | Kinetic Energy Back-up Deceleration Time | 0.0~25.0: KEB Deceleration Time | 0.0 | Sec | |
| 07-15 | DC Injection Brake Mode | 0: Current Mode 1 : Voltage Mode | 1 | - | *6 |
| 07-16 | DC Injection Brake Level (Voltage Mode) | 0.0~10.0 | 4.0 | - | *6 |

| Group 08- Drive & Motor Protection Functions | | | | | |
|--|---|--|-----------------|----------------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 08-00 | Trip Prevention Selection | xxxx0: Enable Trip Prevention During Acceleration xxxx1: Disable Trip Prevention During Acceleration xxx0x: Enable Trip Prevention During Deceleration xxx1x: Disable Trip Prevention During Deceleration xx0xx: Enable Trip Prevention in Run Mode xx1xx: Disable Trip Prevention in Run Mode x0xxx: Enable Over Voltage Prevention in Run Mode x1xxx: Disable Over Voltage Prevention in Run Mode | 01000 | - | *5 |
| 08-01 | Trip Prevention Level During Acceleration (%) | 50 ~ 200 | 200 | % ¹ | |
| 08-02 | Trip Prevention Level During Deceleration (%) | 50 ~ 200 | 200 | | |
| 08-03 | Trip Prevention Level in Run Mode (%) | 50 ~ 200 | 200 | | |
| 08-04 | Over Voltage Prevention Level in Run Mode | 350.0~390.0/700.0~780.0 | 380.0/7 60.0 | VD C | |

¹ Base on the percentage of inverter rated current.

| Group 08- Drive & Motor Protection Functions | | | | | |
|--|---|---|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 08-05 | Electronic Motor Overload Protection Operation Mode | xxx0b: Overload Protection is Disabled | 0001b | - | *7 |
| | | xxx1b: Overload Protection is Enabled | | | |
| | | xx0xb: Cold Start of Motor Overload | | | |
| | | xx1xb: Hot Start of Motor Overload | | | |
| | | x0xb: Standard Motor | | | |
| | | x1xb: Inverter Duty Motor | | | |
| 08-06 | Operation After Overload Protection is Activated | 0: Coast-to-Stop After Overload Protection is Activated 1: Drive Will Not Trip when Overload Protection is Activated (OL1) | 0 | - | |
| 08-07 | Over Heat Protection (cooling fan control) | 0: Auto (Depends on temp.) 1: Operate while in RUN Mode 2: Always Run 3: Disabled | 1 | - | |
| 08-08 | AVR Function (Auto Voltage Regulation) | 0: AVR Function Enable | 4 | - | *5 |
| | | 1: AVR Function Disable | | | |
| | | 2: AVR Function Disable for Stop | | | |
| | | 3: AVR Function Disable for Deceleration. | | | |
| | | 4: AVR Function Disabled for Stop and Deceleration. | | | |
| | | 5: When VDC>360V, AVR Function is Disabled for Stop and Deceleration. | | | |
| 08-09 | Input Phase Loss Protection | 0: Disabled 1: Enabled | 0 | - | |
| 08-10 | Output Phase Loss Protection | 0: Disabled | 0 | - | |
| | | 1: Enabled | | | |
| 08-11 | Motor Type Selection | 0: Overload protection (Standard Motor) | 0 | - | |
| | | 1: Overload protection (Inverter Duty Motor) | | | |
| 08-12 | Motor Overload Protection Curve | 0: Motor Overload Protection for General loads (OL=103 %) (150% for 1 Minutes) | 0 | - | |
| | | 1: Motor Over load Protection for HVAC (Fan & Pump) (OL=113%) (123% for 1 Minutes). | | | |
| 08-13 | Over Torque Detection Control | 0: Over Torque Detection Disabled | 0 | - | |
| | | 1: Over torque detection after set frequency is reached | | | |
| | | 2: Over torque detection after run command | | | |
| 08-14 | Over torque protection action | 0: Stop Output After Over Torque Detection (Free Run to Stop) | 0 | - | |
| | | 1: Continue Running After Over Torque Detection (Display only OL3) | | | |
| 08-15 | Over Torque Detection Level | 30~300 | 160 | - | |
| 08-16 | Over Torque Detection Time | 0.0~25.0 | 0.1 | - | |
| 08-17 | Fire Mode (for firmware below v1.1) | 0: Disabled. | 0 | - | *5 |
| | | 1: Enabled | | | |
| 08-18 | Ground Fault Detection | 0: Disabled | 0 | | *7 |
| | | 1: Enabled | | | |
| 08-19 | Motor Overload(OL1) Protection Level | 0: Motor Overload(OL1) Protection 0 | 0 | | |
| | | 1: Motor Overload(OL1) Protection 1 | | | |
| | | 2: Motor Overload(OL1) Protection 2 | | | |

Notes: Regarding fire mode function, please refer to the conditions below,

1. Below firmware v1.1, Fire Mode is enabled by setting 08-17 = 1
2. Above (including) firmware v1.1, Fire Mode is enabled by setting digital inputs 03-00~03-05 = 28. Parameter 08-17 is then removed.
3. 08-18 is applicable to frame 3 and 4 only.

| Group 09- Communication function setup | | | | | |
|--|--|---|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 09-00 | Assigned Communication Station Number | 1 ~ 32 | 1 | - | *2*3 |
| 09-01 | RTU/ASCII Code Selection | 0: RTU Code 1: ASCII Code | 0 | - | *2*3 |
| 09-02 | Baud Rate Setting (bps) | 0: 4800 1: 9600 2: 19200 3: 38400 | 2 | bps | *2*3 |
| 09-03 | Stop Bit Selection | 0: 1 Stop Bit 1: 2 Stop Bits | 0 | - | *2*3 |
| 09-04 | Parity Selection | 0: Without Parity 1: With Even Parity 2: With Odd Parity | 0 | - | *2*3 |
| 09-05 | Data Format Selection | 0: 8-Bits Data 1: 7-Bits Data | 0 | - | *2*3 |
| 09-06 | Communication Time-Out Detection Time | 0.0 ~ 25.5 | 0.0 | Sec | |
| 09-07 | Communication Time Out Operation Selection | 0: Deceleration to Stop (00-15: Deceleration Time 1) 1: Coast to Stop 2: Deceleration to Stop (00-17: Deceleration Time 2) 3: Continue Operating | 0 | - | |
| 09-08 | Comm. Fault Tolerance Count. | 0 ~ 20 | 3 | | |
| 09-09 | Wait Time of Inverter Transmission | 5 ~ 65 | 5 | ms | |

| Group 10- PID Function Setup | | | | | |
|------------------------------|---|--|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 10-00 | PID Target Value Selection (When 00-05\00-06=6 This Function is Enabled) | 0: Potentiometer on Keypad 1: Analog Signal Input. (AI1) 2: Analog Signal Input. (AI2) 3: Frequency Set by Communication 4: Keypad Frequency Parameter 10-02 | 1 | - | *1 |
| 10-01 | PID Feedback Value Selection | 0: Potentiometer on Keypad 1: Analog Signal Input. (AI1) 2: Analog Signal Input. (AI2) 3: Frequency Set by Communication | 2 | - | *1 |
| 10-02 | PID Target(Keypad Input) | 0.0~100.0 | 50.0 | % | *1 |
| 10-03 | PID Mode Selection | 0: Disabled 1: Deviation D Control. FWD Characteristic. 2: Feedback D Control FWD Characteristic. 3: Deviation D Control Reverse Characteristic. 4: Feedback D Control Reverse Characteristic. | 0 | - | |
| 10-04 | Feedback Gain Coefficient | 0.00 ~ 10.00 | 1.00 | | *1 |

| Group 10- PID Function Setup | | | | | |
|------------------------------|--|--|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 10-05 | Proportional Gain | 0.0 ~ 10.0 | 1.0 | | *1 |
| 10-06 | Integral Time | 0.0 ~ 100.0 | 10.0 | Sec | *1 |
| 10-07 | Derivative Time | 0.00 ~ 10.00 | 0.00 | Sec | *1 |
| 10-08 | PID Offset | 0: Positive 1: Negative | 0 | - | *1 |
| 10-09 | PID Offset Adjust | 0 ~ 109 | 0 | % | *1 |
| 10-10 | PID Output Lag Filter Time | 0.0 ~ 2.5 | 0.0 | Sec | *1 |
| 10-11 | Feedback Loss Detection Mode | 0: Disabled 1: Enabled - Drive Continues to Operate After Feedback Loss 2: Enabled - Drive "STOPS" After Feedback Loss | 0 | - | |
| 10-12 | Feedback Loss Detection Level | 0 ~ 100 | 0 | % | |
| 10-13 | Feedback Loss Detection Delay Time | 0.0 ~25.5 | 1.0 | Sec | |
| 10-14 | Integration Limit Value | 0 ~ 109 | 100 | % | *1 |
| 10-15 | Integral Value Resets to Zero when Feedback Signal Equals the Target Value | 0: Disabled 1: After 1 Second 30: After 30 Second (0~30) | 0 | - | |
| 10-16 | Allowable Integral value Error Margin (Units, 1 Unit = 1/8192) | 0 ~ 100 | 0 | - | |
| 10-17 | PID Sleep Frequency Level | 0.00~599.00 | 0.00 | Hz | |
| 10-18 | PID Sleep Function Delay Time | 0.0 ~25.5 | 0.0 | Sec | |
| 10-19 | PID Wake up frequency Level | 0.00~599.00 | 0.00 | Hz | |
| 10-20 | PID Wake up function Delay Time | 0.0 ~ 25.5 | 0.0 | Sec | |
| 10-21 | Max PID Feedback Setting Level | 0 ~999 | 100 | - | *1 |
| 10-22 | Min PID Feedback Setting Level | 0 ~999 | 0 | - | *1 |

| Group 11- Performance Control Functions | | | | | |
|---|---|--|-----------------|------|------|
| No. | Description | Range | Factory Setting | unit | Note |
| 11-00 | Reverse Operation Control | 0: Reverse Command is Enabled 1: Reverse Command is Disabled | 0 | - | |
| 11-01 | Carrier Frequency (kHz) | 1~16 | 5 | KHz | |
| 11-02 | Carrier Mode Selection | 0: Mode0, 3Phase PWM modulation 1: Mode1, 2Phase PWM modulation 2: Mode2, 2Phase Soft PWM Modulation | 0 | - | |
| 11-03 | Carrier Frequency Reduction by Temperature Rise | 0:Disabled 1:Enabled | 0 | - | |
| 11-04 | S-Curve Acc 1 | 0.0 ~ 4.0 | 0.2 | Sec | |
| 11-05 | S-Curve Acc 2 | 0.0 ~ 4.0 | 0.2 | Sec | |
| 11-06 | S-Curve Dec 3 | 0.0 ~ 4.0 | 0.2 | Sec | |
| 11-07 | S-Curve Dec 4 | 0.0 ~ 4.0 | 0.2 | Sec | |
| 11-08 | Skip Frequency 1 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 11-09 | Skip Frequency 2 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 11-10 | Skip Frequency 3 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |

| Group 11- Performance Control Functions | | | | | |
|---|--|---|-----------------|------|------|
| No. | Description | Range | Factory Setting | unit | Note |
| 11-11 | Skip Frequency Range Bandwidth (\pm) | 0.00 ~ 30.00 | 0.00 | Hz | *1 |
| 11-12 | Energy Saving Gain (V/F Mode) | 0 ~ 100 | 80 | % | |
| 11-13 | Regeneration Prevention Function | 0:Disable | 0 | - | |
| | | 1:Enable | | | |
| | | 2:Enable (only during constant speed) | | | |
| 11-14 | Regeneration Prevention Voltage Level | 200V:300.0~400.0 | 380.0 | V | |
| | | 400V:600.0~800.0 | 760.0 | | |
| 11-15 | Regeneration Prevention Frequency Limit | 0.00 ~ 15.00 | 3.00 | Hz | |
| 11-16 | Regeneration Prevention Voltage Gain | 0~200 | 100 | % | |
| 11-17 | Regeneration Prevention Frequency Gain | 0~200 | 100 | % | |
| 11-18 | STOP Key Selection | 0: Stop key is enabled when the operation command is not provided by operator. | 0 | | |
| | | 1: Stop key is disabled when the operation command is not provided by operator. | | | |

When run command input by (00-02=1 or 2), 11-18 function can be enabled or disabled by STOP key of digital operator.

| Group 12 Digital Display & Monitor Functions | | | | | |
|--|--|---|-----------------|------|------|
| No. | Description | Range | Factory Setting | Unit | Note |
| 12-00 | Extended Display Mode | 00000~88888 Each digit can be set from 0 to 8 as listed below. | 00000 | - | *1 |
| | | 0: Default Display (Frequency and Parameters) | | | |
| | | 1:Output Current | | | |
| | | 2:Output Voltage | | | |
| | | 3:DC Voltage | | | |
| | | 4:Temperature | | | |
| | | 5:PID Feedback | | | |
| | | 6:Analog Signal Input. (AI1) | | | |
| | | 7:Analog Signal Input. (AI2) | | | |
| 8: Count Status | | | | | |
| 12-01 | PID Feedback Display Format | 0:Integer (xxx) | 0 | - | *1 |
| | | 1:One Decimal Place (xx.x) | | | |
| | | 2:Two Decimal Places (x.xx) | | | |
| 12-02 | PID Feedback Display Unit Setting | 0:xxx-- | 0 | - | *1 |
| | | 1:xxxpb(pressure) | | | |
| | | 2:xxxfl(flow) | | | |
| 12-03 | Custom Units (Line Speed) Value | 0~65535 | 1500/1800 | RPM | *1 |
| 12-04 | Custom Units (Line Speed) Display Mode | 0:Drive Output Frequency is Displayed | 0 | - | *1 |
| | | 1:Line Speed.Integer.(xxxxx) | | | |
| | | 2:Line Speed.One Decimal Place. (xxxx.x) | | | |
| | | 3:Line Speed.Two Decimal Places (xxx.xx) | | | |
| | | 4:Line Speed.Three Decimal Places (xx.xxx) | | | |

Group 12 Digital Display & Monitor Functions

| No. | Description | Range | Factory Setting | Unit | Note |
|-------|--|---|-----------------|------|------|
| 12-05 | Inputs and Output Logic Status Display (S1~S6, RY1 and RY2) | | - | - | *4 |
| 12-06 | Alarm Selections for Inverter Components Life Expectancy | xxxx0:Life Alarm of Inrush Current Suppression Circuit is Invalid xxx0x:Life Alarm of Control Circuit Capacitors is Invalid xx0xx:Life Alarm of Main Circuit Capacitors is Invalid xxx1x:Life Alarm of Control Circuit Capacitors is Valid xx1xx:Life Alarm of Main Circuit Capacitors is Valid | 00000 | - | *1 |
| 12-07 | Detect Main Circuit Capacitors | Reserved | | | |
| 12-08 | Display of Inrush Current Suppression Circuit | 0~100 | 100 | % | |
| 12-09 | Display of Control Circuit Capacitors | 0~100 | 100 | % | |
| 12-10 | Reserved | | | | |
| 12-11 | Output Current when Fault Appeared | ---- | 0 | A | |
| 12-12 | Output Voltage when Fault Appeared | ---- | 0 | Vac | |
| 12-13 | Output Frequency when Fault Appeared | ---- | 0 | Hz | |
| 12-14 | DC Bus Voltage when Fault Appeared | ---- | 0 | Vac | |
| 12-15 | Frequency Command when Fault Appeared | ---- | 0 | Hz | |
| 12-16 | Output Power | ---- | 0.0 | kW | |

Output power display (12-16) needs to set motor rated power parameter (02-05) correctly

| Group 13 Inspection & Maintenance Functions | | | | | |
|---|--|---|-----------------|------|------|
| No. | Description | Range | Factory Setting | unit | Note |
| 13-00 | Drive Horsepower Code | ---- | - | - | *3 |
| 13-01 | Software Version | ---- | - | - | *3*4 |
| 13-02 | Fault Log (Latest 3 Faults) | ---- | - | - | *3*4 |
| 13-03 | Accumulated Inverter Operation Time 1 | 0~23 | - | hour | *3 |
| 13-04 | Accumulated Inverter Operation Time 2 | 0~65535 | ---- | day | *3 |
| 13-05 | Accumulated Inverter Operation Time Mode | 0: Power On time 1: Operation time | 0 | - | *3 |
| 13-06 | Parameter Lock | 0: Enable all Functions 1: Preset Speeds from 05-01 to 05-15 Can't be Changed 2: All Functions Can't be Changed Except for Preset speeds from 05-01 to 05-15 3: Disable All Functions Except 13-06 | 0 | - | |
| 13-07 | Parameter Lock Code | 00000~65535 | 00000 | - | |
| 13-08 | Reset Drive to Factory Settings | 1150: Reset to factory setting. 50Hz,220V/380V system. 1160: Reset to factory setting. 60Hz,220V/380V system. 1250: Reset to factory setting 50Hz,230V/400V system. 1260: Reset to factory setting 60Hz,230V/460V system. 1350: Reset to factory setting 50Hz,220V/415V system. 1360: Reset to factory setting 60Hz,230V/400V system. 1112: Reset PLC | 00000 | - | |

| Group 14 PLC Setting function | | | | | |
|-------------------------------|-------------------------------|---------|-----------------|------|------|
| No. | Description | Range | Factory Setting | unit | Note |
| 14-00 | Setting Value1 of T1 | 0~9999 | 0 | - | |
| 14-01 | Setting Value1 of T1 (mode 7) | 0~9999 | 0 | - | |
| 14-02 | Setting Value1 of T2 | 0~9999 | 0 | - | |
| 14-03 | Setting Value1 of T2 (mode 7) | 0~9999 | 0 | - | |
| 14-04 | Setting Value1 of T3 | 0~9999 | 0 | - | |
| 14-05 | Setting Value1 of T3 (mode 7) | 0~9999 | 0 | - | |
| 14-06 | Setting Value1 of T4 | 0~9999 | 0 | - | |
| 14-07 | Setting Value1 of T4 (mode 7) | 0~9999 | 0 | - | |
| 14-08 | Setting Value1 of T5 | 0~9999 | 0 | - | |
| 14-09 | Setting Value1 of T5 (mode 7) | 0~9999 | 0 | - | |
| 14-10 | Setting Value1 of T6 | 0~9999 | 0 | - | |
| 14-11 | Setting Value1 of T6 (mode 7) | 0~9999 | 0 | - | |
| 14-12 | Setting Value1 of T7 | 0~9999 | 0 | - | |
| 14-13 | Setting Value1 of T7 (mode 7) | 0~9999 | 0 | - | |
| 14-14 | Setting Value1 of T8 | 0~9999 | 0 | - | |
| 14-15 | Setting Value1 of T8 (mode 7) | 0~9999 | 0 | - | |
| 14-16 | Setting Value1 of C1 | 0~65535 | 0 | - | |
| 14-17 | Setting Value1 of C2 | 0~65535 | 0 | - | |
| 14-18 | Setting Value1 of C3 | 0~65535 | 0 | - | |
| 14-19 | Setting Value1 of C4 | 0~65535 | 0 | - | |
| 14-20 | Setting Value1 of C5 | 0~65535 | 0 | - | |
| 14-21 | Setting Value1 of C6 | 0~65535 | 0 | - | |
| 14-22 | Setting Value1 of C7 | 0~65535 | 0 | - | |
| 14-23 | Setting Value1 of C8 | 0~65535 | 0 | - | |
| 14-24 | Setting Value1 of AS1 | 0~65535 | 0 | - | |
| 14-25 | Setting Value2 of AS1 | 0~65535 | 0 | - | |
| 14-26 | Setting Value3 of AS1 | 0~65535 | 0 | - | |
| 14-27 | Setting Value1 of AS2 | 0~65535 | 0 | - | |
| 14-28 | Setting Value2 of AS2 | 0~65535 | 0 | - | |
| 14-29 | Setting Value3 of AS2 | 0~65535 | 0 | - | |
| 14-30 | Setting Value1 of AS3 | 0~65535 | 0 | - | |
| 14-31 | Setting Value2 of AS3 | 0~65535 | 0 | - | |
| 14-32 | Setting Value3 of AS3 | 0~65535 | 0 | - | |
| 14-33 | Setting Value1 of AS4 | 0~65535 | 0 | - | |
| 14-34 | Setting Value2 of AS4 | 0~65535 | 0 | - | |
| 14-35 | Setting Value3 of AS4 | 0~65535 | 0 | - | |
| 14-36 | Setting Value1 of MD1 | 0~65535 | 1 | - | |
| 14-37 | Setting Value2 of MD1 | 0~65535 | 1 | - | |
| 14-38 | Setting Value3 of MD1 | 1~65535 | 1 | - | |
| 14-39 | Setting Value1 of MD2 | 0~65535 | 1 | - | |
| 14-40 | Setting Value2 of MD2 | 0~65535 | 1 | - | |
| 14-41 | Setting Value3 of MD2 | 1~65535 | 1 | - | |
| 14-42 | Setting Value1 of MD3 | 0~65535 | 1 | - | |
| 14-43 | Setting Value2 of MD3 | 0~65535 | 1 | - | |
| 14-44 | Setting Value3 of MD3 | 1~65535 | 1 | - | |
| 14-45 | Setting Value1 of MD4 | 0~65535 | 1 | - | |
| 14-46 | Setting Value2 of MD4 | 0~65535 | 1 | - | |
| 14-47 | Setting Value3 of MD4 | 1~65535 | 1 | - | |

| Group 15 PLC Monitoring function | | | | | |
|----------------------------------|-----------------------------|---------|-----------------|------|------|
| No. | Description | Range | Factory Setting | unit | Note |
| 15-00 | Current Value of T1 | 0~9999 | 0 | - | |
| 15-01 | Current Value of T1(mode 7) | 0~9999 | 0 | - | |
| 15-02 | Current Value of T2 | 0~9999 | 0 | - | |
| 15-03 | Current Value of T2(mode 7) | 0~9999 | 0 | - | |
| 15-04 | Current Value of T3 | 0~9999 | 0 | - | |
| 15-05 | Current Value of T3(mode 7) | 0~9999 | 0 | - | |
| 15-06 | Current Value of T4 | 0~9999 | 0 | - | |
| 15-07 | Current Value of T4(mode 7) | 0~9999 | 0 | - | |
| 15-08 | Current Value of T5 | 0~9999 | 0 | - | |
| 15-09 | Current Value of T5(mode 7) | 0~9999 | 0 | - | |
| 15-10 | Current Value of T6 | 0~9999 | 0 | - | |
| 15-11 | Current Value of T6(mode 7) | 0~9999 | 0 | - | |
| 15-12 | Current Value of T7 | 0~9999 | 0 | - | |
| 15-13 | Current Value of T7(mode 7) | 0~9999 | 0 | - | |
| 15-14 | Current Value of T8 | 0~9999 | 0 | - | |
| 15-15 | Current Value of T8(mode 7) | 0~9999 | 0 | - | |
| 15-16 | Current Value of C1 | 0~65535 | 0 | - | |
| 15-17 | Current Value of C2 | 0~65535 | 0 | - | |
| 15-18 | Current Value of C3 | 0~65535 | 0 | - | |
| 15-19 | Current Value of C4 | 0~65535 | 0 | - | |
| 15-20 | Current Value of C5 | 0~65535 | 0 | - | |
| 15-21 | Current Value of C6 | 0~65535 | 0 | - | |
| 15-22 | Current Value of C7 | 0~65535 | 0 | - | |
| 15-23 | Current Value of C8 | 0~65535 | 0 | - | |
| 15-24 | Current Value of AS1 | 0~65535 | 0 | - | |
| 15-25 | Current Value of AS2 | 0~65535 | 0 | - | |
| 15-26 | Current Value of AS3 | 0~65535 | 0 | - | |
| 15-27 | Current Value of AS4 | 0~65535 | 0 | - | |
| 15-28 | Current Value of MD1 | 0~65535 | 0 | - | |
| 15-29 | Current Value of MD2 | 0~65535 | 0 | - | |
| 15-30 | Current Value of MD3 | 0~65535 | 0 | - | |
| 15-31 | Current Value of MD4 | 0~65535 | 0 | - | |
| 15-32 | Current Value of TD | 0~65535 | 0 | μs | |

Chapter 4 Troubleshooting and Maintenance

4.1 Error display and corrective action

4.1.1 Manual Reset and Auto-Reset

| Faults which can not be recovered manually | | | |
|--|---|---|--|
| Display | content | Cause | Corrective action |
| -OV- -OU- | Voltage too high when stopped | Detection circuit malfunction | Consult with the supplier |
| -LV- -LU- | | | |
| -OH- -OH- | The inverter is overheated when stopped | 1. Detection circuit malfunction 2. Ambient temperature too high or bad ventilation | Improve the ventilation conditions, if no result then replace the inverter |
| OH-C OH-C | | | |
| EPr EPr | EEPROM problem | Faulty EEPROM | Consult with the supplier |
| Cot Cot | | | |
| CtEr CtEr | Current Sensor detection error | Current sensor error or circuit malfunction | Consult with the supplier |
| CdEr CdEr | | | |
| Err4 Err4 | CPU Illegal interrupt | External noise | If it occurs too often, please consult with the supplier |
| r-OFF r-OFF | | | |
| Faults which can be recovered manually and automatically | | | |
| Display | content | Cause | Corrective action |
| OC-A OC-A | Over-current at acceleration | 1. Acceleration time too short 2. The capacity of the motor exceeds the capacity of the inverter 3. Short circuit between the motor coil and the case 4. Short circuit between motor wiring and ground 5. IGBT module damaged | 1. Set a longer acceleration time 2. Replace inverter with one that has the same rating as that of the motor 3. Check the motor 4. Check the wiring 5. Consult with the supplier |
| OC-A OC-A | | | |

| Display | content | Cause | Corrective action |
|---|--|---|--|
| OC-C | Over-current at fixed speed | 1.Transient load change 2.Transient power change | 1.Increase the capacity of the inverter 2.Install inductor on the power Supply input side |
| OC-C | | | |
| OC-d | Over-current at deceleration | The preset deceleration time is too short. | Set a longer deceleration time |
| OC-d | | | |
| OC-S | Over current at start | 1.Short circuit between the motor coil and the case 2.Short circuit between motor coil and ground 3.the IGBT module damaged | 1.Inspect the motor 2.Inspect the wiring 3.Consult with the supplier |
| OC-S | | | |
| OV-C | Excessive Voltage during operation/ deceleration | 1.Deceleration time setting too short or excessive load inertia 2.Power voltage varies widely (fluctuates) | 1.Set a longer deceleration time 2. Add a brake resistor or brake module 3.Add a reactor at the power input side |
| OV-C | | | |
| PF | Input phase Loss | Abnormal fluctuations in the main circuit voltage | 1.Check the main circuit power supply wiring. 2.Check the power supply voltage |
| PF | | | |
| ud-C | Output under current detection | Output current < Output under current detection level | Set the level according to application |
| ud-C | | | |
| LF | Output phase loss | Loss of output voltage on any of the phases | 1.Check output cable connection 2.Determine resistance between the lines 3.Check whether the terminals are loose |
| LF | | | |
| Faults which can be recovered manually but not automatically | | | |
| Display | content | Cause | Corrective action |
| OC | Over-current during stop | Detection circuit malfunction | Consult with the supplier |
| OC | | | |
| OL1 | Motor overload | loading too large | Consider increasing the Motor capacity |
| OL1 | | | |
| OL2 | Inverter overload | Excessive Load | Consider increasing the inverter capacity |
| OL2 | | | |
| OL3 | Over torque | 1.Load too large 2.The setting of (8-15, 8-16) too small | 1.Increase the inverter capacity 2.Set(8-15,8-16) as needed |
| OL3 | | | |
| LV-C | Voltage too low during operation | 1.Power voltage too low 2.Power voltage varies widely (fluctuates) | 1.Improve power quality 2.Consider adding a reactor at the power input side |
| LV-C | | | |
| OVSP | Motor rotating too fast | Rotation speed and the set speed value vary widely | 1.Load may be too large 2.Check if the set speed is correct. |
| OVSP | | | |

| Faults which can be recovered manually but not automatically | | | |
|--|--|--|---|
| Display | content | Cause | Corrective action |
| LIFE1 | Inrush current suppression circuit life expectancy alarm | Inrush current suppression circuit is damaged | Consult with the supplier |
| LIFE1 | | | |
| LIFE2 | Control circuit capacitor life expectancy alarm | Control circuit capacitor is damaged | Consult with the supplier |
| LIFE2 | | | |
| LIFE3 | Main Circuit Capacitor life expectancy alarm | Capacitor Main Circuit is damaged | Consult with the supplier |
| LIFE3 | | | |
| GF | Output side ground Fault | If ground fault detection is enabled by 08-18, then for any ground faults (short circuit to ground) the inverter output will switch off. | <ol style="list-style-type: none"> 1. Check the motor winding resistance for failures. 2. Check the motor cable for ground short circuits 3. If the above is correct, then consult with the supplier |
| GF | | | |

4.1.2 Keypad Operation Error Instruction

| Display | content | Cause | Corrective action |
|---------|--|---|---|
| LOC | <ol style="list-style-type: none"> 1. Parameter already locked 2. Motor direction locked 3. Parameter password(13 - 07) enabled | <ol style="list-style-type: none"> 1. Attempt to modify frequency parameter while 13-06>0. 2. Attempt to reverse direction when 11- 00=1. 3. Parameter (13 - 07) enabled, set the correct password will show LOC. | <ol style="list-style-type: none"> 1. Adjust 13-06 2. Adjust 11-00 |
| LOC | | | |
| Err1 | Keypad operation error | <ol style="list-style-type: none"> 1. Press ▲ or ▼ while 00-05/00-06>0 or running at preset speed. 2. Attempt to modify the Parameter.Can not be modified during operation (refer to the parameter list). | <ol style="list-style-type: none"> 1. The ▲ or ▼ is available for modifying the parameter only when 00-05/00-06=0 2. Modify the parameter in STOP mode. |
| Err1 | | | |
| Err2 | Parameter setting error | <ol style="list-style-type: none"> 1. 00-13 is within the range of(11-08 ± 11-11) or (11-09 ± 11-11) or (11-10 ± 11-11) 2. 00-12 ≤ 00-13 3. 00-05 = 00-06 | <ol style="list-style-type: none"> 1. Modify 11-08~11-10 or 11-11 2. Set 00-12>00-13 3. Set 00-05 and 00-06 to different value |
| Err2 | | | |
| Err5 | Modification of parameter is not available in communication | <ol style="list-style-type: none"> 1. Control command sent during communication. 2. Attempt to modify the function 09-02 ~ 09-05 during communication | <ol style="list-style-type: none"> 1. Issue enable command before communication 2. Set parameters 09-02 ~ 09-05 function before communication |
| Err5 | | | |
| Err6 | Communication failed | <ol style="list-style-type: none"> 1. Wiring error 2. Communication parameter setting error. 3. Incorrect communication protocol | <ol style="list-style-type: none"> 1. Check hardware and wiring 2. Check Functions (09-00~09- 05). |
| Err6 | | | |

| Display | content | Cause | Corrective action |
|---------|--------------------|---|---|
| Err7 | Parameter conflict | 1. Attempt to modify the function 13-00/13-08. 2. Voltage and current detection circuit is abnormal. | If reset is not possible, please consult with the supplier. |
| Err7 | | | |

4.1.3 Special conditions

| Display | Fault | Description |
|--------------|--|---|
| StP0 StP0 | Zero speed at stop | Occurs when preset frequency <0.1Hz |
| StP1 StP1 | Fail to start directly On power up. | If the inverter is set for external terminal control mode (00-02/00-03=1) and direct start is disabled (07-04=1) The inverter cannot be started and will flash STP1. The run input is active at power-up, refer to descriptions of (07-04). |
| StP2 StP2 | Keypad Stop Operated when inverter in external Control mode. | If the Stop key is pressed while the inverter is set to external control mode (00-02/00-03=1) then 'STP2' flashes after stop. Release and re-activate the run contact to restart the inverter. |
| E.S. E.S. | External Rapid stop | When external rapid stop input is activated the inverter will decelerate to stop and the display will flash with E.S. message. |
| b.b. b.b. | External base block | When external base block input is activated the inverter stops immediately and then the display will flash with b.b. message. |
| PdEr PdEr | PID feedback loss | PID feedback loss is detected. |
| AtEr AtEr | Auto tuning error | 1. Motor nameplate data Input errors. 2. Emergency stop is activated while auto tuning. |
| FlrE FlrE | Fire Mode | 1. Software rev below 1.1, the fire mode is enabled when 08-17 = 1 2. Software ver 1.1 and above, the fire mode is enabled when 03-00~03-05 = 【28】 3. The display on the keypad indicates FlrE Under fire mode function, the inverter will run at full speed |

4.2 General troubleshooting

| Status | Checking point | Remedy |
|--|--|--|
| Motor runs in wrong direction | Is the wiring for the output terminals correct? | Wiring must match U, V, and W terminals of the motor. |
| | Is the wiring for forward and reverse signals correct? | Check for correct wiring. |
| The motor speed can not be regulated. | Is the wiring for the analog frequency inputs correct? | Check for correct wiring. |
| | Is the setting of operation mode correct? | Check the Frequency Source set in parameters 00-05/00-06. |
| | Is the load too excessive? | Reduce the load. |
| Motor running speed too high or too low | Check the motor specifications (poles, voltage...) correct? | Confirm the motor specifications. |
| | Is the gear ratio correct? | Confirm the gear ratio. |
| | Is the setting of the highest output frequency correct? | Confirm the highest output frequency |
| Motor speed varies unusually | Is the load too excessive? | Reduce the load. |
| | Does the load vary excessively? | 1. Minimize the variation of the load. 2. Consider increasing the capacities of the inverter and the motor. |
| | Is the input power erratic or is there a phase loss ? | 1. Consider adding an AC reactor at the power input side if using single-phase power. 2. Check wiring if using three-phase power. |
| Motor can not run | Is the power connected to the correct L1(L), L2, and L3(N) terminals? is the charging indicator lit ? | 1. Is the power applied ? 2. Turn the power OFF and then ON again. 3. Make sure the power voltage is correct. 4. Make sure screws are secured firmly. |
| | Is there voltage across the output terminals T1, T2, and T3? | Turn the power OFF and then ON again. |
| | Is overload causing the motor to stall? | Reduce the load so the motor will run. |
| | Are there any abnormalities in the inverter? | See error descriptions to check wiring and correct if necessary. |
| | Is there a forward or reverse run command ? | |
| | Has the analog frequency signal been input? | 1. Is analog frequency input signal wiring correct? 2. Is voltage of frequency input correct? |
| | Is the operation mode setting correct? | Operate through the digital keypad |

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第 0 章 前言

0.1 前言

為了充分地發揮本變頻器的功能及確保使用者的安全，請詳閱本操作手冊。當您在使用過程中發現疑難問題時，請與各地經銷商或本公司技術人員聯繫，我們的專業人員會樂於為您服務。

※使用須知

變頻器是精密的電力電子產品，為保障您的生命財產安全，本手冊中有「危險」「注意」等字樣，是為提醒您在搬運、安裝、使用、檢查變頻器時所需關注的安全防範事項，請您配合遵守。



危險

操作不當時，可能造成嚴重的人身傷害。



注意

操作不當時，可能造成變頻器或機械系統損壞。



危險

- ✓ 避免感電！變頻器內部的直流電容器在電源移除後 5 分鐘才能放電完畢，請在電源移除後 5 分鐘，再進行拆裝或實施檢查。
- ✓ 不可在送電過程中實施配線，變頻器處於運行狀態時請勿檢查線路板；
- ✓ 請勿自行拆裝更改變頻器內部連接線或線路及零件；
- ✓ 變頻器接地端子請務必正確接地。



注意

- ✓ 請勿對變頻器內部的零元件進行耐壓測試，這些半導體零件易受高電壓損毀；
- ✓ 絕不可將變頻器輸出端子 T1、T2、T3 連接至交流電源；
- ✓ 變頻器主電路板 CMOS 積體電路易受靜電影響及破壞，請勿觸摸主電板。

第 1 章 安全注意事項

1.1 送電前



- 主回路端子必須正確配線，單相 **L1(L)**、**L3(N)**、三相 **L1(L)**、**L2**、**L3(N)**為電源輸入端子，絕對不可以與 **T1**、**T2**、**T3** 混用；混用時，送電將造成變頻器的損壞。



- 所選用之電源電壓必須與變頻器之輸入電壓規格相同。
- 搬運變頻器時，請勿直接提取前蓋，應由變頻器本體搬運，以防止前蓋脫落，避免變頻器掉落造成人員受傷或變頻器損壞。
- 請將變頻器安裝於金屬類等不燃物材料之上，請勿安裝於易燃性材料上或附近，以防止發生火災。
- 若多台變頻器同放在一個控制盤內，請外加散熱風扇，使盤內溫度低於 **40°C** 以下，以防過熱或火災等發生。
- 請於關閉電源後，再拆卸或裝入操作器，並請按圖操作固定操作器，以免接觸不良造成操作器故障或不顯示。
- 本產品所提供的電源(**10V/24V**)僅供產品內部接點使用，請勿使用於其他外部元件的電源供應來源,如 感應器、電子元件...等,否則會造成產品使用不良的情況。



- 本產品系通過 **IEC 61800-3** 和 **IEC 61800-5-1** 限制區域使用等級。在某些環境下使用本產品時，可能造成電磁干擾，故在使用前請先進行適當的測試，同時請務必做好接地工程。
- 未提供馬達過溫度保護功能。



- 產品的安裝及使用必須由有資格的專業電氣人員進行。
- 產品的安裝必須以固定式配線方式進行。

1.2 送電中



- 實施任何變頻器裝機或配線前，請務必關上總電源，避免觸電及火災發生。
- 配線工程人員須具備相關專業知識，避免觸電與火災發生。
- 確認接地線與大地連接。(220V 級:接地阻抗需低於 100 歐姆; 440V 級:接地阻抗需低於 10 歐姆)
- 接線完成後，確認緊急停止機能有效。(接線責任屬於使用方)
- 勿直接觸碰輸入/輸出電源線，並避免所有接線與變頻器外殼接觸與線路短路。
- 勿對變頻器進行耐壓測試，容易造成半導體元件受損。



- 確認輸入主電源與變頻器相符，避免受傷或火災發生。
- 請依相關接線圖連接煞車電阻及煞車單元，否則有引發火災危險。
- 請依指定轉矩來鎖固端子螺絲，避免引發火災的危險。
- 勿將輸入電源連接至變頻器輸出端子上。
- 勿將電磁接觸器，電磁開關接點連接至輸出端子。
- 勿將進相電容器或 LC/RC 濾波器連接至輸出電路上。
- 確保變頻器、馬達所產生的干擾不會影響周邊感測器或設備。



警告

- 若停電時間大於兩秒（功率越大，可允許斷電時間愈長），會使變頻器失去控制電源，故在電源恢復送電以後，變頻器運行與否，是根據 **00- 02**(或 **00- 03**)及 **07- 04** 參數的設定及外部開關的狀態而決定，此時視為重新開機。
- 若停電時間短，變頻器仍擁有控制電源，因此當電源恢復時，變頻器能否自行啟動，將取決於 **07- 00** 參數的設定。
- 當重新開機時，變頻器運轉與否，取決於 **00- 02**(或 **00- 03**)及 **07- 04** 的設定及電源開關/運轉開關(**FWD/REV** 開關)的狀態(與 **07- 00/07- 01/07- 02**)：
 1. **00- 02**(或 **00- 03**)=**0** 時，重新開機後，不會自動啟動。
 2. **00- 02**(或 **00- 03**)=**1** 且電源開關或運轉開關(**FWD/REV** 開關)關斷時，重新開機後，不會自動啟動。
 3. **00- 02**(或 **00- 03**)=**1** 且電源開關及運轉開關導通且 **07- 04**=**0** 時，重新開機後，會自動啟動。基於安全考慮，請在停電以後將電源開關及運轉開關(**FWD/REV** 開關)關斷，以避免突然複電後，對機器及人身造成傷害。
- **07- 04**=**0** 時，為確保人身及機器設備安全，請參照 **07- 04** 詳細使用說明及建議。

1.3 運轉前



警告

- 送電前請確認所使用變頻器的機種容量和變頻器內功能參數 **13- 00** 所設定的機種容量相同。
- 變頻器與馬達間線長超過 25 公尺，需降低載波頻率(**11-01**)或加裝輸出濾波器來降低負載端過電壓或振盪，避免馬達受損。



注意

- 電源投入時，變頻器會先閃爍 **01- 01** 所設定的變頻器供電電源電壓 2 秒。

1.4 運轉中




警告

- 請確認前外蓋安裝完成後，再打開電源。
- 運轉中不可將馬達機組投入或切離，否則會造成變頻器過電流跳脫，嚴重時會造成變頻器主回路損壞。
- 進行復歸機能時，請勿靠近機器，故障清除後，機器會再啟動。
- 勿於雙手潮濕時操作機器。
- 如設定自動再啟動功能時，馬達於運轉停止後會自動再啟動，請勿靠近機器以免危險。
- 復歸警告前請確認運轉命令為關閉的。
- 若選擇復電後自動重新啟動(07-00)，變頻器將在電源回復後自動啟動。
- 無論變頻器處於運轉或停止狀態，避免觸碰相關端子，以防發生危險。
- 避免感電！變頻器內部的直流電容器在電源移除後 5 分鐘才能放電完畢，請在電源移除 5 分鐘後，再進行拆裝或實施檢查。



注意

- 散熱座、煞車電阻等發熱元件請勿觸摸。
- 變頻器可以很容易使馬達從低速到高速運轉，請確認馬達與機械的容許範圍。
- 使用煞車模組等搭配產品時，請注意其使用之相關設定。
- 電源切斷後，風扇可能會繼續旋轉一段時間。
- 變頻器運轉時，請勿檢查電路板上的信號。

1.5 檢查保養和更換時



警告

- 進行維護檢查前，請先確認電源已經關閉且電源指示燈熄滅(請確認直流電壓不超過 25 伏特)。
- 變頻器端子中有高壓端子，請勿隨意觸摸。
- 電源開啟情況下，請務必安裝保護蓋，另拆卸保護蓋後，請務必透過斷路器斷開電源。
- 除指定的專業人員外，他人請勿進行保養檢查或更換零件。



注意

- 變頻器周圍溫度應在 $-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$ * 95%RH 不結露環境中使用，但需確保周圍環境無滴水及金屬粉塵。

* $-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$ (無防塵蓋/防塵貼紙)

$-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$ (有防塵蓋/防塵貼紙)

變頻器報廢時注意事項



注意

當變頻器要處理報廢時，請作為工業垃圾進行處理，並請注意以下事項：

- 變頻器主回路的電解電容和印刷電路板上的電解電容焚燒時可能會發生爆炸；
- 變頻器的外殼等塑膠件焚燒時會產生有毒氣體。



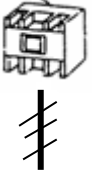

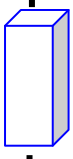
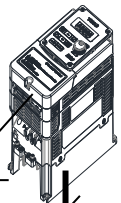
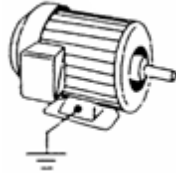


裝有電子元件的設備不能與生活垃圾一起處理，必須按照地方現行法規將其與電氣和電子廢棄物一起單獨回收。

第 2 章 周圍環境及安裝

2.1 週邊設備應用及注意事項

週邊設備

| | | |
|---|-------------------------------|---|
|  | 電源 | <ul style="list-style-type: none"> ➢ 請注意電壓等級是否正確，以免損壞變頻器。 ➢ 交流電源與變頻器之間必須安裝無熔絲斷路器。 |
|  | 無熔絲斷路器 漏電斷路器 | <ul style="list-style-type: none"> ➢ 請使用與變頻器額定電壓、電流等級相符的無熔絲斷路器做變頻器供電電源的通/斷控制，並做為變頻器的保護裝置使用。 ➢ 無熔線斷路器請不要做為變頻器的運轉/停止切換功能使用。 ➢ 如若加裝漏電斷路器作漏電故障保護時，請選用感度電流 200mA 以上，動作時間為 0.1 秒以上的器具，以防高頻誤動作。 |
|  | 電磁接觸器 | <ul style="list-style-type: none"> ➢ 一般使用時，可以不加電磁接觸器，但要作外部順序控制或停電後自動再起動等功能時，需加裝電磁接觸器。 ➢ 請儘量避免使用電磁接觸器作變頻器之運轉/停止控制。 |
|  | 功率改善交流電抗器 | <ul style="list-style-type: none"> ➢ 若欲作進一步改善功因或抑制外來突波時，可外加 AC 電抗器。 |
|  | 輸入側雜訊濾波器 | <ul style="list-style-type: none"> ➢ 變頻器週邊有電感性負載時，請務必加裝使用。 ➢ E510 變頻器內建濾波器以符合 A 級第一類環境。為使您的特別應用滿足必要的 EMC 法規，使用者需要額外加一個濾波器。 |
|  | 變頻器 | <ul style="list-style-type: none"> ➢ 單相輸入電源端子 L1 (L)、L3 (N) (三相輸入電源端子 L1、L2、L3)無相序區分，可任意變換。接地端子 E 請確實做好接地處理。請勿接交流電源以免變頻器損壞。 ➢ 輸出端子 T1、T2、T3，接至馬達的 U、V、W 端子，如果送指令給變頻器執行正轉，但馬達為反轉狀態，只要將 T1、T2、T3 端子中任意兩相對調即可。 ➢ 接地端子請正確接地，200V 級：接地阻抗<100Ω,400V 級：接地阻抗<10Ω |
|  <p>接地</p> | 馬達 | <ul style="list-style-type: none"> ➢ 三相鼠籠式馬達 ➢ 變頻器與電機之間配線距離過長時，線路的電壓降也要考慮，壓降應<%10 ➢ 相間電壓降 (V)=3 ×線阻(Ω/km)×線路長(m)×電流×10⁻³ ➢ 若一台變頻器驅動多台馬達時，變頻器之額定電流必需大於馬達同時運轉時之總電流 ➢ 馬達與變頻器必需分別接地 |

2.2 規格

2.2.1 產品個別規格

單相 200V 機種

| 型號: E510-□□□- H1F(N4)(S) | 2P5 | 201 | 202 | 203 |
|--------------------------|--------------------------------|------|------|------|
| 馬力數(HP) | 0.5 | 1 | 2 | 3 |
| 適用馬達容量(KW) | 0.4 | 0.75 | 1.5 | 2.2 |
| 額定輸出電流(A) | 3.1 | 4.5 | 7.5 | 10.5 |
| 額定容量(KVA) | 1.2 | 1.7 | 2.90 | 4.00 |
| 輸入電壓範圍 | 單相 : 200~240V,50/60HZ | | | |
| 容許電壓變動 | +10%-15% | | | |
| 輸出電壓範圍 | 三相 : 0~240V | | | |
| 輸入電流(A) | 8.5 | 12 | 16 | 23.9 |
| 淨重(KG) | 1.6 | 1.6 | 2.5 | 2.5 |
| 允許瞬停時間(Sec) | 2.0 | 2.0 | 2.0 | 2.0 |
| 防護等級 | IP20/NEMA1&IP66/NEMA4X (視機型而定) | | | |
| 框架 | 1 | | 2 | |

單/三相 200V 機種

| 型號: E510-□□□- H (N4R) | 2P5 | 201 | 202 | 203 |
|-----------------------|--------------------------------|--------|-------|-----------|
| 馬力數(HP) | 0.5 | 1 | 2 | 3 |
| 適用馬達容量(KW) | 0.4 | 0.75 | 1.5 | 2.2 |
| 額定輸出電流(A) | 3.1 | 4.5 | 7.5 | 10.5 |
| 額定容量(KVA) | 1.2 | 1.7 | 2.90 | 4.00 |
| 輸入電壓範圍 | 單/三相 : 200~240V, 50/60HZ | | | |
| 容許電壓變動 | +10%-15% | | | |
| 輸出電壓範圍 | 三相 : 0~240V | | | |
| 輸入電流(A) | 8.5/4.5 | 12/6.5 | 16/11 | 23.9/12.5 |
| 淨重(KG) | 1.6 | 1.6 | 2.5 | 2.5 |
| 允許瞬停時間(Sec) | 2.0 | 2.0 | 2.0 | 2.0 |
| 防護等級 | IP20/NEMA1&IP66/NEMA4X (視機型而定) | | | |
| 框架 | 1 | | 2 | |

三相 200V 機種

| | | | | | | |
|----------------------|--------------------------------|------|-----|------|------|------|
| 型號: E510-□□□- H3(N4) | 202 | 205 | 208 | 210 | 215 | 220 |
| 馬力數(HP) | 2 | 5 | 7.5 | 10 | 15 | 20 |
| 適用馬達容量(KW) | 1.5 | 3.7 | 5.5 | 7.5 | 11 | 15 |
| 額定輸出電流(A) | 7.5 | 17.5 | 26 | 35 | 48 | 64 |
| 額定容量(KVA) | 2.9 | 6.7 | 9.9 | 13.3 | 20.6 | 27.4 |
| 輸入電壓範圍 | 三相: 200~240V, 50/60HZ | | | | | |
| 容許電壓變動 | +10%-15% | | | | | |
| 輸出電壓範圍 | 三相: 0~240V | | | | | |
| 輸入電流(A) | 11 | 20.5 | 33 | 42 | 57 | 70 |
| 淨重(KG) | 1.6 | 2.5 | 6.5 | 6.5 | 10.1 | 10.4 |
| 允許瞬停時間(Sec) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| 防護等級 | IP20/NEMA1&IP66/NEMA4X (視機型而定) | | | | | |
| 框架 | 1 | 2 | 3 | 4 | | |

三相 400V 機種

| | | | | |
|----------------------------|--------------------------------|-----|-----|------|
| 型號: E510-□□□- H3(F)(N4)(S) | 401 | 402 | 403 | 405 |
| 馬力數(HP) | 1 | 2 | 3 | 5 |
| 適用馬達容量(KW) | 0.75 | 1.5 | 2.2 | 3.7 |
| 額定輸出電流(A) | 2.3 | 3.8 | 5.2 | 8.8 |
| 額定容量(KVA) | 1.7 | 2.9 | 4.0 | 6.7 |
| 輸入電壓範圍 | 三相: 380~480V, 50/60HZ | | | |
| 容許電壓變動 | +10%-15% | | | |
| 輸出電壓範圍 | 三相: 0~480V | | | |
| 輸入電流(A) | 4.2 | 5.6 | 7.3 | 11.6 |
| 淨重(KG) | 1.7 | 1.7 | 2.5 | 2.5 |
| 允許瞬停時間(Sec) | 2.0 | 2.0 | 2.0 | 2.0 |
| 防護等級 | IP20/NEMA1&IP66/NEMA4X (視機型而定) | | | |
| 框架 | 1 | | 2 | |

| | | | | | |
|----------------------------|--------------------------------|------|------|------|------|
| 型號: E510-□□□- H3(F)(N4)(S) | 408 | 410 | 415 | 420 | 425 |
| 馬力數(HP) | 7.5 | 10 | 15 | 20 | 25 |
| 適用馬達容量(KW) | 5.5 | 7.5 | 11 | 15 | 18.5 |
| 額定輸出電流(A) | 13.0 | 17.5 | 24 | 32 | 40 |
| 額定容量(KVA) | 9.9 | 13.3 | 19.1 | 24 | 30.5 |
| 輸入電壓範圍 | 三相: 380~480V, 50/60HZ | | | | |
| 容許電壓變動 | +10%-15% | | | | |
| 輸出電壓範圍 | 三相: 0~480V | | | | |
| 輸入電流(A) | 17 | 23 | 31 | 38 | 48 |
| 淨重(KG) | 6.7 | 6.7 | 6.7 | 13.7 | 13.7 |
| 允許瞬停時間(Sec) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| 防護等級 | IP20/NEMA1&IP66/NEMA4X (視機型而定) | | | | |
| 框架 | 3 | | | 4 | |

F: 表示內建濾波器

N4: 表示防護等級 IP66, 不內置電源開關及旋鈕

N4R: 表示防護等級 IP66, 內置旋鈕, 無內置電源開關

N4S: 表示防護等級 IP66, 內置電源開關及旋鈕(只到 15HP)

| | | |
|--------------------------|--------------------------------|------|
| 型號: E510-□□□ - H3(F)(PT) | 420 | 425 |
| 馬力數(HP) | 20 | 25 |
| 適用馬達容量(kW) | 15 | 18.5 |
| 額定輸出電流(A) | 32 | 40 |
| 額定容量(kVA) | 24 | 30.5 |
| 輸入電壓範圍 | 三相 380~480V (+10%-15%),50/60HZ | |
| 輸出電壓範圍 | 三相 0~480V | |
| 輸入電流(A) | 38 | 48 |
| 允許瞬停時間(Sec) | 2.0 | 2.0 |
| 防護等級 | IP20 | |

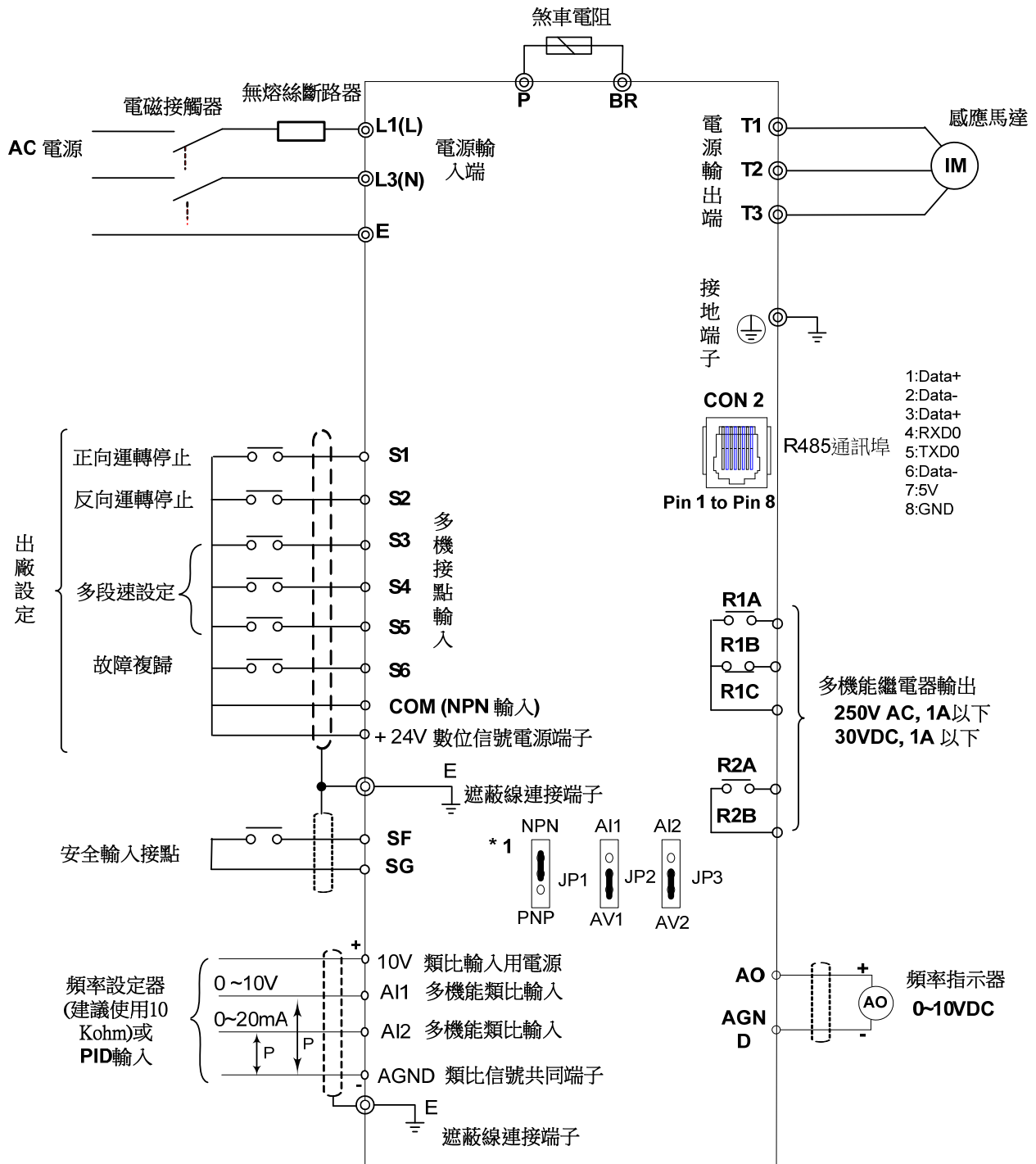
PT : footprint type filter

2.2.2 產品共通規格

| 項目 | E510 | |
|-------|---|---|
| 控制方式 | V/F 控制或向量控制功能 | |
| 頻率 | 頻率控制範圍 | 0.01~599.00Hz |
| | 啟動轉矩 | 150% / 1Hz (向量模式) |
| | 頻率解析度 | 數位輸入: 0.01Hz |
| | | 類比輸入: 0.06Hz/60Hz |
| | 頻率設定 | 面板: ·使用面板▲▼ 鍵設定頻率, 面板旋鈕設定頻率 外部端子: ·AI1、AI2 (0~10V / 2~10V / 0~20mA / 4~20mA) 輸入 up/down 頻率設定 通訊設定 |
| 頻率限制 | 頻率上、下限 ·3 段跳躍頻率可以設定 | |
| 運轉 | 運轉設定 | 面板: run、stop 鍵控制 外部端子: ·多功能運轉模式運轉(2/3 線制選擇)、寸動運轉 通訊運轉 |
| | V/F 曲線設定 | 18 條固定曲線、1 條任意曲線 |
| | 載波頻率 | 1~16KHz (出廠預設值為 5kHz) |
| 一般控制 | 加減速控制 | 2 段加/減速時間可設定 (0.1~3600.0 Sec) 4 段 S 曲線可設定 |
| | 多功能輸入 | 有 29 種 功能可以設定(參見群組 3 說明) |
| | 多功能輸出 | 有 21 種 功能可以設定(參見群組 3 說明) |
| | 多功能模擬輸出 | 有 5 種 功能可以設定(參見群組 4 說明) |
| | 其他功能 | 過負載檢出、 16 段 速、自動程式功能、加/減速時間切換、主/副運轉信號切換、主/副頻率來源切換、 PID 控制、轉矩補償、啟動頻率、滑差補償、異常復歸等 |
| | 顯示 | 5 位 LED |
| 狀態指示燈 | | 指示: 運轉/停機/正轉/反轉等狀態 |
| 保護特性 | 超載保護 | 電子繼電器保護馬達及變頻器 (150%/60s) |
| | 過電壓 | 200V 級: 直流電壓>410V, 400V 級: 直流電壓>820V |
| | 不足電壓 | 200V 級: 直流電壓<190V, 400V 級: 直流電壓<380V |
| | 瞬間停電在啟動 | 瞬停後短時間內可以再啟動 |
| | 失速防止 | 加速/減速/運轉中均有失速防止保護 |
| | 輸出端短路 | 電子線路保護 |
| | 接地故障 | 電子線路保護 |
| | 其他保護功能 | 散熱片過熱保護、載波隨溫度降低功能、故障接點輸出、反轉限制、開機後直接啟動及故障復歸的限制、參數鎖定等功能 |
| 通訊控制 | ·標準內建 RS485 通訊(Modbus) ,可做 1 對 1 或 1 對多 控制 | |
| 環境 | 運轉溫度 | IP20/NEMA1 型: 配電盤內-10~50°C(無防塵蓋/無防塵貼紙) 配電盤外-10~40°C(有防塵蓋/有防塵貼紙) IP66/NEMA4X 型: -10~50°C |
| | 存儲溫度 | -20~60°C |
| | 濕度 | 5%到 95% 相對溼度 RH, 無冷凝或水滴產生 (遵循 IEC60068-2-78 標準) |
| | 震動 | 1G. (9.8m/s²) for < 20Hz. 0.6G (5.88m/s²) 20Hz~50Hz (依據 IEC60068-2-6 標準) |
| | 防護等級 | IP20/NEMA1/IP66/NEMA4X (視機型而定) |

2.3 標準配線

2.3.1 單相：



○ 表隔離線, ⊕ 表雙絞芯隔離絞線

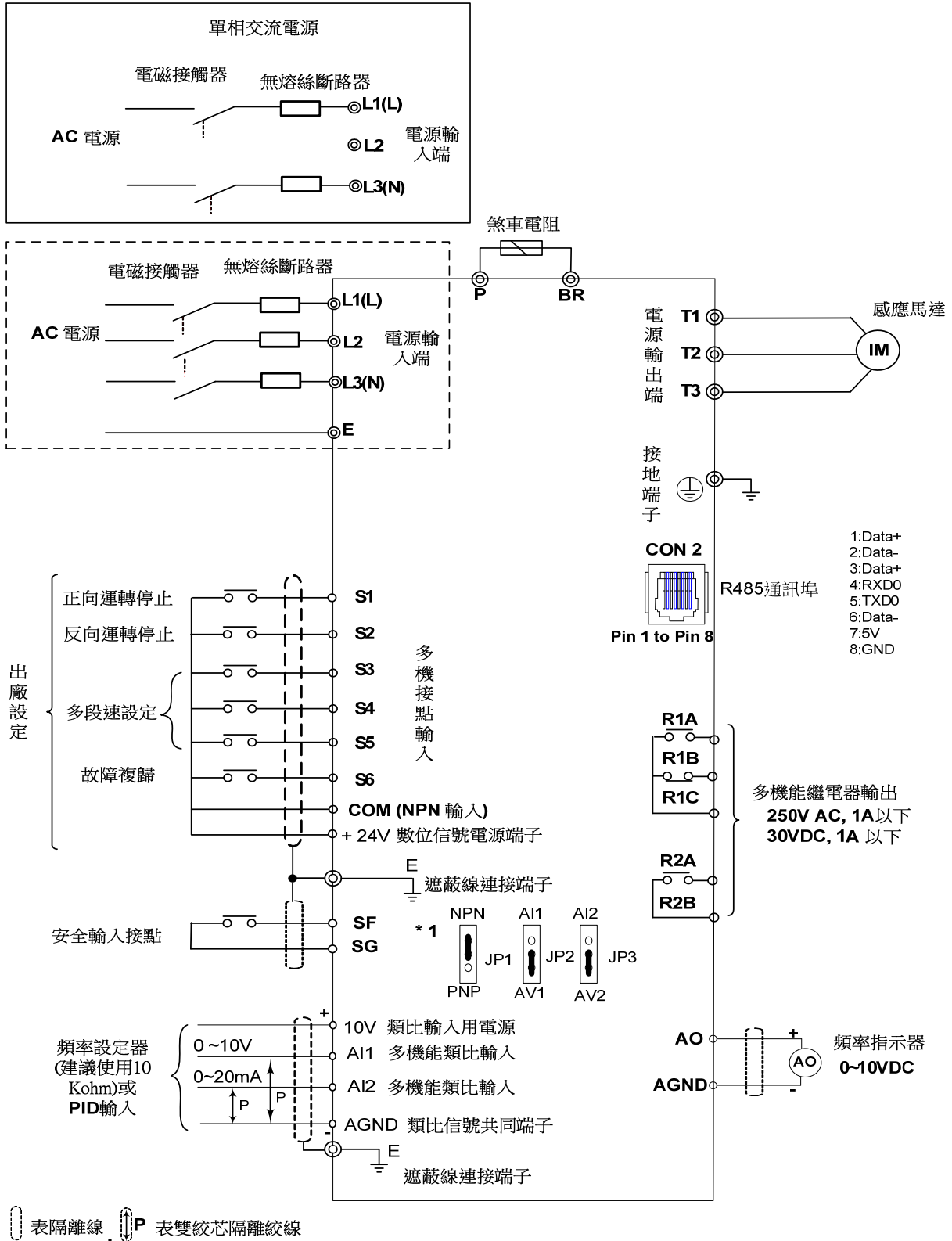
端子符號 ⊙ 表示主迴路 ○ 表示控制迴路

*1 JP1：用來選擇NPN/PNP 模式；JP2：AI1 0/2~10V或0/4~20mA選擇；JP3：AI2 0/2~10V或0/4~20mA 選擇

適用型號：

200V: E510-2P5-H1(F)(N4S)/ E510-201-H1(F) (N4S)/
E510-202-H1(F)(N4S)/E510-203-H1(F) (N4S)

2.3.2 單/三相：



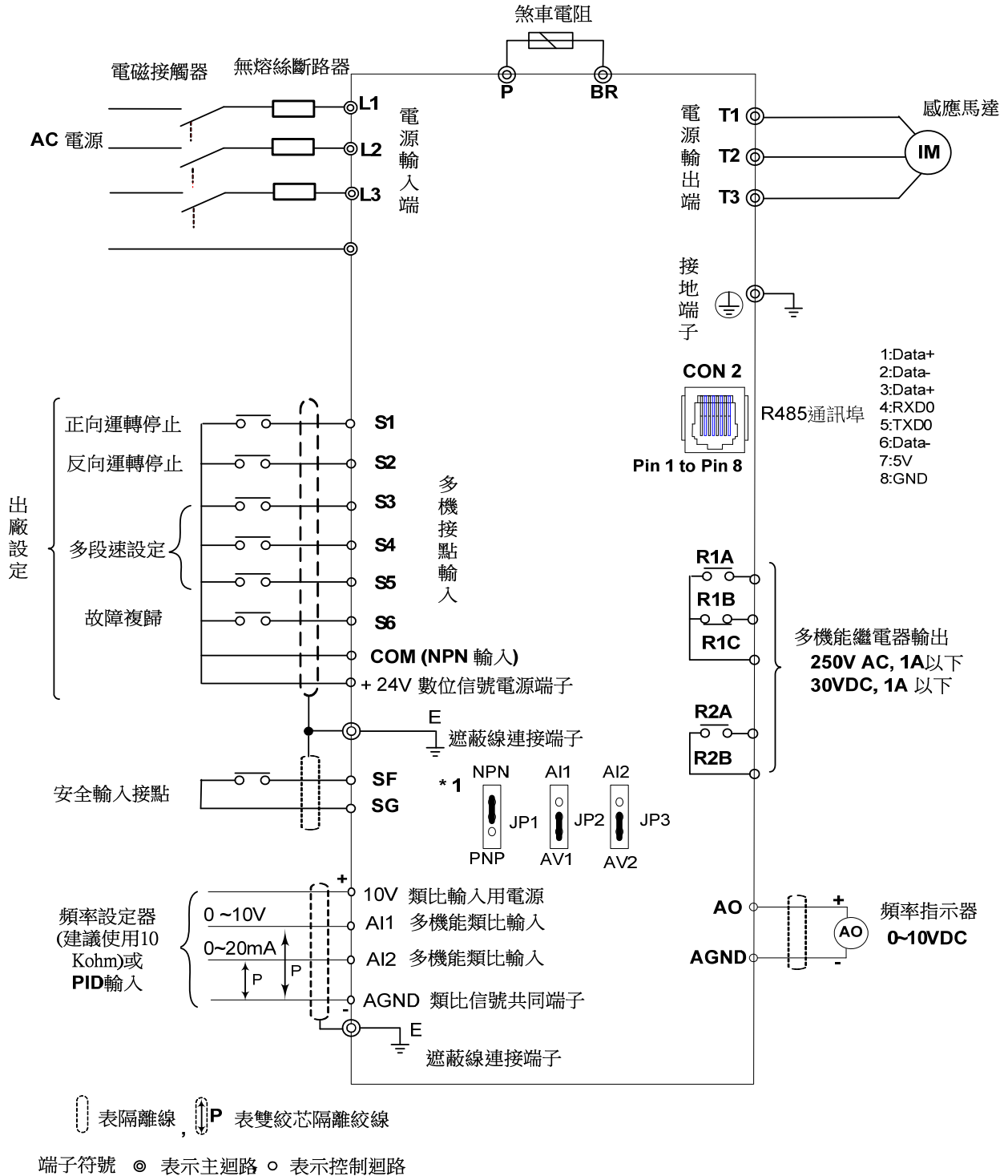
端子符號 ◎ 表示主迴路 ○ 表示控制迴路

*1 JP1：用來選擇NPN/PNP 模式；JP2：AI1 0/2~10V或0/4~20mA選擇；JP3：AI2 0/2~10V或0/4~20mA 選擇

適用型號：

200V: E510-2P5-H(N4R)/ E510-201-H(N4R)/ E510-202-H(N4R)/ E510-203-H(N4R)

2.3.3 三相：



*1 JP1：用來選擇NPN/PNP 模式；JP2：AI1 0/2~10V或0/4~20mA選擇；JP3：AI2 0/2~10V或0/4~20mA 選擇


適用型號：

200V:E510-202-H3(N4)/E510-205-H3(N4)/E510-208-H3(N4)/E510-210-H3(N4)/
E510-215-H3(N4)/E510-220-H3(N4)

400V:E510-401-H3(F)(N4)(S)/ E510-402-H3(F)(N4)(S)/ E510-403-H3(F)(N4)(S)/
E510-405-H3(F)(N4)(S)/ E510-408-H3(F)(N4)(S)/E510-410-H3(F)(N4)(S)/
E510-415-H3(F)(N4)(S)/ E510-420-H3(F)(N4)/E510-425-H3(F)(N4)
E510-420-H3FPT/E510-425-H3FPT

2.4 端子說明

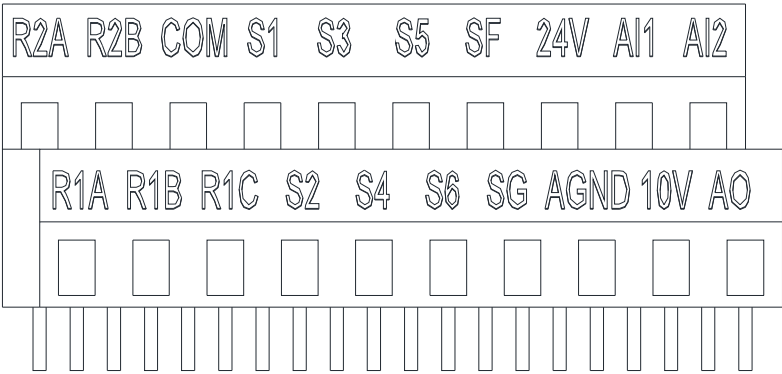
2.4.1 主迴路端子說明

| 端子符號 | TM1 端子功能說明 |
|---|--|
| L1(L) | 交流電源輸入端：單相：L1(L)、L3(N) 單/三相：L1(L)、L2、L3(N) 三相：L1、L2、L3 |
| L2 | |
| L3(N) | |
| T1 | 變頻器的輸出端，連接馬達 U、V、W 端 |
| T2 | |
| T3 | |
| P | 制動電阻連接端子，當負載慣量大或減速時間短，而使變頻器容易過電壓跳脫時使用（參照制動電阻規格） |
| BR | |
|  | 接地端子 |

2.4.2 控制迴路端子說明

| 種類 | 端子 | 端子功能 | 信號準位 |
|----------|---|--|---|
| 數位輸入信號 | S1 | 正轉運轉—停止命令 (預設), 多功能輸入端子*1 | 24 VDC, 8 mA 光耦合隔離(最大電壓 30 Vdc, 輸入阻抗 3.3kΩ) |
| | S2 | 反轉運轉—停止命令 (預設), 多功能輸入端子*1 | |
| | S3 | 多段速設定位 0(5-02), 多功能輸入端子*1 | |
| | S4 | 多段速設定位 1(5-03), 多功能輸入端子*1 | |
| | S5 | 多段速設定位 2(5-05), 多功能輸入端子*1 | |
| | S6 | 故障復歸輸入, 多功能輸入端子*1 | |
| 繼電器輸出 | R1A | 多功能輸出：運轉中，故障指示，設定頻率到達，任意頻率到達，頻率檢出，自動再啟動，瞬停動作，緊急停止，遮斷停止，電機超載保護，變頻器超載保護，過轉矩檢出、電流到達、機械煞車控制功能、PID 回饋斷線檢出設定計數值到達指示，指定計數值到達指示，PLC 狀態指示，PLC 控制... | 250VAC/1A(30VDC/1A) |
| | R1B | | |
| | R1C | | |
| | R2A | | |
| | R2B | | |
| 24V 電源供應 | 24V | 端子 S1~S6 信號的共同端子(JP1 切至 PNP 位置) | ±15%, 最大輸出電流 60mA |
| | COM | 端子 S1~S6 信號的共同端子(JP1 切至 NPN 位置) | |
| 類比輸入信號 | 10V | 速度設定用電源 | 10V(最大電流, 20mA) |
| | AI1 | 多功能類比輸入可用 JP2 切換電壓或電流輸入 *2 電壓：JP2 切至 AV1 位置 電流：JP2 切至 AI1 位置 | 0 到 10V, 0 到 20mA(輸入阻抗: 153KΩ) |
| | AI2 | 多功能類比輸入可用 JP3 切換電壓或電流輸入 *2 電壓：JP3 切至 AV2 位置 電流：JP3 切至 AI2 位置 | 0 到 10V, 0 到 20mA(輸入阻抗: 153KΩ) |
| | AGND | 類比信號共同端子 | ---- |
| |  | 遮蔽線連接端子 (大地) *4 | ---- |
| 類比輸出信號 | AO | 多功能模擬輸出端子*3 | 0 到 10V,(最大電流:2mA) |
| | AGND | 類比信號共同端子 | ---- |
| 安全開關 | SF | SF 為安全開關，當端子導通時將切斷變頻器輸出電壓 | |
| | SG | | |

控制迴路端子：



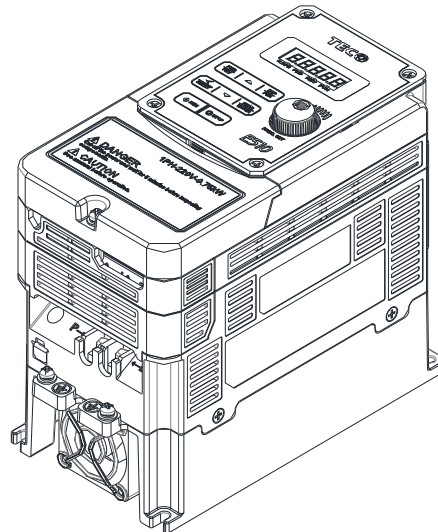
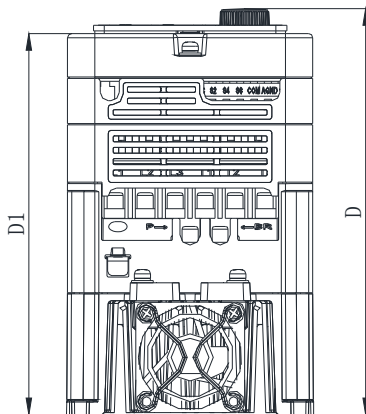
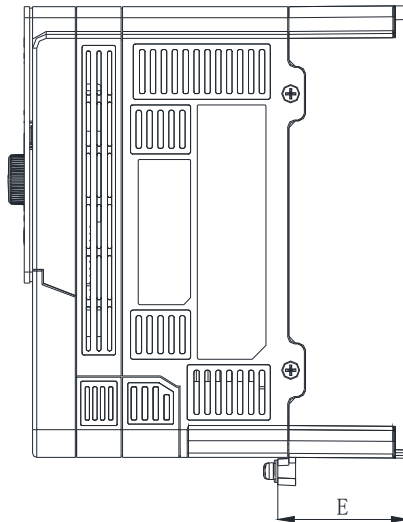
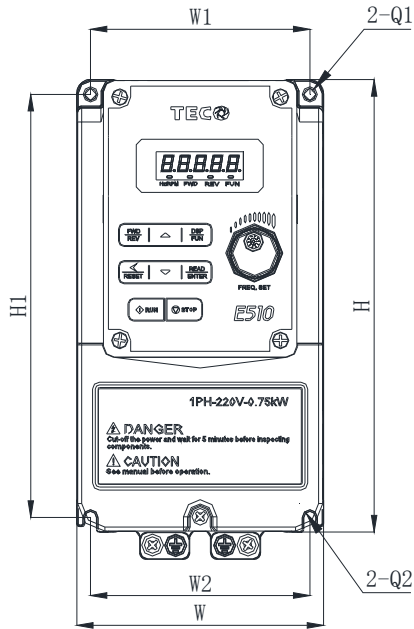
2.5 外形尺寸圖

單位：mm(inch)

| 公差表 | | | | |
|-------------------------------------|-------------------------------------|-----------------------------------|------------------------------------|--|
| 1 ~ 10 ± 0.1 (0.04~0.40 ± 0.004) | 10 ~ 50 ± 0.2 (0.40~1.97 ± 0.01) | 50 ~ 100 ± 0.3 (1.97~4 ± 0.01) | 100 ~ 200 ± 0.5 (4~7.87 ± 0.02) | 200 ~ 400 ± 0.8 (7.87~15.75 ± 0.03) |

2.5.1 IP20/NEMA1 型產品外形尺寸

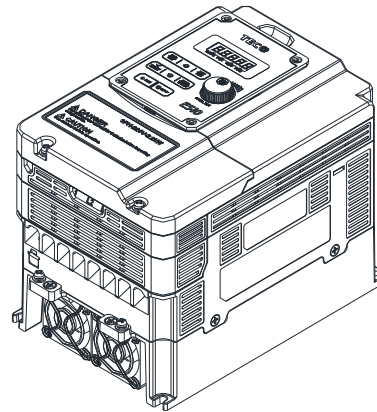
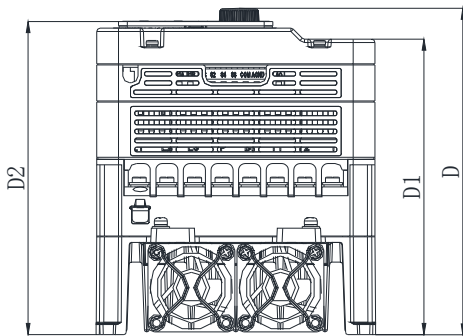
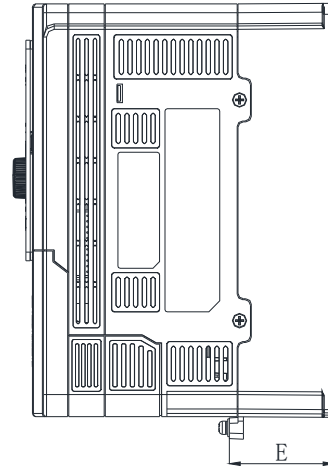
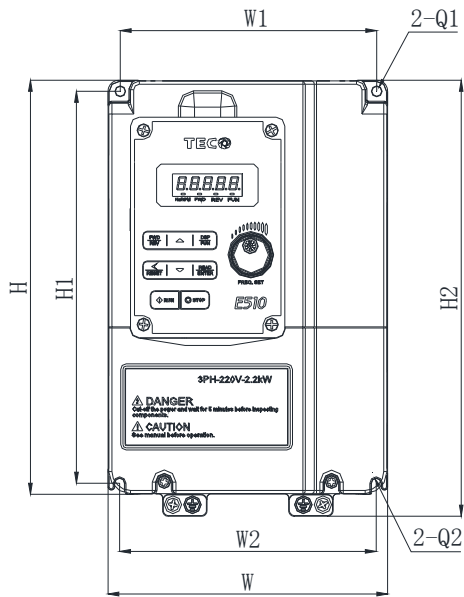
Frame1 (IP20) (單/三相：200V 0.5~1HP；單相：200V 0.5~1HP；三相：200V 2HP；400V 1~2HP)



單位：mm(inch)

| 型號 | 尺寸 | | | | | | | | | | 重量 (Kg) |
|--------------|----------------|----------------|----------------|-----------------|---------------|---------------|-----------------|--------------|---------------|---------------|---------|
| | W | W1 | W2 | H | H1 | D | D1 | E | Q1 | Q2 | |
| E510-2P5-H | | | | | | | | | | | 1.6 |
| E510-201-H | | | | | | | | | | | 1.6 |
| E510-2P5-H1F | | | | | | | | | | | 1.7 |
| E510-201-H1F | | | | | | | | | | | 1.7 |
| E510-202-H3 | 90.6 (3.57) | 80.5 (3.17) | 80.5 (3.17) | 163.6 (6.44) | 153 (6.02) | 149 (5.87) | 137.8 (5.43) | 48 (1.89) | 4.3 (0.17) | 4.3 (0.17) | 1.7 |
| E510-401-H3 | | | | | | | | | | | 1.7 |
| E510-402-H3 | | | | | | | | | | | 1.7 |
| E510-401-H3F | | | | | | | | | | | 1.7 |
| E510-402-H3F | | | | | | | | | | | 1.7 |

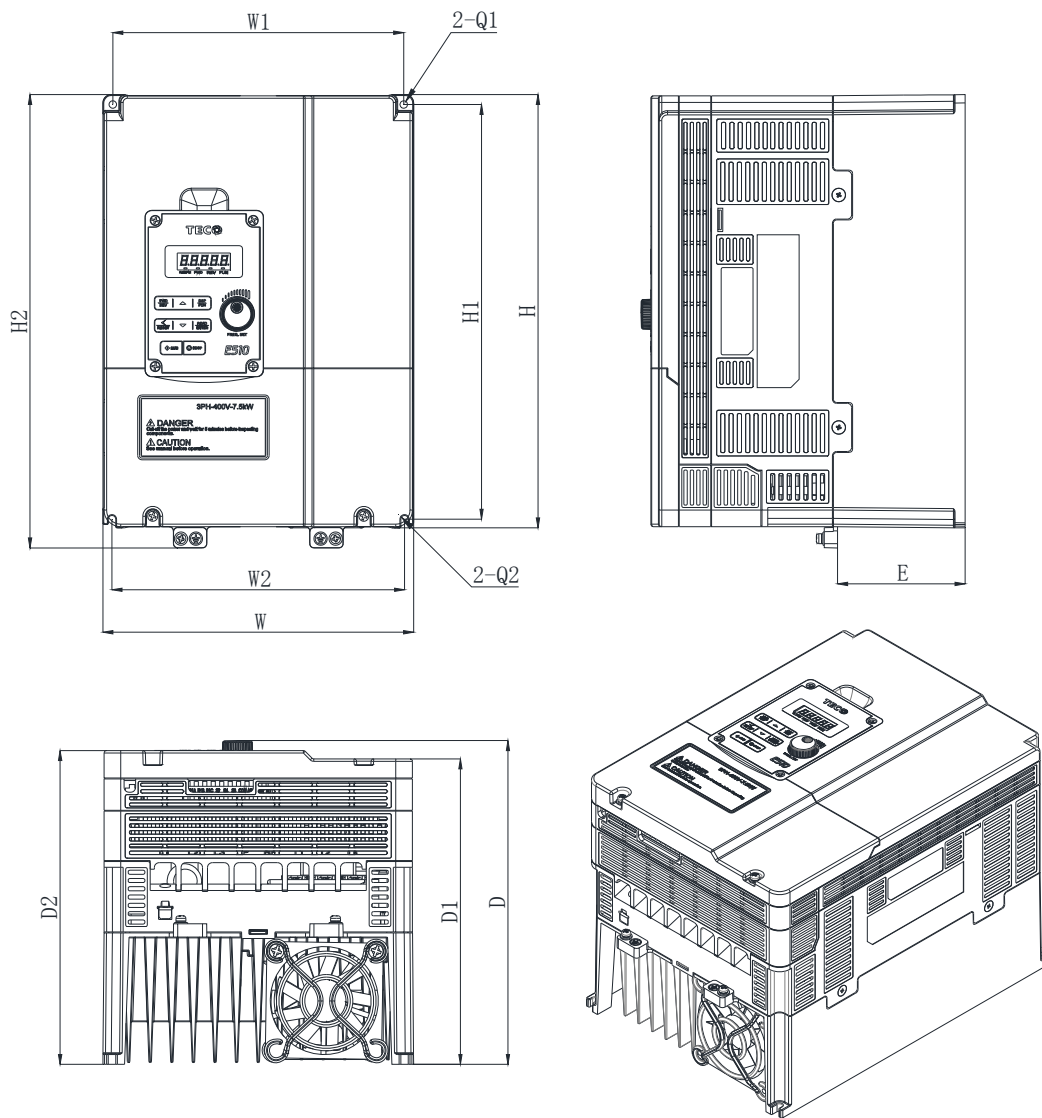
Frame2 (IP20) (單/三相：200V 2~3HP；單相：200V 2~3HP；三相：200V 5HP；400V 3~5HP)



單位：mm(inch)

| 型號 | 尺寸 | | | | | | | | | | | 重量 (Kg) | |
|--------------|-----------------|---------------|---------------|-----------------|-----------------|-----------------|---------------|-----------------|-----------------|---------------|---------------|---------------|-----|
| | W | W1 | W2 | H | H1 | H2 | D | D1 | D2 | E | Q1 | | Q2 |
| E510-202-H | | | | | | | | | | | | | 2.5 |
| E510-203-H | | | | | | | | | | | | | 2.5 |
| E510-202-H1F | | | | | | | | | | | | | 2.5 |
| E510-203-H1F | | | | | | | | | | | | | 2.5 |
| E510-205-H3 | 128.7 (5.07) | 118 (4.65) | 118 (4.65) | 187.6 (7.39) | 177.6 (6.99) | 197.5 (7.78) | 150 (5.91) | 133.8 (5.27) | 141.8 (5.58) | 48.2 (1.9) | 4.5 (0.18) | 4.5 (0.18) | 2.5 |
| E510-403-H3 | | | | | | | | | | | | | 2.5 |
| E510-405-H3 | | | | | | | | | | | | | 2.5 |
| E510-403-H3F | | | | | | | | | | | | | 2.5 |
| E510-405-H3F | | | | | | | | | | | | | 2.5 |

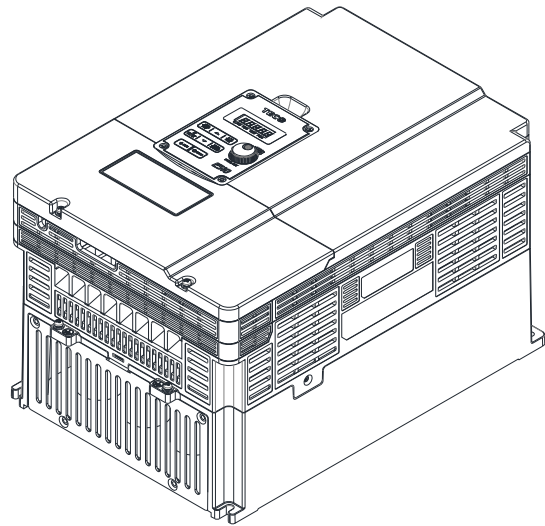
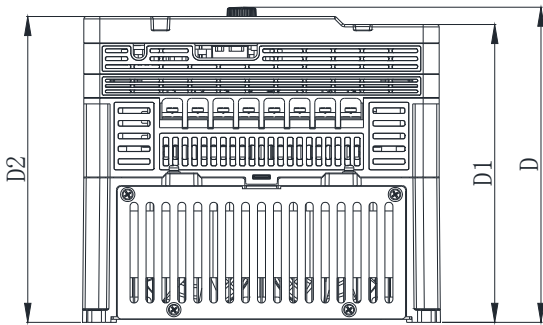
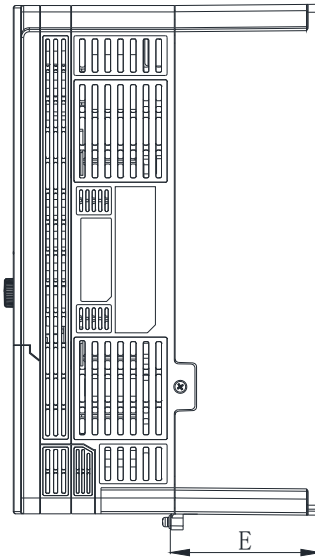
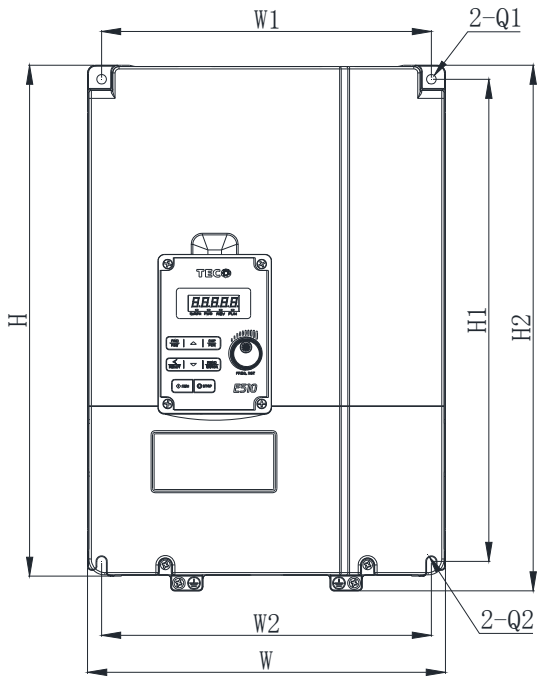
Frame3 (IP20) (三相：200V 7.5~10HP；400V 7.5~15HP)



單位：mm(inch)

| 型號 | 尺寸 | | | | | | | | | | | 重量 (Kg) | |
|--------------|--------|--------|--------|---------|--------|---------|--------|--------|--------|--------|--------|------------|-----|
| | W | W1 | W2 | H | H1 | H2 | D | D1 | D2 | E | Q1 | | Q2 |
| E510-208-H3 | | | | | | | | | | | | | 6.5 |
| E510-210-H3 | | | | | | | | | | | | | 6.5 |
| E510-408-H3 | | | | | | | | | | | | | 6.5 |
| E510-410-H3 | 186.9 | 175 | 176 | 260.9 | 249.8 | 273 | 197.2 | 184 | 189 | 76.7 | 4.5 | 4.5 | 6.5 |
| E510-415-H3 | (7.36) | (6.89) | (6.93) | (10.27) | (9.83) | (10.75) | (7.76) | (7.24) | (7.44) | (3.02) | (0.18) | (0.18) | 6.5 |
| E510-408-H3F | | | | | | | | | | | | | 6.7 |
| E510-410-H3F | | | | | | | | | | | | | 6.7 |
| E510-415-H3F | | | | | | | | | | | | | 6.7 |

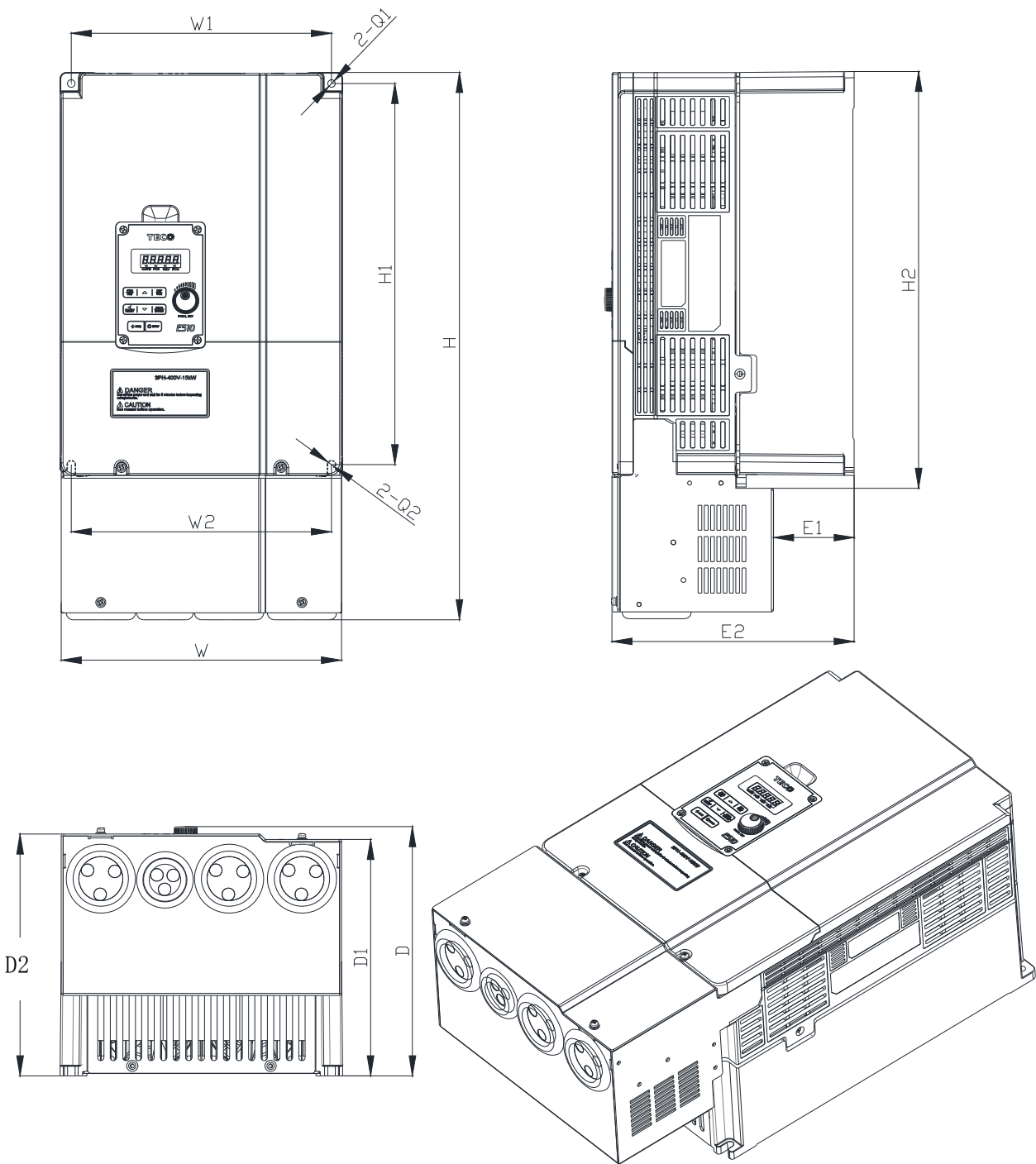
Frame4 (IP20) (三相：200V 15~20HP； 400V 20~25HP)



單位：mm(inch)

| 型號 | 尺寸 | | | | | | | | | | | | 重量 (Kg) | |
|-------------|--------|--------|--------|---------|---------|---------|-------|--------|--------|-------|--------|--------|---------|------|
| | W | W1 | W2 | H | H1 | H2 | D | D1 | D2 | E | Q1 | Q2 | | |
| E510-215-H3 | | | | | | | | | | | | | | 10.1 |
| E510-220-H3 | 224.6 | 207 | 207 | 321.6 | 303.5 | 330.9 | 200.7 | 187.5 | 192.5 | 94 | 6 | 6 | 10.4 | |
| E510-420-H3 | (8.84) | (8.15) | (8.15) | (12.66) | (11.95) | (13.03) | (7.9) | (7.38) | (7.58) | (3.7) | (0.24) | (0.24) | 10.5 | |
| E510-425-H3 | | | | | | | | | | | | | 10.5 | |

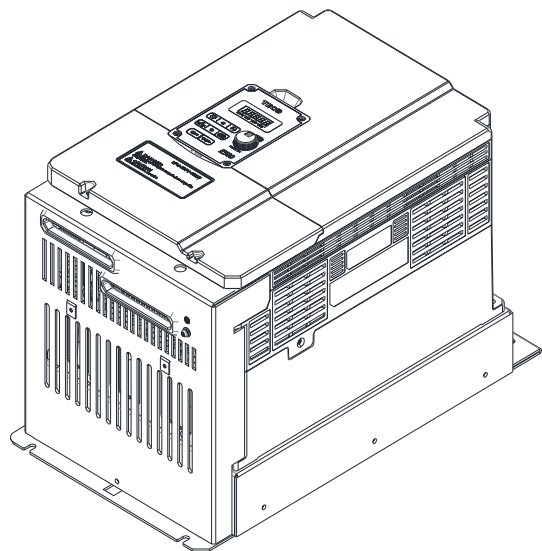
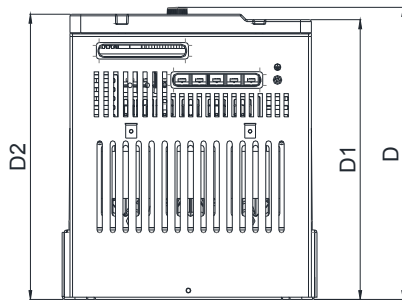
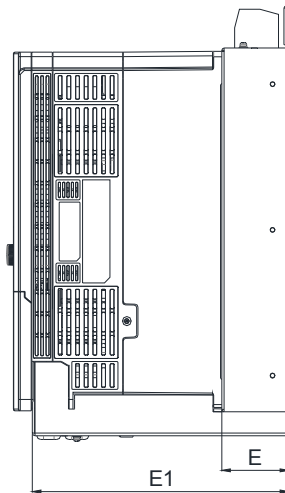
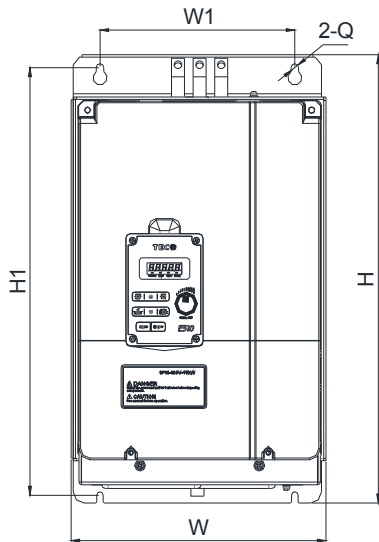
Frame4 (IP20) (内建 EMC 濾波器) (三相：400V 20~25HP)



單位：mm(inch)

| 型號 | 尺寸 | | | | | | | | | | | | | 重量 (Kg) |
|--------------|--------|--------|--------|---------|---------|---------|-------|--------|--------|--------|--------|--------|--------|---------|
| | W | W1 | W2 | H | H1 | H2 | D | D1 | D2 | E1 | E2 | Q1 | Q2 | |
| E510-420-H3F | 224.6 | 207 | 207 | 436 | 303.5 | 330.9 | 200.7 | 187.5 | 192.5 | 64 | 192.5 | 6 | 6 | 13.7 |
| E510-425-H3F | (8.84) | (8.15) | (8.15) | (17.17) | (11.95) | (13.03) | (7.9) | (7.38) | (7.58) | (2.52) | (7.58) | (0.24) | (0.24) | 13.7 |

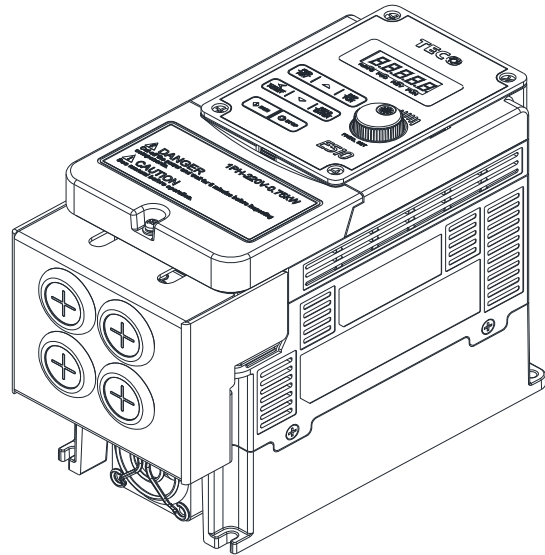
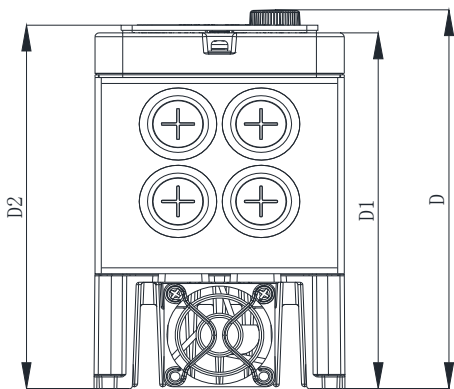
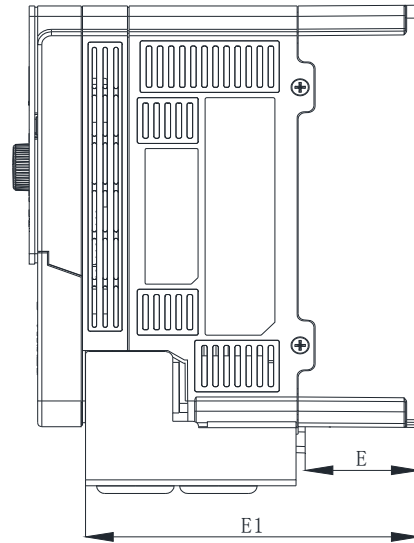
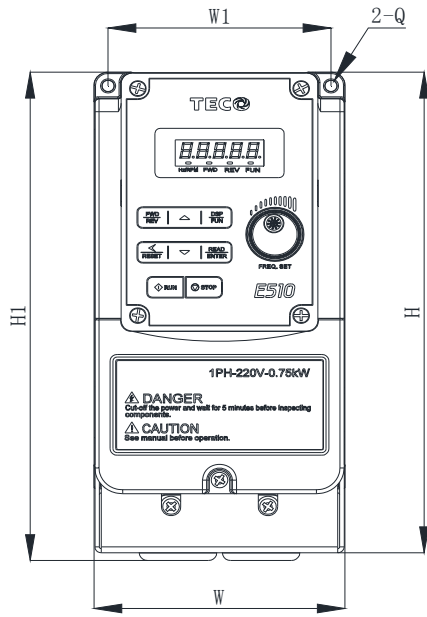
Frame4(IP20)(内建 EMC 滤波器) (三相：400V 20~25HP)



單位：mm(inch)

| 型號 | 尺寸 | | | | | | | | | | 重量 (kg) |
|----------------|--------|--------|---------|---------|---------|--------|---------|--------|--------|--------|------------|
| | W | W1 | H | H1 | D | D1 | D2 | E | E1 | Q | |
| E510-420-H3FPT | 235.6 | 180 | 400 | 381.5 | 263 | 249.5 | 254.5 | 62 | 237 | 7 | 13.8 |
| E510-425-H3FPT | (9.28) | (7.09) | (15.75) | (15.02) | (10.35) | (9.82) | (10.02) | (2.44) | (9.33) | (0.28) | 13.8 |

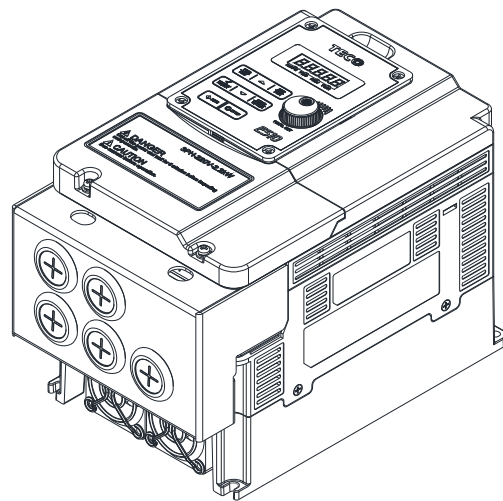
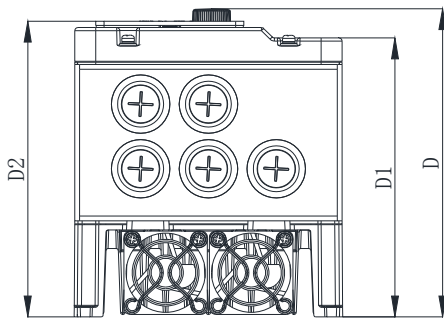
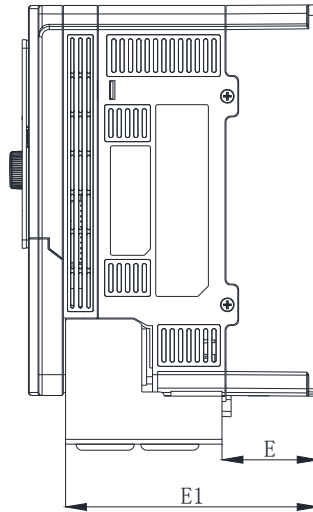
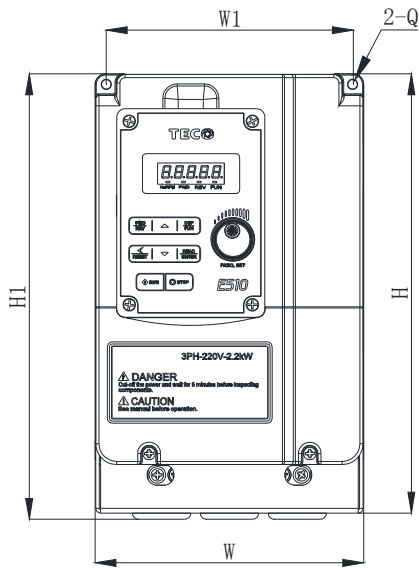
Frame1(NEMA1)(單/三相 :200V 0.5~1HP ; 單相 :200V 0.5~1HP ; 三相 :200V 2HP ;400V 1~2HP)



單位：mm(inch)

| 型號 | 尺寸 | | | | | | | | | | 重量 (Kg) | |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------|-----|
| | W | W1 | H | H1 | D | D1 | D2 | E | E1 | Q | | |
| E510-2P5-H | | | | | | | | | | | | 1.8 |
| E510-201-H | | | | | | | | | | | | 1.8 |
| E510-2P5-H1F | | | | | | | | | | | | 1.9 |
| E510-201-H1F | | | | | | | | | | | | 1.9 |
| E510-202-H3 | 90.6 | 80.5 | 186.2 | 189.2 | 149 | 137.8 | 141 | 41.2 | 120.5 | 4.33 | | 1.9 |
| E510-401-H3 | (3.57) | (3.17) | (7.33) | (7.45) | (5.87) | (5.42) | (5.55) | (1.62) | (4.74) | (0.17) | | 1.9 |
| E510-402-H3 | | | | | | | | | | | | 1.9 |
| E510-401-H3F | | | | | | | | | | | | 1.9 |
| E510-402-H3F | | | | | | | | | | | | 1.9 |

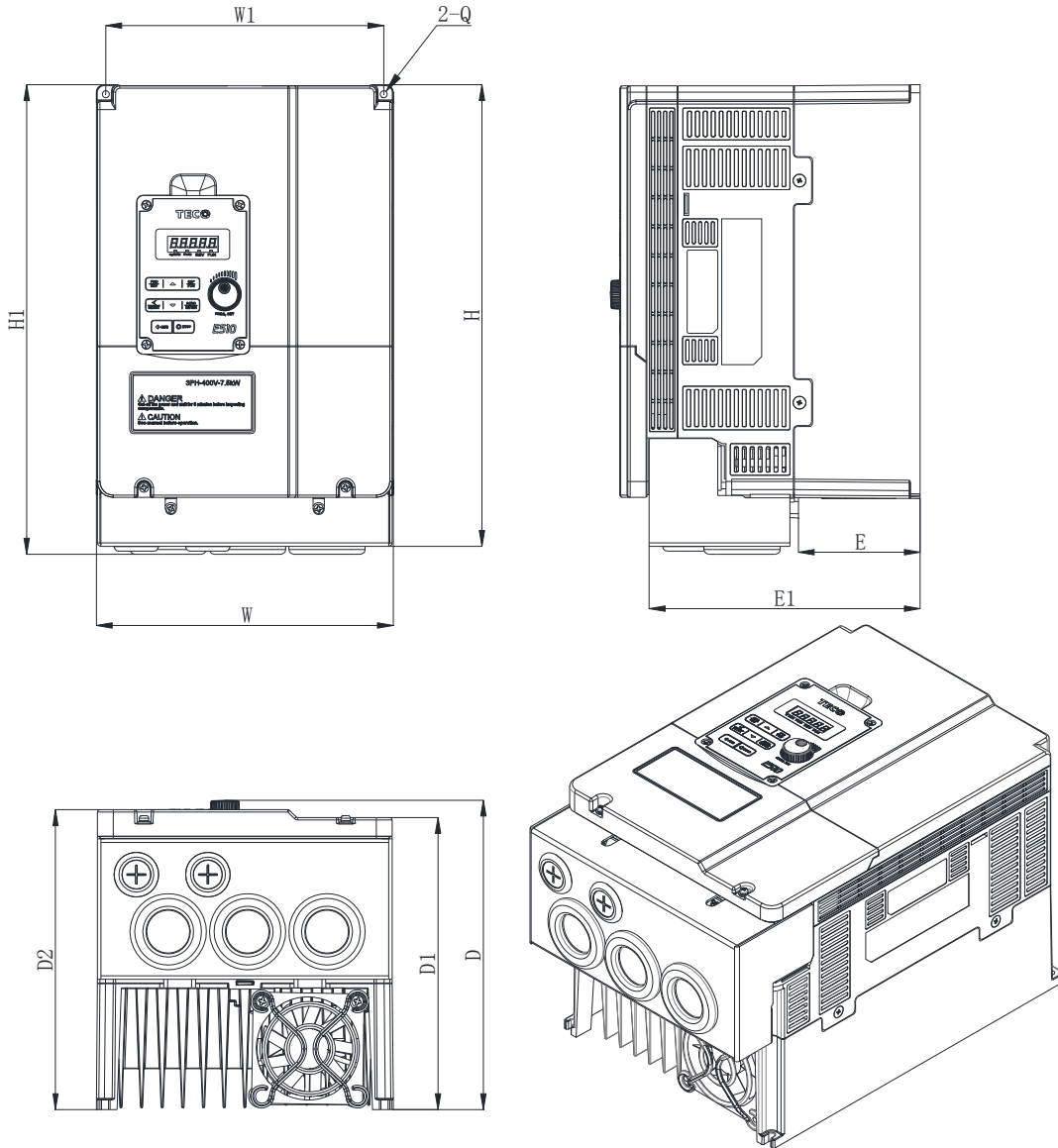
Frame2(NEMA1)(單/三相：200V 2~3HP；單相：200V 2~3HP；三相：200V 5HP；400V 3~5HP)



單位：mm(inch)

| 型號 | 尺寸 | | | | | | | | | | 重量 (Kg) | |
|--------------|-----------------|---------------|-----------------|-----------------|---------------|-----------------|-----------------|----------------|-----------------|---------------|------------|-----|
| | W | W1 | H | H1 | D | D1 | D2 | E | E1 | Q | | |
| E510-202-H | | | | | | | | | | | | 2.7 |
| E510-203-H | | | | | | | | | | | | 2.7 |
| E510-202-H1F | | | | | | | | | | | | 2.8 |
| E510-203-H1F | | | | | | | | | | | | 2.8 |
| E510-205-H3 | 128.7 (5.06) | 118 (4.65) | 210.6 (8.29) | 213.6 (8.41) | 150 (5.91) | 133.8 (5.27) | 141.8 (5.58) | 46.1 (1.81) | 121.1 (4.77) | 4.5 (0.18) | | 2.8 |
| E510-403-H3 | | | | | | | | | | | | 2.8 |
| E510-405-H3 | | | | | | | | | | | | 2.8 |
| E510-403-H3F | | | | | | | | | | | | 2.8 |
| E510-405-H3F | | | | | | | | | | | | 2.8 |

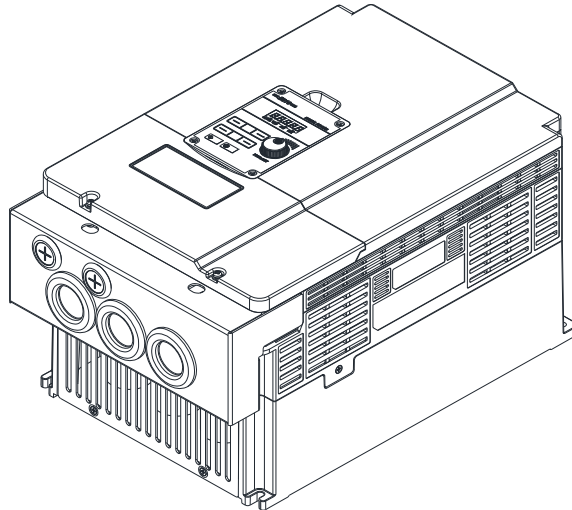
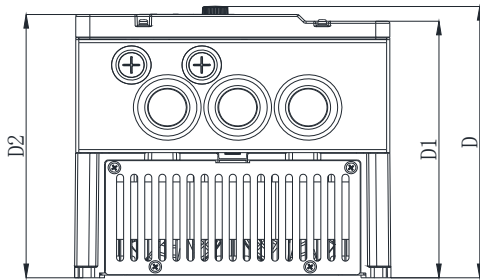
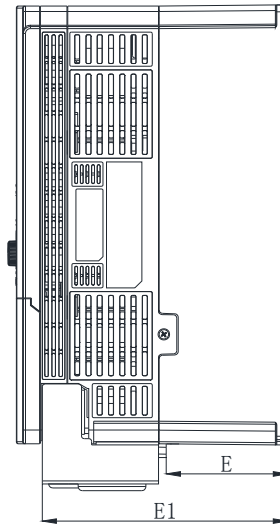
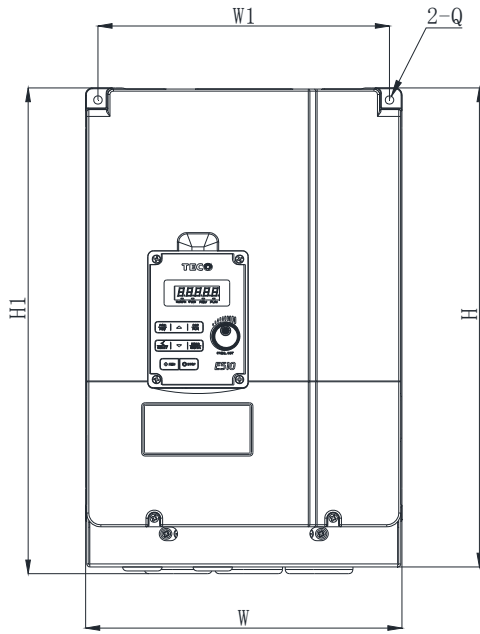
Frame3(NEMA1)(三相：200V 7.5~10HP；400V 7.5~15HP)



單位：mm(inch)

| 型號 | 尺寸 | | | | | | | | | | 重量 (Kg) | |
|--------------|--------|--------|---------|---------|--------|--------|--------|--------|--------|--------|------------|-----|
| | W | W1 | H | H1 | D | D1 | D2 | E | E1 | Q | | |
| E510-208-H3 | | | | | | | | | | | | 6.9 |
| E510-210-H3 | | | | | | | | | | | | 6.9 |
| E510-408-H3 | | | | | | | | | | | | 6.9 |
| E510-410-H3 | 187.5 | 176 | 291 | 293.5 | 197 | 184 | 189 | 76.7 | 170.6 | 4.5 | 6.9 | |
| E510-415-H3 | (7.38) | (6.92) | (11.47) | (11.56) | (7.76) | (7.24) | (7.44) | (3.02) | (6.72) | (0.18) | 6.9 | |
| E510-408-H3F | | | | | | | | | | | | 7.1 |
| E510-410-H3F | | | | | | | | | | | | 7.1 |
| E510-415-H3F | | | | | | | | | | | | 7.1 |

Frame4(NEMA1)(三相 : 200V 15~20HP ; 400V 20~25HP)



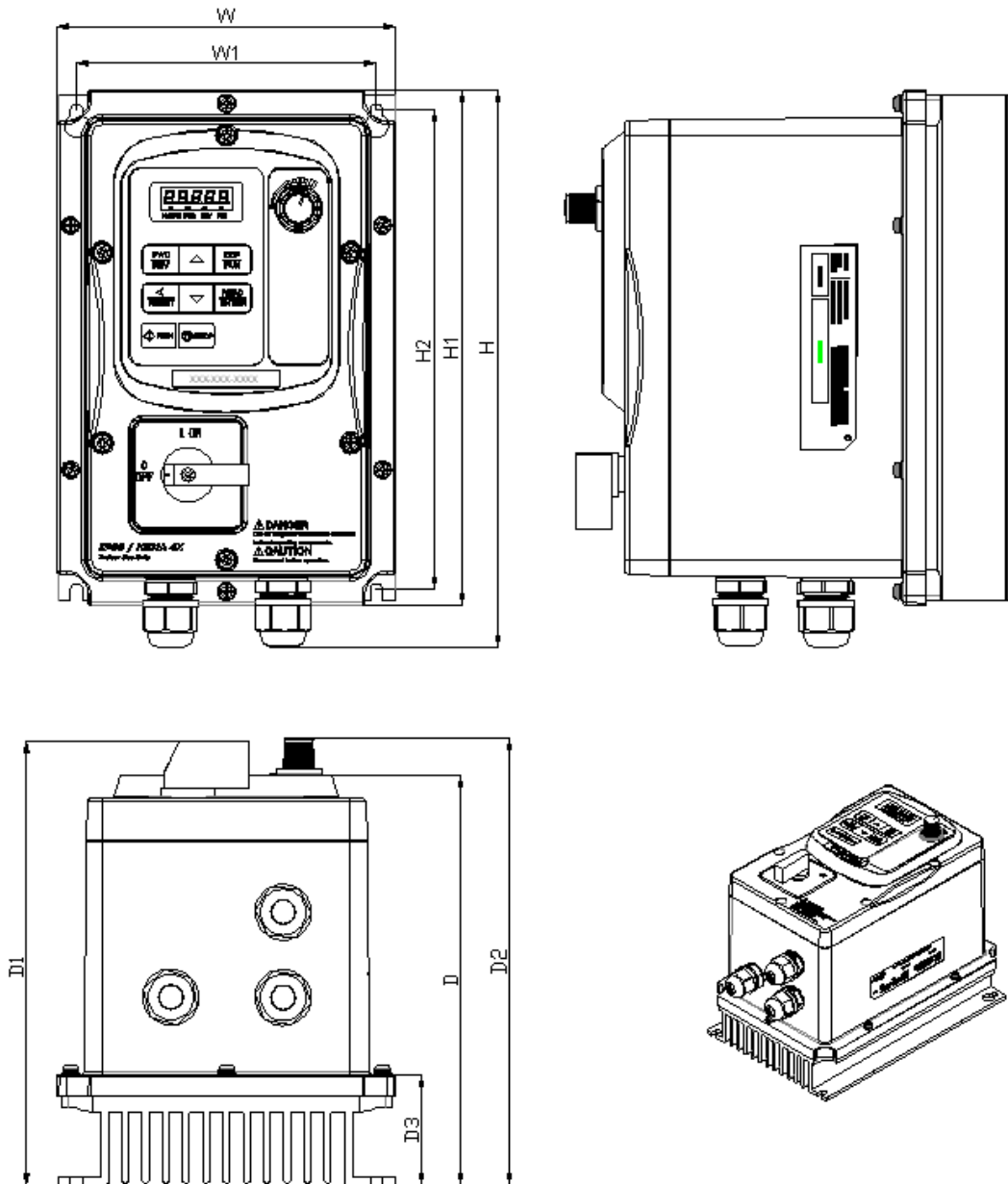
單位 : mm(inch)

| 型號 | 尺寸 | | | | | | | | | | 重量 (Kg) | |
|-------------|--------|--------|---------|---------|-------|--------|--------|--------|--------|--------|------------|------|
| | W | W1 | H | H1 | D | D1 | D2 | E | E1 | Q | | |
| E510-215-H3 | | | | | | | | | | | | 10.5 |
| E510-220-H3 | 224.6 | 207 | 350.1 | 355.1 | 200.7 | 187.5 | 192.5 | 86 | 174 | 4.5 | | 10.5 |
| E510-420-H3 | (8.84) | (8.15) | (13.78) | (13.98) | (7.9) | (7.38) | (7.58) | (3.89) | (6.85) | (0.18) | | 10.9 |
| E510-425-H3 | | | | | | | | | | | | 11 |

2.5.2 IP66/NEMA4X 型產品外形尺寸

Frame 1 (IP66/NEMA4X)

(單/三相：200V 0.5~1HP；單相：200V 0.5~1HP；三相：200V 2HP；400V 1~2HP)

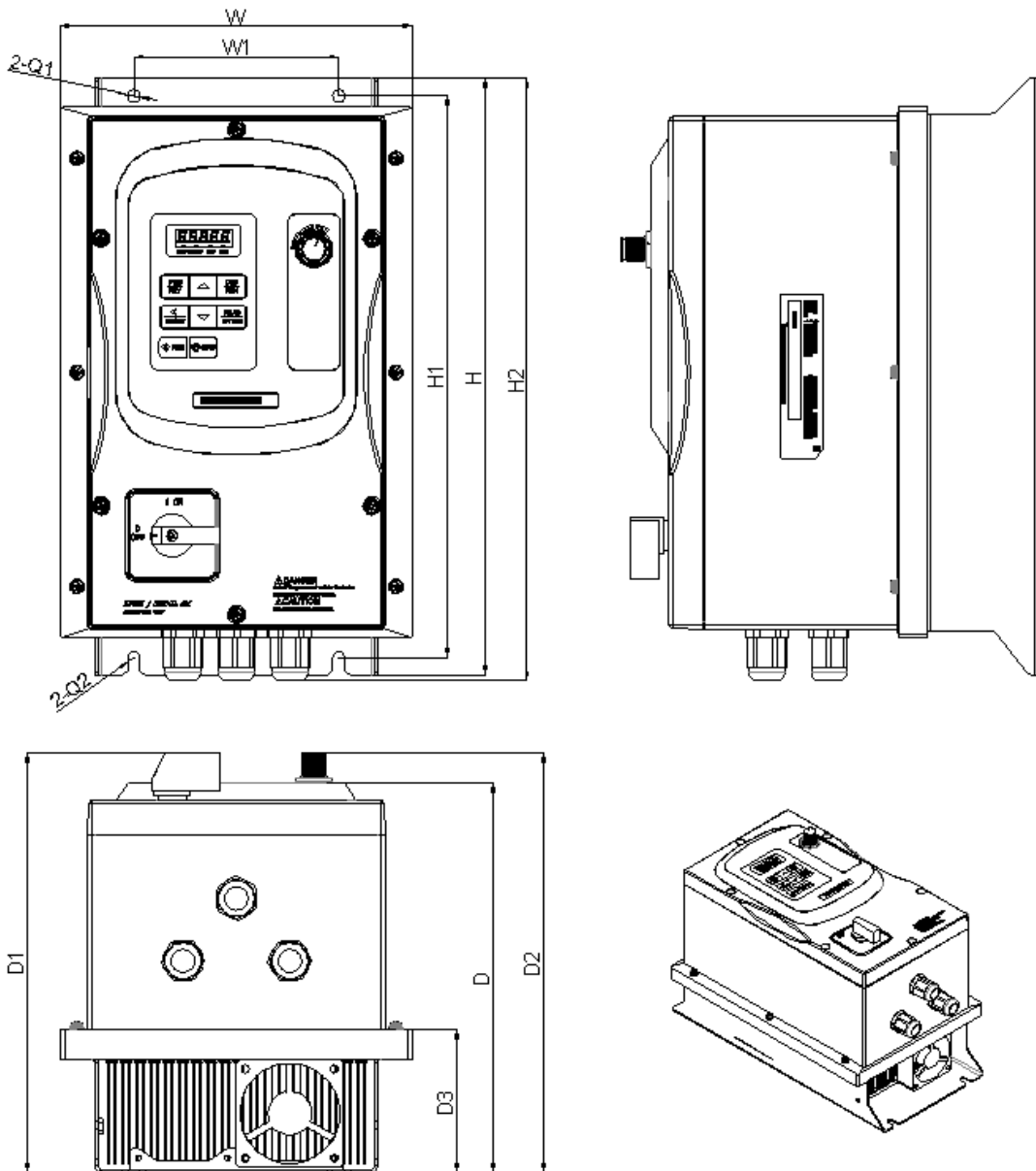


單位：mm(inch)

| 型號 | 尺寸 | | | | | | | | | | | 重量 (Kg) | |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------------|--------|--------|----------------|---------------|---------------|----------------|-----|
| | W | W1 | H | H1 | H2 | D | D1 | D2 | D3 | Q1 | Q2 | | Q3 |
| E510-2P5-HN4R | 150.8 (5.94) | 133.3 (5.25) | 248.7 (9.79) | 230.2 (9.06) | 214.2 (8.43) | 183 (7.20) | 200 | 200 | 49.5 (1.95) | 5.4 (0.21) | 5.4 (0.21) | 10.6 (0.42) | 2.9 |
| E510-2P5-H1FN4S | | | | | | | (7.87) | (7.87) | | | | | |
| E510-201-HN4R | | | | | | | 200 | 200 | | | | | |
| E510-201-H1FN4S | | | | | | | (7.87) | (7.87) | | | | | |
| E510-401-H3N4 | | | | | | | 200 | 200 | | | | | |
| E510-401-H3FN4S | | | | | | | (7.87) | (7.87) | | | | | |
| E510-402-H3N4 | | | | | | | 200 | 200 | | | | | |
| E510-402-H3FN4S | | | | | | | (7.87) | (7.87) | | | | | |

Frame 2 (IP66/NEMA4X)

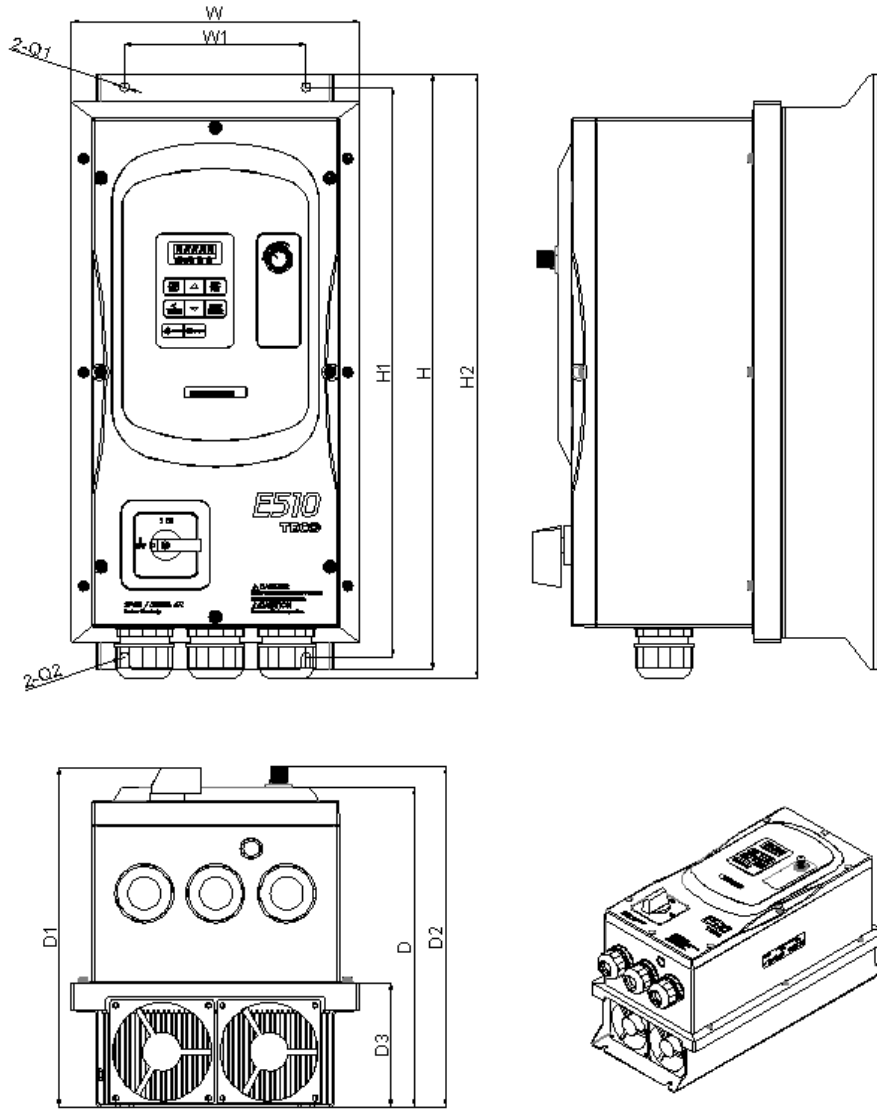
(單/三相：200V 2~3HP；單相：200V 2~3HP；三相：200V5HP；400V 3~5HP；)



單位：mm(inch)

| 型號 | 尺寸 | | | | | | | | | | | 重量 (kg) |
|-----------------|---------------|---------------|----------------|----------------|------------------|-----------------|-----------------|-----------------|----------------|-------------|-------------|------------|
| | W | W1 | H | H1 | H2 | D | D1 | D2 | D3 | Q1 | Q2 | |
| E510-202-HN4R | 198 (7.80) | 115 (4.53) | 335 (13.19) | 315 (12.40) | 337.9 (13.30) | 218.4 (8.60) | | 235.2 (9.26) | 79.8 (3.14) | 7 (0.28) | 7 (0.28) | 5.98 |
| E510-202-H1FN4S | | | | | | | 235.2 (9.26) | 235.2 (9.26) | | | | |
| E510-203-HN4R | | | | | | | | 235.2 (9.26) | | | | |
| E510-203-H1FN4S | | | | | | | 235.2 (9.26) | 235.2 (9.26) | | | | |
| E510-205-H3N4 | | | | | | | | | | | | |
| E510-403-H3N4 | | | | | | | | | | | | |
| E510-403-H3FN4S | | | | | | | 235.2 (9.26) | 235.2 (9.26) | | | | |
| E510-405-H3N4 | | | | | | | | | | | | |
| E510-405-H3FN4S | | | | | | | 235.2 (9.26) | 235.2 (9.26) | | | | |

Frame 3 (IP66/NEMA4) (三相：200V 8~20HP； 400V 8~25HP)

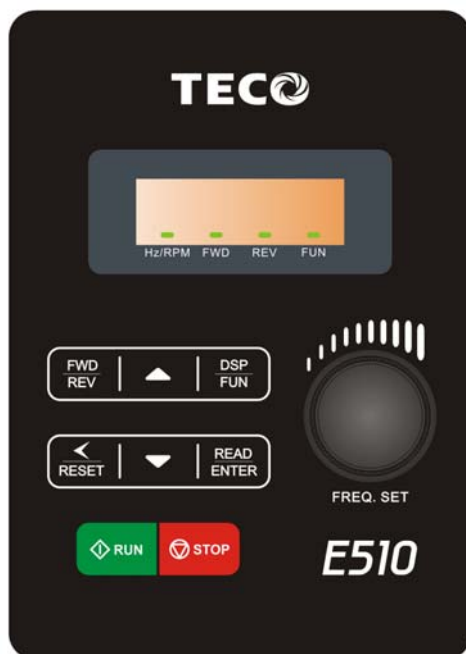


單位：mm(inch)

| 型號 | 尺寸 | | | | | | | | | | 重量 (kg) | |
|-----------------|-----------------|---------------|----------------|----------------|------------------|-----------------|------------------|------------------|--------------|-------------|-------------|-------|
| | W | W1 | H | H1 | H2 | D | D1 | D2 | D3 | Q1 | | Q2 |
| E510-208-H3N4 | 222.8 (8.77) | 140 (5.51) | 460 (18.11) | 440 (17.32) | 466.3 (18.36) | 246.6 (9.71) | 266.5 (10.49) | 263.5 (10.37) | 96 (3.78) | 7 (0.28) | 7 (0.28) | 12.68 |
| E510-210-H3N4 | | | | | | | | | | | | |
| E510-215-H3N4 | | | | | | | | | | | | |
| E510-220-H3N4 | | | | | | | | | | | | |
| E510-408-H3N4 | | | | | | | | | | | | |
| E510-408-H3FN4S | | | | | | | | | | | | |
| E510-410-H3N4 | | | | | | | | | | | | |
| E510-410-H3FN4S | | | | | | | | | | | | |
| E510-415-H3N4 | | | | | | | | | | | | |
| E510-415-H3FN4S | | | | | | | | | | | | |
| E510-420-H3N4 | | | | | | | | | | | | |
| E510-425-H3N4 | | | | | | | | | | | | |

第 3 章 軟體索引

3.1 面板功能說明



| 類型 | 名稱 | 功能 |
|---------------|------------------------------|---|
| 顯示 | 主顯示區 (五位 8 段數碼管) 狀態顯示區 | 顯示頻率、參數、以及電壓、電流、溫度及異常等 |
| | | Hz/RPM：頻率信號指示燈 FWD：當變頻器處於正轉狀態時，此指示燈被點亮 (停機時閃爍，運轉後則處於長亮狀態) REV：當變頻器處於反轉狀態時，此指示燈被點亮 (停機時閃爍，運轉後則處於長亮狀態) FUN：當面板顯示參數功能表時，此指示燈被點亮 |
| 旋鈕 | 面板旋鈕 | 可設定頻率 |
| 按鍵 (8 個按鍵) | RUN 鍵 | RUN 鍵：可令變頻器運轉 |
| | STOP 鍵 | STOP 鍵：可令變頻器停止運轉 |
| | FWD/REV 鍵 (雙功能鍵) | FWD 鍵：切換至正轉 REV 鍵：切換至反轉 |
| | DSP/FUN 鍵 (雙功能鍵) | DSP 鍵：用於卻換顯示畫面 FUN 鍵：用於查看參數畫面 |
| | READ/ENTER 鍵 (雙功能鍵) | READ 鍵： ENTER 鍵： ①從參數設定畫面進入參數值畫面，例如：在 00- 00 畫面，按下此鍵，則顯示 0 (參數值)。 ②修改參數或參數值確認時使用 |
| | </RESET 鍵 (雙功能鍵) | “<”左移位鍵：變更參數或參數值時使用 |
| | ▲鍵 | 用於翻查代碼或增加參數值。 |
| ▼鍵 | 用於翻查代碼或減小參數值。 | |

3.2 參數一覽表

| 參數群組 | 名 稱 |
|-------|----------------|
| 群組 00 | 基本功能群組 |
| 群組 01 | V/F 控制功能群組 |
| 群組 02 | 馬達參數群組 |
| 群組 03 | 外部端子數位輸入輸出功能群組 |
| 群組 04 | 外部端子類比輸入輸出功能群組 |
| 群組 05 | 多段速功能群組 |
| 群組 06 | 自動程式運轉功能群組 |
| 群組 07 | 啟動停止控制功能群組 |
| 群組 08 | 保護功能群組 |
| 群組 09 | 通訊功能群組 |
| 群組 10 | PID 功能群組 |
| 群組 11 | 輔助功能群組 |
| 群組 12 | 監視功能群組 |
| 群組 13 | 維護功能群組 |
| 群組 14 | PLC 設定群組 |
| 群組 15 | PLC 監控群組 |

| 參數屬性 | |
|------|---------------------------------|
| *1 | 運轉中可修改的參數 |
| *2 | 通訊中不可修改的參數 |
| *3 | 在做出廠設定時，此參數的值(用戶設定的值)不會恢復為出廠預設值 |
| *4 | 參數唯讀不可修改 |
| *5 | 軟體 V1.1 以上適用 |
| *6 | 軟體 V1.3 以上適用 |
| *7 | 軟體 V1.7 以上適用 |

| 群組 00-基本功能群組 | | | | | |
|--------------|-------------|-------------------|-------------|-----|------|
| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
| 00-00 | 控制模式 | 0：V/F 模式 | 0 | - | |
| | | 1：向量模式 | | | |
| 00-01 | 預留 | | | | |
| 00-02 | 主運轉命令來源選擇 | 0：按鍵面板控制 | 1 | - | |
| | | 1：外部端子控制 | | | |
| | | 2：通訊控制 | | | |
| | | 3：PLC | | | |
| 00-03 | 副運轉命令來源選擇 | 0：按鍵面板控制 | 0 | - | |
| | | 1：外部端子控制 | | | |
| | | 2：通訊控制 | | | |
| 00-04 | 多功能端子運轉模式選擇 | 0：正轉/停止-反轉/停止 | 0 | - | |
| | | 1：運轉/停止-正轉/反轉 | | | |
| | | 2：3 線制運轉/停止 | | | |
| 00-05 | 主頻率命令來源選擇 | 0：按鍵面板上下鍵設定 | 2 | - | |
| | | 1：按鍵面板旋鈕設定 | | | |
| | | 2：外部端子 AI1 設定 | | | |
| | | 3：外部端子 AI2 設定 | | | |
| | | 4：外部端子 UP/DOWN 設定 | | | |
| | | 5：通訊控制設定 | | | |
| | | 6：PID 設定 | | | |
| | | 7：脈衝輸入調速 | | | |
| 00-06 | 副頻率命令來源選擇 | 0：按鍵面板上下鍵設定 | 4 | - | |
| | | 1：按鍵面板旋鈕設定 | | | |
| | | 2：外部端子 AI1 設定 | | | |
| | | 3：外部端子 AI2 設定 | | | |
| | | 4：外部端子 UP/DOWN 設定 | | | |
| | | 5：通訊控制設定 | | | |
| | | 6：PID 設定 | | | |
| | | 7：脈衝輸入調速 | | | |
| 00-07 | 頻率源組合模式選擇 | 0：主頻率源與副頻率源切換 | 0 | - | |
| | | 1：主頻率源+副頻率源 | | | |
| 00-08 | 通訊頻率命令 | 0.00~599.00 | 0.00 | Hz | *4 |
| 00-09 | 頻率命令記憶模式 | 0：不記憶關電前通訊頻率命令 | 0 | - | |
| | | 1：記憶關電前通訊頻率命令 | | | |
| 00-10 | 停機時初始頻率命令模式 | 0：依目前頻率命令 | 0 | - | |
| | | 1：頻率命令歸零 | | | |
| | | 2：依參數 00-11 設定值 | | | |
| 00-11 | 停機時初始頻率命令設定 | 0.00~599.00 | 50.00/60.00 | Hz | |
| 00-12 | 頻率上限 | 0.01~599.00 | 50.00/60.00 | Hz | |
| 00-13 | 頻率下限 | 0.00~598.99 | 0.00 | Hz | |
| 00-14 | 加速時間 1 | 0.1~3600.0 | 10.0 | Sec | *1 |
| 00-15 | 減速時間 1 | 0.1~3600.0 | 10.0 | Sec | *1 |
| 00-16 | 加速時間 2 | 0.1~3600.0 | 10.0 | Sec | *1 |
| 00-17 | 減速時間 2 | 0.1~3600.0 | 10.0 | Sec | *1 |
| 00-18 | 寸動頻率 | 0.00~599.00 | 2.00 | Hz | *1*7 |
| 00-19 | 寸動加速時間 | 0.1~3600.0 | 0.5 | Sec | *1*7 |
| 00-20 | 寸動減速時間 | 0.1~3600.0 | 0.5 | Sec | *1*7 |

| 群組 01-V/F 控制功能群組 | | | | | |
|------------------|------------------|--|----------------|-----|----|
| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
| 01-00 | V/F 曲線選擇 | 0~18 | 0/9 | - | |
| 01-01 | V/F 最大輸出電壓 | 200V : 170.0~264.0 400V : 323.0~528.0 | 依據 13-08 決定 | Vac | |
| 01-02 | 基底頻率 | 0.20 ~ 599.00 | 50.00/60.00 | Hz | |
| 01-03 | 最大輸出電壓比 | 0.0 ~ 100.0 | 100.0 | % | |
| 01-04 | 中間輸出頻率 2 | 0.10 ~ 599.00 | 25.00/30.00 | Hz | |
| 01-05 | 中間輸出電壓比 2 | 0.0 ~ 100.0 | 50.0 | % | |
| 01-06 | 中間輸出頻率 1 | 0.10 ~ 599.00 | 10.00/12.00 | Hz | |
| 01-07 | 中間輸出電壓比 1 | 0.0 ~ 100.0 | 20.0 | % | |
| 01-08 | 最小輸出頻率 | 0.10 ~ 599.00 | 0.50/0.60 | Hz | |
| 01-09 | 最小輸出電壓比 | 0.0 ~ 100.0 | 1 | % | |
| 01-10 | 轉矩補償增益(V/F 曲線修正) | 0 ~ 10.0 | 0.0 | % | *1 |
| 01-11 | V/F 啟動頻率 | 0.00~10.00 | 0.00 | Hz | |
| 01-12 | 滑差補償低通濾波時間 | 0.05~10.00 | 0.10 | S | |
| 01-13 | V/F 模式選擇 | 0 : 模式 0 1 : 模式 1 | 依機種別 | - | *7 |

| 群組 02-馬達參數群組 | | | | | |
|---------------------|-------------|--|-------------|----------|------|
| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
| 02-00 | 馬達空載電流 | 0~【(參數 02-01) -0.1】 | - | Amps(AC) | *3 |
| 02-01 | 馬達額定電流(OL1) | 0.2~100 | - | A | *3 |
| 02-02 | 馬達額定滑差補償 | 0.0 ~ 200.0 | 0.0 | % | *1 |
| 02-03 | 馬達額定轉速 | 0~39000 | - | Rpm | *3 |
| 02-04 | 馬達額定電壓 | 200V : 170.0~264.0 400V : 323.0~528.0 | 220.0/440.0 | V | |
| 02-05 | 馬達額定功率 | 0.1~37.0 | - | KW | |
| 02-06 | 馬達額定頻率 | 0~599.0 | 50.0/60.0 | Hz | |
| 02-07 | 馬達級數 | 2 ~16 | 4 | | |
| 02-08 ~ 02-13 | 預留 | | | | |
| 02-14 | 馬達參數自動調校 | 0 : 不執行 1 : 執行馬達參數靜態自學習 | 0 | | |
| 02-15 | 定子電阻增益 | ---- | | | *3*4 |
| 02-16 | 轉子電阻增益 | ---- | | | *3*4 |

| 群組 03-外部端子數位輸入輸出功能群組 | | | | | |
|----------------------|---------------|-----------------------------|------|----|----|
| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
| 03-00 | 多功能端子 S1 功能設定 | 0 : 正轉/停止 | 0 | - | |
| 03-01 | 多功能端子 S2 功能設定 | 1 : 反轉/停止 | 1 | - | |
| 03-02 | 多功能端子 S3 功能設定 | 2 : 多段速設定位元 1 | 2 | - | |
| 03-03 | 多功能端子 S4 功能設定 | 3 : 多段速設定位元 2 | 3 | - | |
| 03-04 | 多功能端子 S5 功能設定 | 4 : 多段速設定位元 3 | 4 | - | |
| 03-05 | 多功能端子 S6 功能設定 | 5 : 多段速設定位元 4 6 : 寸動正轉指令 | 17 | - | |

群組 03-外部端子數位輸入輸出功能群組

| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
|-------------------------|----------------|----------------------------------|-------|-------|----|
| | | 7：寸動反轉指令 | | | |
| | | 8：Up 增頻率指令 | | | |
| | | 9：Down 減頻率指令 | | | |
| | | 10：加/減速時間 2 | | | |
| | | 11：加/減速禁止 | | | |
| | | 12：主/副運轉命令切換 | | | |
| | | 13：主/副頻率命令切換 | | | |
| | | 14：緊急停止(減速到零停止) | | | |
| | | 15：遮斷停止(自由運轉停止) | | | |
| | | 16：PID 功能禁止 | | | |
| | | 17：故障復歸(Reset) | | | |
| | | 18：自動程式運轉 | | | |
| | | 19：速度搜尋 | | | |
| | | 20：節能運行(僅 V/F) | | | |
| | | 21：PID 積分器歸零 | | | |
| | | 22：計數器觸發信號輸入 | | | |
| | | 23：計數器歸零指令 | | | |
| | | 24：PLC 應用 | | | |
| 25：脈衝輸入-脈衝寬度測量 (S3) | *6 | | | | |
| 26：脈衝輸入-脈衝頻率測量 (S3) | *6 | | | | |
| 27：電源電壓偵測電能回升功能 | | | | | |
| 28：火災模式輸入 (軟體 V1.1 版以上) | *5 | | | | |
| 03-06 | up/down 頻率幅寬設定 | 0.00~5.00 | 0.00 | Hz | |
| 03-07 | up/down 頻率保持選擇 | 0：當使用增/減頻率指令時，當變頻器停止運行時設定的頻率將被保持 | 0 | - | |
| | | 1：設定的頻率將被歸至 0 Hz | | | |
| | | 2：設定的頻率將被保持，停機時增/減頻率功能有效 | | | |
| 03-08 | S1~S6 信號確認掃描時間 | 1~200 | 10 | 2mSec | |
| 03-09 | S1~S5 接點類型選擇 | xxxx0：S1 常開接點 xxx1：S1 常閉接點 | 00000 | - | |
| | | xxx0x：S2 常開接點 xxx1x：S2 常閉接點 | | | |
| | | xx0xx：S3 常開接點 xx1xx：S3 常閉接點 | | | |
| | | x0xxx：S4 常開接點 x1xxx：S4 常閉接點 | | | |
| | | 0xxxx：S5 常開接點 1xxxx：S5 常閉接點 | | | |
| 03-10 | S6 接點類型選擇 | xxxx0：S6 常開接點 xxxx1：S6 常閉接點 | 00000 | - | |
| 03-11 | 繼電器 RY1 | 0：運轉中 | 0 | - | |
| 03-12 | 繼電器 RY2 | 1：故障指示 | 1 | - | |
| | | 2：設定頻率到達 | | | |
| | | 3：任意頻率到達(03-13±03-14) | | | |
| | | 4：頻率檢出 1 (> 03-13) | | | |
| | | 5：頻率檢出 2 (< 03-13) | | | |
| | | 6：自動再啟動 | | | |
| | | 7：瞬停動作 | | | |
| | | 8：緊急停止 | | | |
| | | 9：遮斷停止 | | | |
| | | 10：馬達超載保護(OL1) | | | |

群組 03-外部端子數位輸入輸出功能群組

| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
|-------|----------------|--------------------------|------|-----|----|
| | | 11：變頻器超載保護(OL2) | | | |
| | | 12：過轉矩檢出(OL3) | | | |
| | | 13：電流到達(03-15~16) | | | |
| | | 14：機械煞車控制功能 (03-17~18) | | | |
| | | 15：PID 回授斷線檢出 | | | |
| | | 16：設定計數值到達指示(3-22) | | | |
| | | 17：指定計數值到達指示(3-22~23) | | | |
| | | 18：PLC 狀態指示(00-02) | | | |
| | | 19：PLC 控制 | | | |
| | | 20：零速功能 | | | *6 |
| | | 21：低電流檢出 | | | |
| 03-13 | 任意頻率到達設定 | 0.00~599.00 | 0.00 | Hz | *1 |
| 03-14 | 頻率輸出偵測範圍(±) | 0.00~30.00 | 2.00 | Hz | *1 |
| 03-15 | 電流到達準位 | 0.1~999.9 | 0.1 | A | |
| 03-16 | 電流到達檢測延遲時間 | 0.1~10.0 | 0.1 | Sec | |
| 03-17 | 機械煞車釋放準位設定 | 0.00~20.00 | 0.00 | Hz | |
| 03-18 | 機械煞車動作準位設定 | 0.00~20.00 | 0.00 | Hz | |
| 03-19 | 繼電器輸出接點模式 | 0：A 接點(常開) 1：B 接點(常閉) | 0 | - | |
| 03-20 | 內部/外部多功能輸入端子選擇 | 0~63 | 0 | - | |
| 03-21 | 內部多功能輸入端子動作設定 | 0~63 | 0 | - | |
| 03-22 | 設定計數值到達設定 | 0~9999 | 0 | - | |
| 03-23 | 指定計數值到達設定 | 0~9999 | 0 | - | |
| 03-24 | 低電流檢出設定 | 0：無效 1：有效 | 0 | - | |
| 03-25 | 低電流檢出準位 | 5%~100% | 20% | % | |
| 03-26 | 低電流檢出延遲時間 | 0.0~50.0s | 20.0 | Sec | |
| 03-27 | 脈衝輸入頻率 | 0.01~0.20 | 0.1 | kHz | *7 |
| 03-28 | 脈衝頻率倍率設定 | 0.01~9.99 | 1.00 | | *6 |
| 03-29 | 繼電器低電流檢出方式 | 0：僅運轉中檢測 1：上電即檢測 | 0 | | |
| 03-30 | 繼電器低電流檢出準位 | 0~100 | 0 | % | |
| 03-31 | 繼電器低電流檢出時間 | 0.0~50.0 | 0 | Sec | |

群組 04-外部端子類比輸入輸出功能群組

| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
|-------|--------------------------------------|--------------------------------------|------|-------|----|
| 04-00 | AI1 與 AI2 輸入信號種類 | AI1 AI2 | 1 | - | *7 |
| | | 【0】：0~10V (0~20mA) 0~10V (0~20mA) | | | |
| | | 【1】：0~10V (0~20mA) 2~10V (4~20mA) | | | |
| | | 【2】：2~10V (4~20mA) 0~10V (0~20mA) | | | |
| | 【3】：2~10V (4~20mA) 2~10V (4~20mA) | | | | |
| 04-01 | AI1 信號掃描濾波時間 | 1~200 | 50 | 2mSec | |
| 04-02 | AI1 增益值 | 0 ~ 1000 | 100 | % | *1 |
| 04-03 | AI1 偏置值 | 0 ~ 100 | 0 | % | *1 |
| 04-04 | AI1 偏置值正負選擇 | 0：正向 1：負向 | 0 | - | *1 |
| 04-05 | AI1 信號方向控制選擇 | 0：正向 1：負向 | 0 | - | *1 |
| 04-06 | AI2 信號掃描濾波時間 | 1~200 | 50 | 2mSec | |
| 04-07 | AI2 增益值 | 0 ~ 1000 | 100 | % | *1 |
| 04-08 | AI2 偏置值 | 0 ~ 100 | 0 | % | *1 |
| 04-09 | AI2 偏置值正負選擇 | 0：正向 1：負向 | 0 | - | *1 |
| 04-10 | AI2 信號方向控制選擇 | 0：正向 1：負向 | 0 | - | *1 |
| 04-11 | 類比輸出種類選擇 AO | 0：輸出頻率 | 0 | - | *1 |
| | | 1：頻率設定 | | | |
| | | 2：輸出電壓 | | | |
| | | 3：直流電壓 | | | |
| | | 4：輸出電流（100%為變頻器額定電流） | | | |
| 04-12 | 類比輸出 AO 增益 | 0 ~ 1000 | 100 | % | *1 |
| 04-13 | 類比輸出 AO 偏置 | 0 ~ 100 | 0 | % | *1 |
| 04-14 | AO 偏置值正負選擇 | 0：正向 1：負向 | 0 | - | *1 |
| 04-15 | AO 信號方向控制選擇 | 0：正向 1：負向 | 0 | - | *1 |
| 04-16 | 比例連動功能 | 0：無效 1：有效 | 0 | - | *1 |
| 04-17 | Keypad VR 旋鈕增益值 | 0~1000 | 100 | % | *1 |
| 04-18 | Keypad VR 旋鈕偏壓值 | 0~100 | 0 | % | *1 |
| 04-19 | Keypad VR 旋鈕偏壓值正負選擇 | 0：正向 1：負向 | 0 | - | *1 |
| 04-20 | Keypad VR 旋鈕訊號方向控制選擇 | 0：正向 1：負向 | 0 | - | *1 |

群組 05-多段速功能群組

| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
|-------|------------------|------------------------------|-------|----|----|
| 05-00 | 多段速加減速模式選擇 | 0：段速加減速時間由加減速時間 1/加減速時間 2 設定 | 0 | - | |
| | | 1：段速加減速時間獨立設定 | | | |
| 05-01 | 多段速頻率設定 0 (面板頻率) | 0.00 ~ 599.00 | 5.00 | Hz | *1 |
| 05-02 | 多段速 1 頻率設定 | 0.00 ~ 599.00 | 5.00 | Hz | *1 |
| 05-03 | 多段速 2 頻率設定 | 0.00 ~ 599.00 | 10.00 | Hz | *1 |
| 05-04 | 多段速 3 頻率設定 | 0.00 ~ 599.00 | 20.00 | Hz | *1 |
| 05-05 | 多段速 4 頻率設定 | 0.00 ~ 599.00 | 30.00 | Hz | *1 |
| 05-06 | 多段速 5 頻率設定 | 0.00 ~ 599.00 | 40.00 | Hz | *1 |
| 05-07 | 多段速 6 頻率設定 | 0.00 ~ 599.00 | 50.00 | Hz | *1 |
| 05-08 | 多段速 7 頻率設定 | 0.00 ~ 599.00 | 50.00 | Hz | *1 |
| 05-09 | 多段速 8 頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 05-10 | 多段速 9 頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 05-11 | 多段速 10 頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |

群組 05-多段速功能群組

| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
|-------|---------------|---------------|------|-----|----|
| 05-12 | 多段速 11 頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 05-13 | 多段速 12 頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 05-14 | 多段速 13 頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 05-15 | 多段速 14 頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 05-16 | 多段速 15 頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 05-17 | 多段速 0 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-18 | 多段速 0 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-19 | 多段速 1 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-20 | 多段速 1 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-21 | 多段速 2 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-22 | 多段速 2 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-23 | 多段速 3 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-24 | 多段速 3 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-25 | 多段速 4 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-26 | 多段速 4 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-27 | 多段速 5 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-28 | 多段速 5 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-29 | 多段速 6 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-30 | 多段速 6 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-31 | 多段速 7 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-32 | 多段速 7 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-33 | 多段速 8 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-34 | 多段速 8 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-35 | 多段速 9 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-36 | 多段速 9 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-37 | 多段速 10 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-38 | 多段速 10 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-39 | 多段速 11 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-40 | 多段速 11 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-41 | 多段速 12 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-42 | 多段速 12 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-43 | 多段速 13 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-44 | 多段速 13 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-45 | 多段速 14 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-46 | 多段速 14 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-47 | 多段速 15 加速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |
| 05-48 | 多段速 15 減速時間設定 | 0.1 ~ 3600.0 | 10.0 | Sec | *1 |

群組 06-自動程式運轉功能群組

| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
|-------------------------|--------------|---|------|-----|----|
| 06-00 | 自動程式運轉模式選擇 | 0：自動程式運轉無效 | 0 | - | |
| | | 1：執行單一週期之自動運轉模式，停止後會由停止前的速度起，繼續運轉 | | | |
| | | 2：連續迴圈週期之自動運轉模式，停止後會由停止前的速度起，繼續運轉 | | | |
| | | 3：單一週期結束後，以最後一段運轉速度繼續運轉；停止後會由停止前的速度起，繼續運轉 | | | |
| | | 4：執行單一週期之自動運轉模式，停止後會從第一段速起，開始運轉 | | | |
| | | 5：連續迴圈週期之自動運轉模式，停止後會從第一段速起，開始運轉 | | | |
| | | 6：單一週期結束後，以最後一段運轉速度繼續運轉；停止後會從第一段速起，開始運轉 | | | |
| 第 0 段速的頻率通過參數 05-01 來設定 | | | | | |
| 06-01 | 第 1 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-02 | 第 2 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-03 | 第 3 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-04 | 第 4 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-05 | 第 5 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-06 | 第 6 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-07 | 第 7 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-08 | 第 8 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-09 | 第 9 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-10 | 第 10 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-11 | 第 11 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-12 | 第 12 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-13 | 第 13 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-14 | 第 14 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-15 | 第 15 段速頻率設定 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 06-16 | 第 0 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-17 | 第 1 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-18 | 第 2 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-19 | 第 3 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-20 | 第 4 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-21 | 第 5 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-22 | 第 6 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-23 | 第 7 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-24 | 第 8 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-25 | 第 9 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-26 | 第 10 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-27 | 第 11 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-28 | 第 12 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-29 | 第 13 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-30 | 第 14 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-31 | 第 15 段運行時間設定 | 0.0 ~ 3600.0 | 0.0 | Sec | *1 |
| 06-32 | 第 0 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-33 | 第 1 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-34 | 第 2 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-35 | 第 3 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |

群組 06-自動程式運轉功能群組

| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
|-------|--------------|----------------|------|----|----|
| 06-36 | 第 4 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-37 | 第 5 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-38 | 第 6 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-39 | 第 7 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-40 | 第 8 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-41 | 第 9 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-42 | 第 10 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-43 | 第 11 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-44 | 第 12 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-45 | 第 13 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-46 | 第 14 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |
| 06-47 | 第 15 段運行轉向選擇 | 0：停止 1：正轉 2：反轉 | 0 | - | |

群組 07-啟動停止控制功能群組

| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
|-------|-----------------|---------------------------------------|-------------|-----|----|
| 07-00 | 低壓瞬停再啟動 | 0：瞬停再啟動無效 | 0 | - | |
| | | 1：瞬停再啟動有效 | | | |
| 07-01 | 自動複歸再啟動時間 | 0.0~800.0 | 0.0 | Sec | |
| 07-02 | 自動複歸再啟動次數 | 0~10 | 0 | - | |
| 07-03 | 複歸模式設定 | 0：當 RUN 指令存在時，複歸指令無效 | 0 | - | |
| | | 1：複歸指令與 RUN 指令狀態無關 | | | |
| 07-04 | 開機後直接啟動 | 0：外部運轉命令有效時，送電後直接啟動 | 1 | - | |
| | | 1：外部運轉命令有效時，送電後不可直接啟動 | | | |
| 07-05 | 開機直接啟動延時 | 1.0~300.0 | 1.0 | Sec | |
| 07-06 | 停止時直流制動頻率 | 0.10 ~ 10.00 | 1.5 | Hz | |
| 07-07 | 停止時直流制動準位 | 0.0 ~ 150.0 | 50.0 | % | |
| 07-08 | 停止時直流制動時間 | 0.0 ~ 25.5 | 0.5 | Sec | |
| 07-09 | 停止方式 | 0：減速停止 1：自由停止 | 0 | - | |
| 07-10 | 啟動方式選擇 | 0：正常啟動 1：速度搜尋 | 0 | - | |
| 07-11 | 自動複歸再啟動方式 | 0：速度搜尋 1：正常啟動 | 0 | - | |
| 07-12 | 允許瞬停時間 | 0.0 ~ 2.0 | 0.5 | Sec | |
| 07-13 | 主迴路低電壓檢出 | 150.0~210.0 300.0~420.0 | 190.0/380.0 | Vac | |
| 07-14 | 瞬停時能量回升設定 (KEB) | 0.0：不執行瞬停能量回升功能 0.1~25.0：瞬停時能量回升時間 | 0.0 | Sec | |
| 07-15 | 直流制動選擇 | 0：電流型直流制動 1：電壓型直流制動 | 1 | - | *6 |
| 07-16 | 電壓型直流制動準位 | 0.0~10.0 | 4.0 | % | *6 |

| 群組 08-保護功能群組 | | | | | |
|--------------|-----------------|--|-------|------------|----|
| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
| 08-00 | 失速防止功能 | xxxx0：加速時失速防止有效 | 01000 | - | *5 |
| | | xxxx1：加速時失速防止無效 | | | |
| | | xxx0x：減速時失速防止有效 | | | |
| | | xxx1x：減速時失速防止無效 | | | |
| | | xx0xx：運轉中失速防止有效 | | | |
| | | xx1xx：運轉中失速防止無效 | | | |
| | | x0xxx：運轉中過電壓防止有效 | | | |
| | | x1xxx：運轉中過電壓防止無效 | | | |
| 08-01 | 加速失速防止準位 | 50 ~ 200 | 200 | 額定電流的 100% | |
| 08-02 | 減速失速防止準位 | 50 ~ 200 | 200 | 額定電流的 100% | |
| 08-03 | 運轉失速防止準位 | 50 ~ 200 | 200 | 額定電流的 100% | |
| 08-04 | 運轉過電壓防止準位 | 350.0~390.0/700.0~780.0 | 380.0 | VDC | *1 |
| 08-05 | 電子電譯保護馬達 OL1 | xxx0b：馬達過載無效 | 0001b | - | *7 |
| | | xxx1b：馬達過載有效 | | | |
| | | xx0xb：馬達過載冷啟動 | | | |
| | | xx1xb：馬達過載熱啟動 | | | |
| | | x0xxb：標準馬達 | | | |
| | | x1xxb：變頻馬達 | | | |
| 08-06 | 超載(OL1)保護動作啟動方式 | 0：超載保護後停止輸出(自由運轉停止) | 0 | - | |
| | | 1：超載保護後繼續運轉(僅顯示 OL1) | | | |
| 08-07 | 冷卻風扇控制方式 | 0：感溫自動運轉 | 1 | - | |
| | | 1：RUN 機中運轉 | | | |
| | | 2：持續運轉 | | | |
| | | 3：停止運轉 | | | |
| 08-08 | 自動穩壓功能(AVR) | 0：AVR 有效 | 4 | - | *5 |
| | | 1：AVR 無效 | | | |
| | | 2：AVR 在“stop”停機時無效 | | | |
| | | 3：AVR 在減速時無效(高頻->低頻) | | | |
| | | 4：AVR 在減速和“stop”停機時無效 | | | |
| | | 5：AVR 在減速和“stop”停機時無效(當 VDC>360V/740V 時) | | | |
| 08-09 | 輸入欠相保護 | 0：無效 | 0 | - | |
| | | 1：有效 | | | |
| 08-10 | 輸出欠相保護 | 0：無效 | 0 | - | |
| | | 1：有效 | | | |
| 08-11 | 馬達類型選擇 | 0：電子繼電器保護標準馬達 | 0 | - | |
| | | 1：電子繼電器保護專用馬達 | | | |
| 08-12 | 馬達超載保護選擇 | 0：馬達電子繼電器保護(OL=103%) (150%1分鐘) | 0 | - | |
| | | 1：馬達電子繼電器保護(OL=113%) (123%1分鐘) | | | |
| 08-13 | 過轉矩偵測控制 | 0：過轉矩偵測無效 | 0 | - | |
| | | 1：到達設定頻率後開始偵測 | | | |
| | | 2：運轉中即偵測 | | | |
| 08-14 | 過轉矩保護動作選擇 | 0：過轉矩偵測後停止輸出(自由運轉停止) | 0 | - | |
| | | 1：過轉矩偵測後繼續運轉(僅顯示 OL3) | | | |
| 08-15 | 過轉矩偵測準位 | 30 ~ 300 | 160 | - | |

| 群組 08-保護功能群組 | | | | | |
|--------------|---------------|-----------------|------|----|----|
| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
| 08-16 | 過轉矩偵測時間 | 0.0~25.0 | 0.1 | - | |
| 08-17 | 火災模式 | 0：無效 | 0 | - | *5 |
| | | 1：有效 | | | |
| 08-18 | 輸出側接地過電流檢測 | 0：無效 | 0 | - | *7 |
| | | 1：有效 | | | |
| 08-19 | 馬達過載(OL1)保護準位 | 0：馬達過載(OL1)保護 0 | 0 | | |
| | | 1：馬達過載(OL1)保護 1 | | | |
| | | 0：馬達過載(OL1)保護 2 | | | |

Notes：08-17 功能修正，軟體 V1.1 版以上，併入多機能端子 03-00 ~ 03-05 (28 火災模式輸入)設定使用。
08-18 僅對 frame3, 4 機種別可出現

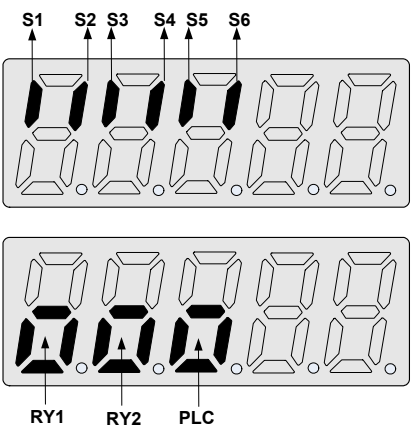
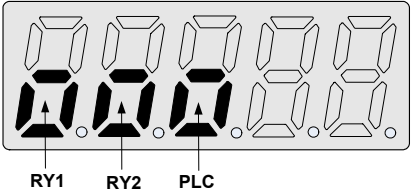
| 群組 09-通訊功能群組 | | | | | |
|--------------|-----------------|--------------------------|------|------|------|
| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
| 09-00 | 變頻器通訊站別 | 1 ~ 32 | 1 | - | *2*3 |
| 09-01 | RTU 碼/ASCII 碼選擇 | 0：RTU 碼 1：ASCII 碼 | 0 | - | *2*3 |
| 09-02 | 串列傳輸速率設定 | 0：4800 | 2 | bps | *2*3 |
| | | 1：9600 | | | |
| | | 2：19200 | | | |
| | | 3：38400 | | | |
| 09-03 | 停止位元選擇 | 0：1 停止位元 | 0 | - | *2*3 |
| | | 1：2 停止位元 | | | |
| 09-04 | 奇偶位元選擇 | 0：無奇偶位元 | 0 | - | *2*3 |
| | | 1：偶位元 | | | |
| | | 2：奇位元 | | | |
| 09-05 | 資料位元選擇 | 0：8 位元數據 | 0 | - | *2*3 |
| | | 1：7 位元數據 | | | |
| 09-06 | 通訊異常檢測時間 | 0.0~25.5 | 0.0 | Sec | |
| 09-07 | 通訊異常檢出處理 | 0：通訊中斷後依第一段減速時間停止並顯示 COT | 0 | - | |
| | | 1：通訊中斷後採取自由運轉停止並顯示 COT | | | |
| | | 2：通訊中斷後依第二段減速時間停止並顯示 COT | | | |
| | | 3：通訊中斷後繼續運轉並顯示 COT | | | |
| 09-08 | Error 6 容錯次數 | 0~20 | 3 | | |
| 09-09 | 通訊等待時間 | 5~65 | 5 | mSec | |

| 群組 10-PID 功能群組 | | | | | |
|----------------|---|-------------------------|------|-----|----|
| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
| 10-00 | PID 目標值來源設定 (00-05 或 00-06=6 此參數功能啟用) | 0 : Keypad 旋鈕設定 | 1 | - | *1 |
| | | 1 : 類比 AI1 設定 | | | |
| | | 2 : 類比 AI2 設定 | | | |
| | | 3 : 通訊設定 | | | |
| 10-01 | PID 回授值來源設定 | 0 : Keypad 旋鈕設定 | 2 | - | *1 |
| | | 1 : 類比 AI1 設定 | | | |
| | | 2 : 類比 AI2 設定 | | | |
| | | 3 : 通訊設定 | | | |
| 10-02 | PID 鍵盤設定 | 0.0~100.0 | 50.0 | % | *1 |
| 10-03 | PID 運轉模式選擇 | 0 : PID 運轉功能無效 | 0 | - | |
| | | 1 : PID 控制, 偏差 D 值控制 | | | |
| | | 2 : PID 控制, 回授 D 值控制 | | | |
| | | 3 : PID 控制, 偏差 D 值反特性控制 | | | |
| | | 4 : PID 控制, 回授 D 值反特性控制 | | | |
| 10-04 | 回授比例係數 | 0.00 ~ 10.00 | 1.00 | | *1 |
| 10-05 | 比例增益 | 0.0 ~ 10.0 | 1.0 | % | *1 |
| 10-06 | 積分時間 | 0.0 ~ 100.0 | 10.0 | Sec | *1 |
| 10-07 | 微分時間 | 0.00 ~ 10.00 | 0.00 | Sec | *1 |
| 10-08 | PID 偏置 | 0 : 正方向 | 0 | - | *1 |
| | | 1 : 負方向 | | | |
| 10-09 | PID 偏置調整 | 0 ~ 109 | 0 | % | *1 |
| 10-10 | PID 一次延遲過濾時間 | 0.0 ~ 2.5 | 0.0 | Sec | *1 |
| 10-11 | 回授信號斷線時檢出模式 | 0 : 不檢出 | 0 | - | |
| | | 1 : 檢出運轉 | | | |
| | | 2 : 檢出停止 | | | |
| 10-12 | 回授信號斷線檢出位元准比例係數 | 0 ~ 100 | 0 | % | |
| 10-13 | 回授信號斷線時檢出延遲時間 | 0.0 ~ 25.5 | 1.0 | Sec | |
| 10-14 | 積分極限值比例係數 | 0 ~ 109 | 100 | % | *1 |
| 10-15 | 回授信號到達設定值時積分器歸零 | 0 : 無效 | 0 | - | |
| | | 1 : 1 Sec | | | |
| | | 30 : 30 Sec | | | |
| | | 0 ~ 30 | | | |
| 10-16 | 允許誤差範圍(單位值) (1 單元=1/8192) | 0 ~ 100 | 0 | - | |
| 10-17 | PID 休眠起始頻率 | 0.00 ~ 599.00 | 0.00 | Hz | |
| 10-18 | PID 休眠延遲時間 | 0.0 ~ 25.5 | 0.0 | Sec | |
| 10-19 | PID 喚醒起始頻率 | 0.00 ~ 599.00 | 0.00 | Hz | |
| 10-20 | PID 喚醒延遲時間 | 0.0 ~ 25.5 | 0.0 | Sec | |
| 10-21 | PID 回授最大值設定 | 0 ~ 999 | 100 | - | *1 |
| 10-22 | PID 回授最小值設定 | 0 ~ 999 | 0 | - | *1 |

| 群組 11 輔助功能群組 | | | | | |
|--------------|------------------|---------------------------------|-------|-----|----|
| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
| 11-00 | 反轉禁止指令 | 0：反轉指令有效 | 0 | - | |
| | | 1：反轉指令無效 | | | |
| 11-01 | 載波頻率 | 1~16 | 5 | KHz | |
| 11-02 | 載波模式選擇 | 0：載波模式 0 三相調變 | 0 | - | |
| | | 1：載波模式 1 兩相調變 | | | |
| | | 2：載波模式 2 兩相軟調變 | | | |
| 11-03 | 載波頻率隨溫度降低選擇 | 0：降低載波無效 | 0 | - | |
| | | 1：降低載波有效 | | | |
| 11-04 | 第 1 段加速 S 曲線時間設定 | 0.0 ~ 4.0 | 0.2 | Sec | |
| 11-05 | 第 2 段加速 S 曲線時間設定 | 0.0 ~ 4.0 | 0.2 | Sec | |
| 11-06 | 第 3 段減速 S 曲線時間設定 | 0.0 ~ 4.0 | 0.2 | Sec | |
| 11-07 | 第 4 段減速 S 曲線時間設定 | 0.0 ~ 4.0 | 0.2 | Sec | |
| 11-08 | 跳躍頻率 1 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 11-09 | 跳躍頻率 2 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 11-10 | 跳躍頻率 3 | 0.00 ~ 599.00 | 0.00 | Hz | *1 |
| 11-11 | 跳躍頻率範圍(±) | 0.00 ~ 30.00 | 0.00 | Hz | *1 |
| 11-12 | 節能運轉增益(VF) | 0 ~ 100 | 80 | % | |
| 11-13 | 再生回避動作選擇 | 0：再生回避功能無效 | 0 | - | |
| | | 1：再生回避功能始終有效 | | | |
| | | 2：僅在恒速運行時，再生回避功能有效 | | | |
| 11-14 | 再生回避動作水準 | 200V:300.0~400.0 | 380.0 | V | |
| | | 400V:600.0~800.0 | 760.0 | | |
| 11-15 | 再生回避補償頻率限制值 | 0.00~15.00Hz：再生回避功能啟動時上升的頻率的限制值 | 3.00 | Hz | |
| 11-16 | 再生回避電壓增益 | 0~200 | 100 | % | |
| 11-17 | 再生回避頻率增益 | 0~200 | 100 | % | |
| 11-18 | STOP 鍵選擇 | 0：運轉指令不由操作器提供時，停止鍵有效 | 0 | | |
| | | 1：運轉指令不由操作器提供時，停止鍵無效 | | | |

當運轉指令由(00-02=1)或(00-02=2)輸入，此參數可啟用或禁用數字操作器的停止鍵

群組 12 監視功能群組

| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
|------------------|--------------|---|-----------|-----|----|
| 12-00 | 顯示畫面選擇 | 00000~88888 每一位的範圍為 0~8 | 00000 | - | *1 |
| | | 0：不顯示畫面 | | | |
| | | 1：變頻器輸出電流 | | | |
| | | 2：變頻器輸出電壓 | | | |
| | | 3：變頻器直流電壓 | | | |
| | | 4：溫度 | | | |
| | | 5：PID 回授值 | | | |
| | | 6：AI1 值 | | | |
| | | 7：AI2 值 | | | |
| 8：計數值 | | | | | |
| 12-01 | PID 回授顯示模式 | 0：以整數顯示回授值(xxx) | 0 | - | *1 |
| | | 1：以小數點 1 位元顯示回授值(xx.x) | | | |
| | | 2：以小數點 2 位元顯示回授值(x.xx) | | | |
| 12-02 | PID 回授顯示單位設定 | 0：xxx_(無單位) | 0 | - | *1 |
| | | 1：xxxpb(壓力) | | | |
| | | 2：xxxfl(流量) | | | |
| 12-03 | 線速度顯示 | 0~65535 | 1500/1800 | RPM | *1 |
| 12-04 | 線速度顯示模式 | 0：顯示變頻器輸出頻率 | 0 | - | *1 |
| | | 1：以整數顯示線速度(xxxxx) | | | |
| | | 2：以小數點 1 位元顯示線速度(xxxx.x) | | | |
| | | 3：以小數點 2 位元顯示線速度(xxx.xx) | | | |
| | | 4：以小數點 3 位元顯示線速度(xx.xxx) | | | |
| 12-05 | 顯示輸入輸出端子狀態 |  | - | - | *4 |
| | |  | | | |
| 12-06 | 壽命報警狀態顯示 | xxxx0：浪湧電流抑制電路壽命報警無效 | 00000 | - | *1 |
| | | xxxx1：浪湧電流抑制電路壽命報警 | | | |
| | | xxx0x：控制電路電容器壽命報警無效 | | | |
| | | xxx1x：控制電路電容器壽命報警 | | | |
| | | xx0xx：主電路電容器壽命報警無效 | | | |
| xx1xx：主電路電容器壽命報警 | | | | | |
| 12-07 | 測定主電路電容器壽命 | 預留 | 100 | % | |
| 12-08 | 浪湧電流抑制電路壽命顯示 | 0~100 | 100 | % | |
| 12-09 | 控制電路電容器壽命顯示 | 0~100 | 100 | % | |
| 12-10 | 主電路電容器壽命顯示 | 預留 | 100 | % | |
| 12-11 | 故障時的輸出電流 | ---- | 0 | A | |
| 12-12 | 故障時的輸出電壓 | ---- | 0 | Vac | |
| 12-13 | 故障時的輸出頻率 | ---- | 0 | Hz | |
| 12-14 | 故障時的直流母線電壓 | ---- | 0 | Vac | |
| 12-15 | 故障時的頻率指令 | ---- | 0 | Hz | |

| 群組 12 監視功能群組 | | | | | |
|--------------|--------|------|------|----|----|
| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
| 12-16 | 輸出功率顯示 | ---- | 0.0 | kW | |

輸出功率顯示(參數 12-16)需要正確設定馬達額定功率(參數 02-05)

| 群組 13 維護功能群組 | | | | | |
|--------------|----------|--|-------|----|------|
| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
| 13-00 | 變頻器馬力值 | ---- | - | - | *3 |
| 13-01 | 軟體版本 | ---- | - | - | *3*4 |
| 13-02 | 故障記錄 | ---- | - | - | *3*4 |
| 13-03 | 累積工作時間 1 | 0~23 | - | 小時 | *3 |
| 13-04 | 累積工作時間 2 | 0~65535 | ---- | 天 | *3 |
| 13-05 | 累積工作時間選擇 | 0：通電時累積時間 | 0 | - | *3 |
| | | 1：運轉時累積時間 | | | |
| 13-06 | 參數鎖定 | 0：所有參數可寫 | 0 | - | |
| | | 1：參數 5-01~5-15 不可更改， 其他參數均可更改 | | | |
| | | 2：參數 5-01~5-15 可更改， 其他參數均不可更改 | | | |
| | | 3：參數 13-06 可修改，其他參數均不可修改 | | | |
| 13-07 | 參數密碼功能 | 00000~65535 | 00000 | - | |
| 13-08 | 恢復出廠設定 | 1150:將參數復歸為出廠值(50hz,220V/380V 機種) 1160:將參數復歸為出廠值(60hz,220V/380V 機種) 1250:將參數復歸為出廠值(50HZ,230V/400V 機種) 1260:將參數復歸為出廠值(60hz,230V/460V 機種) 1350:將參數復歸為出廠值(50HZ,220V/415V 機種) 1360:將參數復歸為出廠值(60HZ,230V/400V 機種) 1112：將 PLC 程式清除(RESET) | 00000 | - | |

群組 14 PLC 設定群組

| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
|-------|----------------|---------|------|----|----|
| 14-00 | T1 設定值 1 | 0~9999 | 0 | - | |
| 14-01 | T1 設定值 2(模式 7) | 0~9999 | 0 | - | |
| 14-02 | T2 設定值 1 | 0~9999 | 0 | - | |
| 14-03 | T2 設定值 2(模式 7) | 0~9999 | 0 | - | |
| 14-04 | T3 設定值 1 | 0~9999 | 0 | - | |
| 14-05 | T3 設定值 2(模式 7) | 0~9999 | 0 | - | |
| 14-06 | T4 設定值 1 | 0~9999 | 0 | - | |
| 14-07 | T4 設定值 2(模式 7) | 0~9999 | 0 | - | |
| 14-08 | T5 設定值 1 | 0~9999 | 0 | - | |
| 14-09 | T5 設定值 2(模式 7) | 0~9999 | 0 | - | |
| 14-10 | T6 設定值 1 | 0~9999 | 0 | - | |
| 14-11 | T6 設定值 2(模式 7) | 0~9999 | 0 | - | |
| 14-12 | T7 設定值 1 | 0~9999 | 0 | - | |
| 14-13 | T7 設定值 2(模式 7) | 0~9999 | 0 | - | |
| 14-14 | T8 設定值 1 | 0~9999 | 0 | - | |
| 14-15 | T8 設定值 2(模式 7) | 0~9999 | 0 | - | |
| 14-16 | C1 設定值 | 0~65535 | 0 | - | |
| 14-17 | C2 設定值 | 0~65535 | 0 | - | |
| 14-18 | C3 設定值 | 0~65535 | 0 | - | |
| 14-19 | C4 設定值 | 0~65535 | 0 | - | |
| 14-20 | C5 設定值 | 0~65535 | 0 | - | |
| 14-21 | C6 設定值 | 0~65535 | 0 | - | |
| 14-22 | C7 設定值 | 0~65535 | 0 | - | |
| 14-23 | C8 設定值 | 0~65535 | 0 | - | |
| 14-24 | AS1 設定值 1 | 0~65535 | 0 | - | |
| 14-25 | AS1 設定值 2 | 0~65535 | 0 | - | |
| 14-26 | AS1 設定值 3 | 0~65535 | 0 | - | |
| 14-27 | AS2 設定值 1 | 0~65535 | 0 | - | |
| 14-28 | AS2 設定值 2 | 0~65535 | 0 | - | |
| 14-29 | AS2 設定值 3 | 0~65535 | 0 | - | |
| 14-30 | AS3 設定值 1 | 0~65535 | 0 | - | |
| 14-31 | AS3 設定值 2 | 0~65535 | 0 | - | |
| 14-32 | AS3 設定值 3 | 0~65535 | 0 | - | |
| 14-33 | AS4 設定值 1 | 0~65535 | 0 | - | |
| 14-34 | AS4 設定值 2 | 0~65535 | 0 | - | |
| 14-35 | AS4 設定值 3 | 0~65535 | 0 | - | |
| 14-36 | MD1 設定值 1 | 0~65535 | 1 | - | |
| 14-37 | MD1 設定值 2 | 0~65535 | 1 | - | |
| 14-38 | MD1 設定值 3 | 1~65535 | 1 | - | |
| 14-39 | MD2 設定值 1 | 0~65535 | 1 | - | |
| 14-40 | MD2 設定值 2 | 0~65535 | 1 | - | |
| 14-41 | MD2 設定值 3 | 1~65535 | 1 | - | |
| 14-42 | MD3 設定值 1 | 0~65535 | 1 | - | |
| 14-43 | MD3 設定值 2 | 0~65535 | 1 | - | |
| 14-44 | MD3 設定值 3 | 1~65535 | 1 | - | |
| 14-45 | MD4 設定值 1 | 0~65535 | 1 | - | |
| 14-46 | MD4 設定值 2 | 0~65535 | 1 | - | |
| 14-47 | MD4 設定值 3 | 1~65535 | 1 | - | |

群組 15 PLC 監控群組

| 代碼 | 參數名稱 | 範圍 | 出廠設定 | 單位 | 屬性 |
|-------|----------------|---------|------|----|----|
| 15-00 | T1 當前值 | 0~9999 | 0 | - | |
| 15-01 | T1 當前值 2(模式 7) | 0~9999 | 0 | - | |
| 15-02 | T2 當前值 | 0~9999 | 0 | - | |
| 15-03 | T2 當前值 2(模式 7) | 0~9999 | 0 | - | |
| 15-04 | T3 當前值 | 0~9999 | 0 | - | |
| 15-05 | T3 當前值 2(模式 7) | 0~9999 | 0 | - | |
| 15-06 | T4 當前值 | 0~9999 | 0 | - | |
| 15-07 | T4 當前值 2(模式 7) | 0~9999 | 0 | - | |
| 15-08 | T5 當前值 | 0~9999 | 0 | - | |
| 15-09 | T5 當前值 2(模式 7) | 0~9999 | 0 | - | |
| 15-10 | T6 當前值 | 0~9999 | 0 | - | |
| 15-11 | T6 當前值 2(模式 7) | 0~9999 | 0 | - | |
| 15-12 | T7 當前值 | 0~9999 | 0 | - | |
| 15-13 | T7 當前值 2(模式 7) | 0~9999 | 0 | - | |
| 15-14 | T8 當前值 | 0~9999 | 0 | - | |
| 15-15 | T8 當前值 2(模式 7) | 0~9999 | 0 | - | |
| 15-16 | C1 當前值 | 0~65535 | 0 | - | |
| 15-17 | C2 當前值 | 0~65535 | 0 | - | |
| 15-18 | C3 當前值 | 0~65535 | 0 | - | |
| 15-19 | C4 當前值 | 0~65535 | 0 | - | |
| 15-20 | C5 當前值 | 0~65535 | 0 | - | |
| 15-21 | C6 當前值 | 0~65535 | 0 | - | |
| 15-22 | C7 當前值 | 0~65535 | 0 | - | |
| 15-23 | C8 當前值 | 0~65535 | 0 | - | |
| 15-24 | AS1 當前值 | 0~65535 | 0 | - | |
| 15-25 | AS2 當前值 | 0~65535 | 0 | - | |
| 15-26 | AS3 當前值 | 0~65535 | 0 | - | |
| 15-27 | AS4 當前值 | 0~65535 | 0 | - | |
| 15-28 | MD1 當前值 | 0~65535 | 0 | - | |
| 15-29 | MD2 當前值 | 0~65535 | 0 | - | |
| 15-30 | MD3 當前值 | 0~65535 | 0 | - | |
| 15-31 | MD4 當前值 | 0~65535 | 0 | - | |
| 15-32 | TD 當前值 | 0~65535 | 0 | μs | |

第 4 章 異常診斷及保養

4.1 故障顯示及對策

4.1.1 手動復歸與自動復歸

| 無法手動復歸且無法自動復歸的故障 | | | |
|------------------|------------------------------------|--|--|
| 顯示 | 內容 | 異常原因 | 對策 |
| -OV- -OU- | 停機中電壓過高 | 偵測線路故障 | 變頻器送修 |
| -LV- -LU- | 停機中電壓過低 | 1. 電源電壓過低 2. 限流電阻(R1)或保險絲燒斷 3. 偵測線路故障 | 1. 檢查電源電壓是否正常 2. 換修限流電阻或保險絲 3. 變頻器送修 |
| -OH- -OH- | 停機中變頻器過熱 | 1. 周溫過熱或通風不良 2. 偵測線路故障 | 1. 改善通風條件 2. 變頻器送修 |
| OH-C OH-C | 運行中變頻器過熱 | 1. 周溫過熱或通風不良 2. 偵測線路故障 | 1. 改善通風條件 2. 變頻器送修 |
| EPr EPr | EEPROM 異常 | EEPROM 故障 | 更換 EEPROM |
| COt COt | 通訊異常 | 通訊中斷 | 檢查通訊線路 |
| CtEr CtEr | 電流感測器偵測錯誤 | 電流感測元件或線路故障 | 變頻器送修 |
| CdEr CdEr | OC、CL 線路偵測錯誤 | OC、CL 偵測線路故障 | 變頻器送修 |
| Err4 Err4 | CPU 工作異常 | 外界雜訊干擾 | 如時常發生，請與本公司聯絡 |
| r-OFF r-OFF | 電源繼電器斷開 (power relay off) 故障 | power relay 或相關線路損壞 | 變頻器送修 |
| 可手動復歸及自動復歸的故障 | | | |
| 顯示 | 內容 | 異常原因 | 對策 |
| OC-A OC-A | 加速時過電流 | 1. 加速時間設定太短 2. 使用的馬達容量大於變頻器容量 3. 馬達繞組與外殼短路 4. 馬達接線與大地短路 5. IGBT 模組損壞 | 1. 設定較長的加速時間 2. 更換容量相當的變頻器 3. 檢修馬達 4. 檢查配線 5. 更換 IGBT 模組 |
| OC-C OC-C | 定速中過電流 | 1. 負載瞬間變化 2. 電源瞬間變化 | 1. 加大變頻器容量 2. 電源輸入側加裝電抗器 |

| 顯示 | 內容 | 異常原因 | 對策 |
|--------------------|------------------|---|--|
| OC-d OC-d | 減速時過電流 | 減速時間設定太短 | 設定較長的減速時間 |
| OC-S OC-S | 啟動瞬間過電流 | 1.馬達繞組與外殼短路 2.馬達接線與大地短路 3.IGBT 模組損壞 | 1.檢修馬達 2.檢查配線 3.更換 IGBT 模組 |
| OV-C OU-C | 運轉中/減速中 電壓過高 | 1.減速時間設定太短 2.負載慣性較大 3.電源電壓變化過大 | 1.設定較長的減速時間 2.外加制動電阻或制動模組 3.電源輸入側加裝電抗器 |
| PF PF | 輸入欠相 | 主迴路直流電壓發生異常波動 | 1. 確認主迴路電源的接線是否發生斷線或接線錯誤 2. 確認端子是否鬆動 3. 確認電源電壓 |
| ud-C ud-C | 低電流檢出 | 輸出電流<低電流檢出準位 (03-25) | 根據實際情況設定準位元 |
| LF LF | 輸出欠相 | 變頻器輸出側發生欠相 | 1. 確認輸出電纜的接線是否發生斷線或接線錯誤。 2. 測定馬達線間電阻。 3. 確認端子是否鬆動。 |
| 可手動復歸的故障但無法自動復歸的故障 | | | |
| 顯示 | 內容 | 異常原因 | 對策 |
| OC OC | 停機中過電流 | 1.偵測線路故障 | 1.變頻器送修 |
| OL1 OL1 | 馬達超載 | 1.負載太大 | 1.加大馬達容量 |
| OL2 OL2 | 變頻器超載 | 1.負載太大 | 1.加大變頻器容量 |
| OL3 OL3 | 過轉矩 | 1.負載太大 2.8-15、8-16 設定太小 | 1.加大變頻器容量 2.依需要設定 8-15、8-16 |
| LV-C LU-C | 運轉中 電壓過低 | 1.電源電壓過低 2.電源電壓變化過大 | 1.改善電源品質 2.電源輸入側加裝電抗器 |
| OVSP OU SP | 馬達旋轉過速 | 旋轉速度與設定值相差過大 | 1.負載是否過重。 2. 頻率設定信號是否正確。 |
| LIFE1 LIFE1 | 浪湧電流抑制電路 壽命報警 | 浪湧電流抑制電路的劣化 | 變頻器送修 |
| LIFE2 LIFE2 | 控制電路電容器壽命 報警 | 控制電路電容器的劣化 | 變頻器送修 |
| LIFE3 LIFE3 | 主電路電容器壽命 報警 | 主電路電容器的劣化 | 變頻器送修 |

| 顯示 | 內容 | 異常原因 | 對策 |
|----|------|--|-----------------------|
| GF | 接地故障 | 當變頻器的輸出側(負載側)發生接地，電路中流過接地過電流時大於50%變頻器的額定輸出電流，會停止變頻器的輸出。保護功能的通過08-18進行設定。 | 確認輸出電纜的接線、電機是否發生接地錯誤。 |
| GF | | | |

注：“@”符號表示當故障發生時，故障接點不動作。

4.1.2 按鍵操作錯誤

| 顯示 | 內容 | 異常原因 | 對策 |
|------|-----------------------------------|--|---|
| LOC | 1.參數已鎖定 2.頻率轉向已鎖定 3.參數密碼已設定 | 1.13-06>0時，企圖修禁止修改的頻率或參數。 2.在禁止反轉時(11-00=1)，企圖反轉。 3.參數密碼功能(13-07)啟用時，設定了正確的密碼會顯示LOC。 | 1.參數鎖定(13-06)設為0 2.正確使用禁止反轉參數(11-00) |
| LOC | | | |
| Err1 | 操作方式錯誤 | 1.頻率來源設定為非面板來源時(00-05/00-06>0)或段速運轉時，按面板上、下鍵。 2.運轉中企圖修改運轉中不可修改的參數(可參考參數一覽表) | 1.設定頻率來源為面板(00-05/00-06=0)，才可由上、下鍵修改頻率。 2.停機後修改此參數。 |
| Err1 | | | |
| Err2 | 參數設定錯誤 | 1.00-13在11-08±11-11或11-09±11-11或11-10±11-11的範圍 2.00-12≤00-13 3.00-05=00-06 | 1.修改11-08~11-10或11-11 2.00-12>00-13 3.將00-05與00-06設為不同值 |
| Err2 | | | |
| Err5 | 通訊中，修改參數無效 | 1.通訊中禁止下控制命令 2.修改通訊中禁止修改的參數09-00~09-05 | 1.通訊前必須先下致能命令 2.通訊前，先設定好參數 |
| Err5 | | | |
| Err6 | 通訊失敗 | 1.接線錯誤 2.通訊參數設定錯誤 3.通訊格式錯誤 | 1.檢查硬體及配線 2.檢查通訊參數(09-00~09-05)的設定 |
| Err6 | | | |
| Err7 | 參數設定錯誤 | 1.企圖修改13-00或13-08 2.電壓、電流偵測線路異常 | 復歸變頻器，如仍故障變頻器送修。 |
| Err7 | | | |

4.1.3 特殊情況說明

| 顯示 | 內容 | 說明 |
|--------------|---------------------------|---|
| StP0 StP0 | 零速停止中 | 當設定頻率為<0.1Hz 時發生 |
| StP1 StP1 | 直接啟動失效 | 1.變頻器設定外部運轉(00- 02/00- 03=1)，且直接啟動功能無效(07- 04=1)時，若電源投入時，運轉開關放在導通的位置，則變頻器無法啟動，此時閃爍 STP1 (請參考 07- 04 說明)。 |
| StP2 StP2 | 鍵盤緊急停止 | 1.變頻器設定外部運轉(00- 02/00- 03=1)，若在運轉中按下鍵盤上的 STOP 鍵，則停止後閃爍 STP2 ，必須將運轉開關先關斷再導通後，才會再啟動。 2.變頻器處於通訊狀態，若在運轉中按下鍵盤上的 STOP 鍵，則顯示 STP2 |
| E.S. E.S. | 外部緊急停止 | 外部緊急停止信號經由多功能輸入端子輸入時，變頻器減速停止，停止後閃爍 E.S. |
| b.b. b.b. | 外部遮斷 BASE BLOCK | 外部遮斷信號經由多功能輸入端子輸入時，變頻器立刻停止輸出，並閃爍 b.b. |
| PdEr PdEr | PID 回授斷線 | PID 回授信號線路斷線檢出。 |
| AtEr AtEr | 參數自學習出錯 | 1. 馬達銘牌輸入錯誤，造成自動參數量測失敗 2. 執行參數自學習 Auto tuning 過程中緊急停機 |
| FlrE FlrE | 火災模式 | 外部火災信號經由多功能輸入端子輸入時，變頻器全速運行，面板閃爍 FlrE 。 |

4.2 一般故障檢查方法

| 異常現象 | 檢查要點 | 處理內容 |
|-------------|--------------------------------|---|
| 馬達運轉方向相反 | 輸出端子配線正確嗎？ | 要與馬達的 U、V、W 相配合 |
| | 正轉或反轉信號配線正確嗎？ | 配線檢查並更正 |
| 馬達運轉無法變速 | 類比頻率輸入配線正確嗎？ | 配線檢查並更正 |
| | 運轉模式設定正確嗎？ | 操作器運轉模式設定檢查 |
| | 負荷是否過重嗎？ | 減輕負荷 |
| 馬達運轉速度過高或過低 | 馬達的規格(極數電壓)正確嗎？ | 確認馬達規格 |
| | 齒輪比正確嗎？ | 確認齒輪比 |
| | 最高輸出頻率設定值正確嗎？ | 確認最高輸出頻率值 |
| 馬達運轉時速度變動異常 | 負荷會過重嗎？ | 減輕負荷 |
| | 負荷的變動很大嗎？ | 負荷變動要減少變頻器及馬達容量大 |
| | 輸入電源是否有欠相的情形嗎？ | 1.使用單相規格時，在輸入電源側加裝 AC 電抗器 2.使用三相輸入規格時請檢查配線 |
| 馬達不運轉 | 電源電壓是否正常投入變頻器輸入端子(充電指示燈是否亮了)嗎？ | 1.電源是否投入 2.電源先斷電後再送電一次 3.電源電壓等級確認 4.端子螺絲是否鎖緊 |
| | 變頻器是否有電壓輸出？ | 將電源先斷電後再送電一次 |
| | 負荷是否過重，造成馬達堵死嗎？ | 減輕負荷使馬達可以運轉 |
| | 變頻器有異常發生嗎？ | 參考故障指示排除，檢查配線不正常需更正 |
| | 正/反轉運轉指令送至變頻器了嗎？ | |
| | 類比頻率設定值已輸入嗎？ | 1.頻率輸入設定電壓是否正確 2.類比頻率輸入信號配線是否正確 |
| 運轉模式設定值正確嗎？ | 由操作面板設定運轉 | |

Appendix-1 Instructions for UL

◆ Safety Precautions

DANGER

Electrical Shock Hazard

Do not connect or disconnect wiring while the power is on.

Failure to comply will result in death or serious injury.

WARNING

Electrical Shock Hazard

Do not operate equipment with covers removed.

Failure to comply could result in death or serious injury.

The diagrams in this section may show drives without covers or safety shields to show details. Be sure to reinstall covers or shields before operating the drives and run the drives according to the instructions described in this manual.

Always ground the motor-side grounding terminal.

Improper equipment grounding could result in death or serious injury by contacting the motor case.

Do not touch any terminals before the capacitors have fully discharged.

Failure to comply could result in death or serious injury.

Before wiring terminals, disconnect all power to the equipment. The internal capacitor remains charged even after the power supply is turned off. After shutting off the power, wait for at least the amount of time specified on the drive before touching any components.

Do not allow unqualified personnel to perform work on the drive.

Failure to comply could result in death or serious injury.

Installation, maintenance, inspection, and servicing must be performed only by authorized personnel familiar with installation, adjustment, and maintenance of AC drives.

Do not perform work on the drive while wearing loose clothing, jewelry, or lack of eye protection.

Failure to comply could result in death or serious injury.

Remove all metal objects such as watches and rings, secure loose clothing, and wear eye protection before beginning work on the drive.

Do not remove covers or touch circuit boards while the power is on.

Failure to comply could result in death or serious injury.

Fire Hazard

Tighten all terminal screws to the specified tightening torque.

Loose electrical connections could result in death or serious injury by fire due to overheating of electrical connections.

Do not use an improper voltage source.

Failure to comply could result in death or serious injury by fire.

Verify that the rated voltage of the drive matches the voltage of the incoming power supply before applying power.

Do not use improper combustible materials.

Failure to comply could result in death or serious injury by fire.

Attach the drive to metal or other noncombustible material.

NOTICE

Observe proper electrostatic discharge procedures (ESD) when handling the drive and circuit boards.

Failure to comply may result in ESD damage to the drive circuitry.

Never connect or disconnect the motor from the drive while the drive is outputting voltage.

Improper equipment sequencing could result in damage to the drive.

Do not use unshielded cable for control wiring.

Failure to comply may cause electrical interference resulting in poor system performance. Use shielded twisted-pair wires and ground the shield to the ground terminal of the drive.

NOTICE

Do not modify the drive circuitry.

Failure to comply could result in damage to the drive and will void warranty.

Teco is not responsible for any modification of the product made by the user. This product must not be modified.

Check all the wiring to ensure that all connections are correct after installing the drive and connecting any other devices.

Failure to comply could result in damage to the drive.

◆ **UL Standards**

The UL/cUL mark applies to products in the United States and Canada and it means that UL has performed product testing and evaluation and determined that their stringent standards for product safety have been met. For a product to receive UL certification, all components inside that product must also receive UL certification.



◆ **UL Standards Compliance**

This drive is tested in accordance with UL standard UL508C and complies with UL requirements. To ensure continued compliance when using this drive in combination with other equipment, meet the following conditions:

■ **Installation Area**

Do not install the drive to an area greater than pollution severity 2 (UL standard).

■ **Main Circuit Terminal Wiring**

UL approval requires crimp terminals when wiring the drive's main circuit terminals. Use crimping tools as specified by the crimp terminal manufacturer. Teco recommends crimp terminals made by NICHIFU for the insulation cap.

The table below matches drives models with crimp terminals and insulation caps. Orders can be placed with a Teco representative or directly with the Teco sales department.

Closed-Loop Crimp Terminal Size

| Drive Model E510 | Wire Gauge mm ² (AWG) (min) | | Terminal | Crimp Terminal | Tool | Insulation Cap |
|---------------------|---|--------------------|----------|----------------|------------------|----------------|
| | R/L1 · S/L2 · T/L3 | U/T1 · V/T2 · W/T3 | Screws | Model No. | Machine No. | Model No. |
| 201 | 2.1 (14) | | M3.5 | R2-3.5 | Nichifu NH 1 / 9 | TIC 2 |
| 202 | 3.3 (12) | | M4 | R3.5-4 | Nichifu NH 1 / 9 | TIC 3.5 |
| 202-H3 | 2.1 (14) | | M3.5 | R2-3.5 | Nichifu NH 1 / 9 | TIC 2 |
| 205 | 5.3 (10) | | M4 | R5.5-4 | Nichifu NH 1 / 9 | TIC 5.5 |
| 210 | 8.4 (8) | | M5 | R8-5 | Nichifu NH 1 / 9 | TIC 8 |
| 220 | 21.2 (4) | | M5 | R22-5 | Nichifu NOP 150H | TIC 22 |
| 402 | 2.1 (14) | | M3.5 | R2-3.5 | Nichifu NH 1 / 9 | TIC 2 |
| 405 | 2.1 (14) | | M4 | R2-3.5 | Nichifu NH 1 / 9 | TIC 2 |
| 415 | 8.4 (8) | | M5 | R8-5 | Nichifu NH 1 / 9 | TIC 8 |
| 425 | 8.4 (8) | | M5 | R8-5 | Nichifu NH 1 / 9 | TIC 8 |

Recommended Input Fuse Selection

| Drive Model E510 | Fuse Type | |
|------------------|---|------------------------|
| | Manufacturer: Bussmann / FERRAZ SHAWMUT | |
| | Model | Fuse Ampere Rating (A) |
| | 200 V Class Single / Three-Phase Drives | |
| 2P5-HXXX | Bussmann 20CT | 690V 20A |
| 201-HXXX | Bussmann 20CT | 690V 20A |
| 202-HXXX | Bussmann 35FE | 690V 35A |
| 203-HXXX | Bussmann 50FE | 690V 50A |
| 2P5-H3XX | Bussmann 20CT | 690V 20A |
| 201-H3XX | Bussmann 20CT | 690V 20A |
| 202-H3XX | Bussmann 20CT | 690V 20A |
| 203-H3XX | Bussmann 30FE | 690V 30A |
| 205-XXXX | Bussmann 50FE | 690V 50A |
| 208-XXXX | Bussmann 63FE | 690V 63A |
| 210-XXXX | FERRAZ SHAWMUT A50QS100-4 | 500V 100A |
| 215-XXXX | Bussmann 120FEE / FERRAZ A50QS150-4 | 690V 120A / 500V 150A |
| 220-XXXX | FERRAZ SHAWMUT A50QS150-4 | 500V 150A |

| Drive Model E510 | Fuse Type | |
|------------------|---|------------------------|
| | Manufacturer: Bussmann / FERRAZ SHAWMUT | |
| | Model | Fuse Ampere Rating (A) |
| | 400 V Class Three-Phase Drives | |
| 401-XXXX | Bussmann 10CT | 690V 10A |
| 402-XXXX | Bussmann 16CT | 690V 16A |
| 403-XXXX | Bussmann 16CT | 690V 16A |
| 405-XXXX | Bussmann 25ET | 690V 25A |
| 408-XXXX | Bussmann 40FE | 690V 40A |
| 410-XXXX | Bussmann 50FE | 690V 50A |
| 415-XXXX | Bussmann 63FE | 690V 63A |
| 420-XXXX | Bussmann 80FE | 690V 80A |
| 425-XXXX | FERRAZ SHAWMUT A50QS100-4 | 500V 100A |

◆ Motor Overtemperature Protection

Motor overtemperature protection shall be provided in the end use application.

■ Field Wiring Terminals

All input and output field wiring terminals not located within the motor circuit shall be marked to indicate the proper connections that are to be made to each terminal and indicate that copper conductors, rated 75°C are to be used.

■ Drive Short-Circuit Rating

This drive has undergone the UL short-circuit test, which certifies that during a short circuit in the power supply the current flow will not rise above value. Please see electrical ratings for maximum voltage and table below for current.

- The MCCB and breaker protection and fuse ratings (refer to the preceding table) shall be equal to or greater than the short-circuit tolerance of the power supply being used.
- Suitable for use on a circuit capable of delivering not more than (A) RMS symmetrical amperes for (Hp) Hp in 240 / 480 V class drives motor overload protection.

| Horse Power (Hp) | Current (A) | Voltage (V) |
|--------------------|---------------|---------------|
| 1 - 50 | 5,000 | 240 / 480 |

◆ Drive Motor Overload Protection

Set parameter 02-01 (motor rated current) to the appropriate value to enable motor overload protection. The internal motor overload protection is UL listed and in accordance with the NEC and CEC.

■ 02-01 Motor Rated Current

Setting Range: Model Dependent
 Factory Default: Model Dependent

The motor rated current parameter (02-01) protects the motor and allows for proper vector control when using open loop vector or flux vector control methods (00-00 = 1). The motor protection parameter 08-05 is set as factory default. Set 02-01 to the full load amps (FLA) stamped on the nameplate of the motor.

The operator must enter the rated current of the motor (02-01) in the menu during auto-tuning.

■ Motor Overload Protection Selection

The drive has an electronic overload protection function (OL1) based on time, output current, and output frequency, which protects the motor from overheating. The electronic thermal overload function is UL-recognized, so it does not require an external thermal overload relay for single motor operation.

This parameter selects the motor overload curve used according to the type of motor applied.

Overload Protection Settings

| Setting | Description |
|---------|---|
| 08-05=0 | Disabled |
| 08-05=1 | Enabled |
| 08-12=0 | Constant Torque (OL = 103 %) (150 % for 1 Minute) |
| 08-12=1 | Variable Torque (OL = 113 %)(123 % for 1 Minute) |
| 08-11=0 | Standard Motor protection |
| 08-11=1 | Inverter duty motor protection |

Sets the motor overload protection function in 08 group according to the applicable motor.

Setting 08-05 = 0. Disables the motor overload protection function when two or more motors are connected to a single inverter. Use an alternative method to provide separate overload protection for each motor such as connecting a thermal overload relay to the power line of each motor.

Setting 08-12 = 0. To protect the general mechanical load, as long as the load is less than 103% rated current, the motor continue to run. The load is larger than 150% rated current, the motor will run for 1 minute. (Refer to following curve (1)).

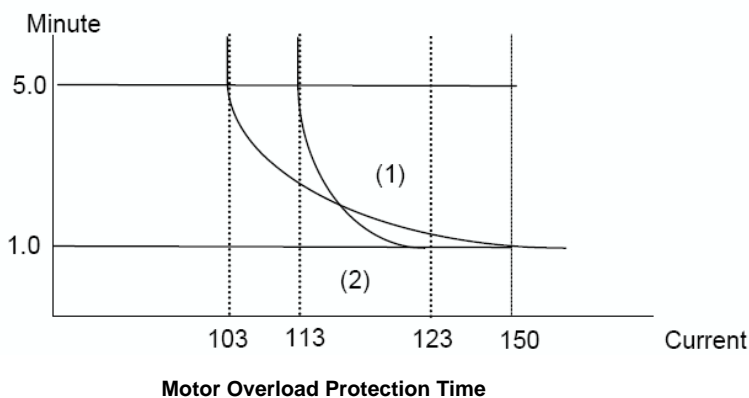
Setting 08-12 = 1. To protect HVAC load(FANPUMP...so on)as long as the load is less than 113% rated current, the motor continue to run. The load is larger than 123% rated current, the motor will run for 1 minute.

Setting 08-11 = 0. For motors without a forced cooling fan (general purpose standard motor), the heat dissipation capability is lower when in low speed operation.

Setting 08-11 = 1. For motors with a forced cooling fan (inverter duty or V/F motor), the heat dissipation capability is not dependent upon the rotating speed.

To protect the motor from overload by using electronic overload protection, be sure to set parameter 02-01 according to the rated current value shown on the motor nameplate.

Refer to the following "Motor Overload Protection Time" for the standard motor overload protection curve example : Setting 08-12 = 0.







The heat sinking function will not be as effective when the motor run at low speed. So the thermal relay action level will decline at the same time. (The curve 1 will change to curve 2).

■ 08-06 Motor Overload Operation Selection

| Setting | Description |
|---------|---|
| 0 | Coast-to-Stop After Overload Protection is Activated |
| 1 | Drive Will Not Trip when Overload Protection is Activated (OL1) |


Préface


- ◆ Le produit est un lecteur conçu pour commander un moteur à induction triphasé. lire attentivement ce manuel pour garantir le bon fonctionnement, la sécurité et pour se familiariser avec les fonctions d'entraînement.
- ◆ Le lecteur est un appareil électrique / électronique et doit être installé et géré par un personnel qualifié
- ◆ Une mauvaise manipulation peut entraîner un fonctionnement incorrect, cycle de vie plus court, ou l'échec de ce produit ainsi que le moteur.
- ◆ Tous les documents sont sujets à changement sans préavis. Soyez sûr d'obtenir les dernières éditions de l'utilisation ou visitez notre site Web
- ◆ Lire le manuel d'instructions avant de procéder à l'installation, les connexions (câblage), le fonctionnement ou l'entretien et l'inspection.
- ◆ Vérifiez que vous avez une bonne connaissance de l'entraînement et de vous familiariser avec les consignes de sécurité et les précautions avant de procéder à fonctionner le lecteur.
- ◆ prêter attention aux consignes de sécurité indiquées par l'avertissement  et symbole Attention .

| | |
|---|---|
|  Avertissement | ignorer les informations indiquées par le symbole d'avertissement peut entraîner la mort ou des blessures graves. |
|  Attention | ignorer les informations indiquées par le symbole de mise en garde peut entraîner des blessures mineures ou modérées et / ou des dommages matériels importants. |

Chapitre 1 Consignes de sécurité

1.1 avant d'alimenter le disque dur

| |
|--|
|  Avertissement |
| <ul style="list-style-type: none">➤ Le circuit principal doit être correctement câblée. Pour les terminaux monophasés d'approvisionnement de l'utilisation des intrants (R/L1, T/L3) et de trois bornes d'entrée de l'utilisation de l'offre de phase (R/L1, S/L2, T/L3). U/T1, V/T2, W/T3 ne doivent être utilisés pour connecter le moteur. Raccordement de l'alimentation d'entrée à l'un des U/T1, V/T2 W/T3 ou bornes risque d'endommager le lecteur. |

| |
|--|
|  Attention |
| <ul style="list-style-type: none">➤ Pour éviter que le couvercle ne se désengage ou de tout autre dommage physique, ne portez pas le lecteur par son couverture. Soutenir le groupe par son dissipateur de chaleur lors du transport. Une mauvaise manipulation peut endommager le lecteur ou blesser le personnel, et doit être évitée.➤ Pour éviter que les risques d'incendie, ne pas installer le lecteur sur ou à proximité d'objets inflammables. Installer sur des objets ininflammables comme les surfaces métalliques. |

- Si plusieurs disques sont placés dans le même panneau de contrôle, fournir une ventilation adéquate pour maintenir la température en dessous de 40 ° C/104 ° F (50 ° C/122 ° F sans housse de protection) pour éviter la surchauffe ou incendie.
- Lors d'un retrait ou d'installation de l'opérateur numérique, éteignez-le d'abord, puis de suivre les instructions de ce manuel pour éviter les erreurs de l'opérateur ou de la perte de l'affichage causé par des connexions défectueuses.



Avertissement

- Lors d'un retrait ou d'installation de l'opérateur numérique, éteignez-le d'abord, puis de suivre les instructions de ce manuel pour éviter les erreurs de l'opérateur ou de la perte de l'affichage causé par des connexions défectueuses....

1.2 Câblage



Avertissement

- Coupez toujours l'alimentation électrique avant de procéder à l'installation d'entraînement et le câblage des terminaux utilisateurs.
- Le câblage doit être effectué par un personnel qualifié / électricien certifié.
- Assurez-vous que le lecteur est correctement mis à la terre. (220V Classe: impédance de mise à la terre doit être inférieure à 100Ω Classe 440V: Impédance de mise à la terre doit être inférieure à 10Ω.)
- vérifier et tester mes circuits d'arrêt d'urgence après le câblage. (L'Installateur est responsable du câblage.)
- Ne touchez jamais de l'entrée ou de lignes électriques de sortie permettant directement ou toute entrée ou de lignes de puissance de sortie à venir en contact avec le boîtier d'entraînement.
- Ne pas effectuer un test de tenue en tension diélectrique (mégohmmètre) sur le disque dur ou cela va entraîner des dommages de lecture pour les composants semi-conducteurs.



Attention

- La tension d'alimentation appliquée doit se conformer à la tension d'entrée spécifiée par le lecteur. (Voir la section signalétique du produit)
- Raccorder la résistance de freinage et de l'unité de freinage sur les bornes assignées.
- Ne pas brancher une résistance de freinage directement sur les bornes CC P (+) et N (-), sinon risque d'incendie.
- Utilisez des recommandations de la jauge de fil et les spécifications de couple. (Voir Wire Gauge et la section de spécification de couple) °
- Ne jamais brancher l'alimentation d'entrée aux bornes onduleur de sortie U/T1, V/T2, W/T3.
- Ne pas brancher un contacteur ou interrupteur en série avec le variateur et le moteur.
- Ne branchez pas un facteur condensateur de correction de puissance ou suppresseur de tension à la sortie du variateur °
- S'assurer que l'interférence générée par l'entraînement et le moteur n'a pas d'incidence sur les périphériques.

1.3 Avant l'opération



Avertissement

- Assurez-vous que la capacité du disque correspond aux paramètres de notation avant d'alimenter.
- Réduire le paramètre de la fréquence porteuse si le câble du variateur au moteur est supérieure à 80 pi (25 m). Un courant de haute fréquence peut être générée par la capacité parasite entre les câbles et entraîner un déclenchement de surintensité du variateur, une augmentation du courant ou d'une lecture actuelle inexacts.
- Veillez à installer tous les couvercles avant de l'allumer. Ne retirez pas les capots pendant que l'alimentation du lecteur est allumé, un choc électrique peut se produire autrement.
- Ne pas actionner d'interrupteurs avec les mains mouillées, un choc électrique pourrait survenir autrement.
- Ne touchez pas les bornes d'entraînement lorsqu'il est alimenté, même si le lecteur est arrêté, un choc électrique pourrait survenir autrement.

1.4 Configuration Paramètre



Attention

- Ne branchez pas une charge pour le moteur tout en effectuant un auto-tune.
- Assurez-vous que le moteur peut fonctionner librement et il y a suffisamment d'espace autour du moteur lors de l'exécution d'un auto-tune rotation.

1.5 Opération




Avertissement

- Veillez à installer tous les couvercles avant de l'allumer. Ne retirez pas les capots pendant que l'alimentation du lecteur est allumé, un choc électrique peut se produire autrement.
- Ne pas brancher ou débrancher le moteur pendant le fonctionnement. Le variateur pourrai se déclencher et ainsi endommager le lecteur.
- Les opérations peuvent commencer soudainement si une alarme ou un défaut est réarmé avec un ordre de marche active. Assurez-vous qu'un ordre de marche est actif lors de la réinitialisation de l'alarme ou de défaut, autrement des accidents peuvent se produire.
- Ne pas actionner d'interrupteurs avec les mains mouillées, un choc électrique pourrait survenir .
- Un interrupteur d'urgence externe indépendant est fourni, qui s'arrête en urgence vers le bas la sortie de l'onduleur en cas de danger.
- Si le redémarrage automatique après une récupération d'énergie est activée, le variateur démarrera automatiquement après le rétablissement du courant.
- Assurez-vous qu'il est sûr de faire fonctionner le variateur et le moteur avant d'effectuer un auto-tune rotation.
- Ne touchez pas les bornes d'entraînement lorsqu'il est alimenté même si l'onduleur s'est arrêté, un choc électrique pourrait survenir .
- Ne pas contrôler les signaux sur les circuits pendant que le lecteur est en marche.
- Après la mise hors tension, le ventilateur de refroidissement peut continuer à fonctionner pendant un certain temps.



Attention

- Ne touchez pas les composants générant de la chaleur tels que radiateurs et des résistances de freinage. 
- Vérifiez soigneusement la performance du moteur ou de la machine avant d'utiliser à grande vitesse, sous peine de blessure.
- Notez les réglages des paramètres liés à l'unité de freinage lorsque applicable.
- Ne pas utiliser la fonction de freinage d'entraînement pour un maintien mécanique, sous peine de blessure.
- Ne pas contrôler les signaux sur les circuits pendant que le lecteur est en marche.

1.6 Entretien, Inspection et remplacement



Avertissement

- Attendre un minimum de 5 minutes après que l'alimentation a été débranchée avant de commencer une inspection. Vérifiez également que le voyant de charge est éteint et que la tension du bus cc a chuté au-dessous de 25Vdc.
- Ne jamais toucher les bornes à haute tension dans le lecteur.
- Assurez-vous que l'alimentation du lecteur est débranché avant de démonter le lecteur.
- Seul le personnel autorisé peuvent faire l'entretien, l'inspection et les opérations de remplacement. (Enlevez les bijoux en métal tels que les montres et les bagues et utiliser des outils isolés.)



Attention

- Le variateur peut être utilisé dans un environnement avec une gamme de température allant de 14 ° -104 ° F (10-40 ° C) et l'humidité relative de 95% sans condensation.
- Le variateur doit être utilisé dans un environnement sans poussière, gaz, vapeur et humidité.

1.7 Mise au rebut du variateur



Attention

- jeter cet appareil avec soin comme un déchet industriel et selon les réglementations locales nécessaires.
- Les condensateurs du circuit principal d'entraînement et circuits imprimés sont considérés comme des déchets dangereux et ne doivent pas être brûlés.
- The Plastic enclosure and parts of the drive such as the top cover board will release harmful gases if burned.



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