

Variable Frequency Drive E310 Series

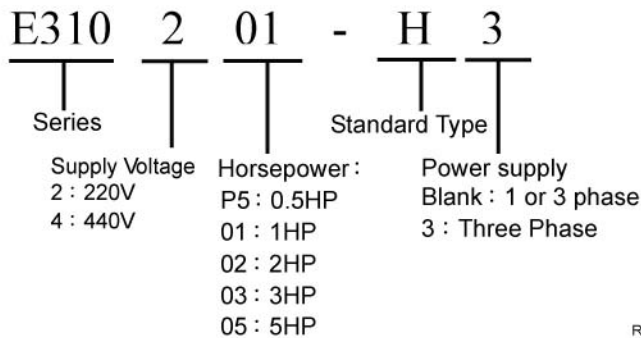
FAMCO
هایپر صنعت



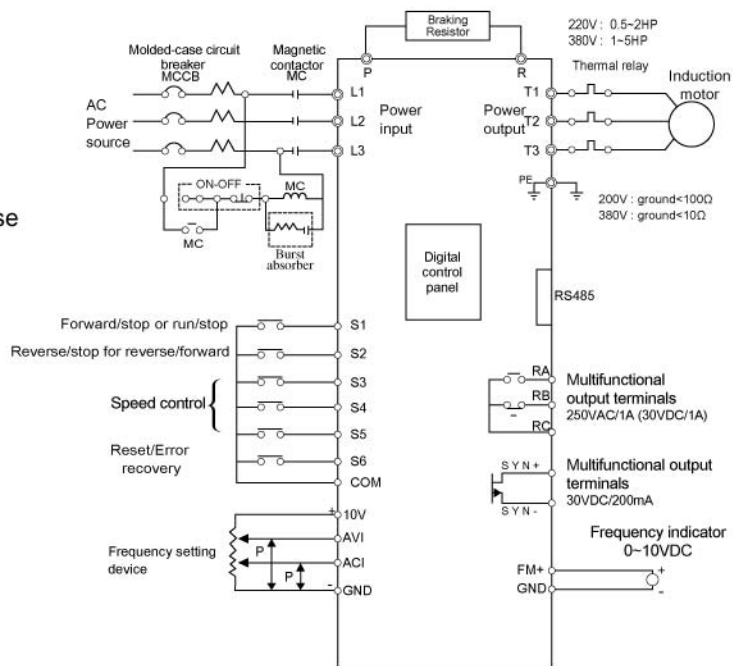
Product Feature

- With auto torque boost, 150% torque output at 1 Hz
- Output frequency up to 400Hz
- Speed Control / Precision is 1:100(Vector) / $\pm 0.5\%$ (Vector)
- Improved braking Capability by Built-in Braking Transistor
- Built-in RS485 communication
- 5 digit 7 segment removable keypad with standard RJ45 interface
- Cooling by heat sink, eliminating noise from fan

Definition of model



Wiring Diagram



Application

Application for Industrial Machine

High Environment Immunity

- Without fan
- Heat sink outside designing for dusty environment
- Less trip at low voltage

High Performance

- High braking ability with built-in braking transistor
- High torque at low speed
- Fast response time
- Built-in RS485 communication

Edge Bonding Machine



Bar Feeder Machine



Sander Machine



CNC Machine



Packaging Machine



Die casting Machine



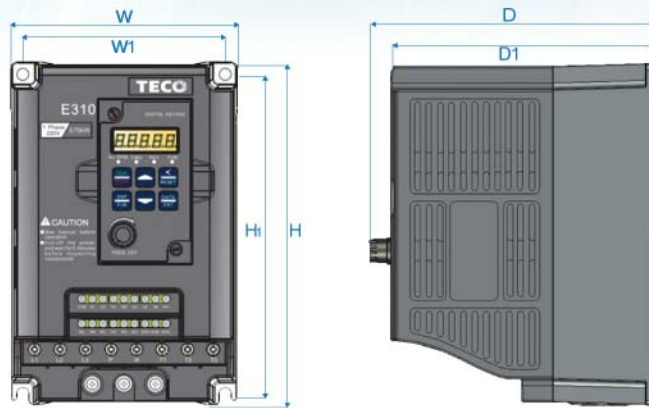
Product Specifications

| E310-□□□-XX | 2P5 | 201 | 202 | 401 | 402 | 403 | 405 |
|---|---|--------|-------|---|------|------|------|
| Horsepower (HP) | 0.5 | 1 | 2 | 1 | 2 | 3 | 5 |
| Max Applicable Motor Output (KW) | 0.4 | 0.75 | 1.5 | 0.75 | 1.5 | 2.2 | 3.7 |
| Rated Output Current (A) | 3.1 | 4.5 | 7.5 | 2.3 | 3.8 | 5.2 | 8.8 |
| Rated Capacity (KVA) | 1.2 | 1.7 | 2.9 | 1.7 | 2.9 | 4.0 | 6.7 |
| Max. Input Voltage | Single or Three phase 200~240V +10%-15% , 50/60Hz± 5% | | | Three phase 380~480V +10%-15% , 50/60Hz± 5% | | | |
| Max. Output Voltage | Three phase 200~240V | | | Three phase 380~480V | | | |
| Input Current (A)(Singel/Three phase) | 8.5/4.5 | 12/6.5 | 16/11 | 4.2 | 5.6 | 7.3 | 11.6 |
| Net Weight (KG) | 1.37 | 1.37 | 1.47 | 1.33 | 1.35 | 2.22 | 2.25 |
| Allowable momentary power loss time (Sec) | 1.0 | 1.0 | 2.0 | 1.0 | 1.0 | 2.0 | 2.0 |

General Specifications

| Item | E310 |
|-------------------------------|---|
| Control Mode | V/F or Vector Control |
| Range | 0.01~400.00 Hz |
| Start control torque | 150%/1Hz (Vector) |
| Speed control range | 1:100 (Vector) |
| Speed Control Precision | ±0.5% (Vector) |
| Setting resolution | Digital: 0.01Hz, Analog: 0.06Hz/ 60Hz(10bits) |
| Keypad setting | Set directly with ▲ ▼ keys or the VR on the keypad |
| Display Function | Five digital LED and status indicator; display frequency/ line speed/ DC voltage/ Output voltage/Current/ Rotation direction/Inverter parameter/ Fault Log/ Program Version / Heat sink temperature/PID feed back |
| External signal setting | 1.External potentiometer 0-10V/ 0-20mA 2.Provides up/down controls, speed control or automatic procedure control with multifunctional contacts on the terminal block (TM2) |
| Frequency Limit Function | Upper/lower frequency limits and three programmable skip frequencies |
| Carrier frequency | 1 ~ 12 kHz |
| V/F pattern | 18 fixed patterns, 1 programable curve |
| Acc/Dec control | Two-stage Acc/Dec time (0.1 – 3,600 seconds) and four-stage S curves (refer to descriptions on 10-07..) |
| Multifunction analog output | 5 functions (refer to description on 2-12) |
| Multifunction input | 22 functions (refer to description on 01-00~01-05) |
| Multifunction output | 14 functions (refer to description on 01-09~01-10) |
| Other Functions | Momentary Power Loss Restart, Speed Search, Overload Detection, 8 preset speeds, Acc/Dec Switch (2 Stages), S Curves, 3-wire Control, PID control, torque boost, Slip Compensation, Frequency Upper/Lower Limit, Auto energy saving, Modbus slave and PC/PDA Link, Auto Restart, Encoder input. |
| Overload protection | The relays to protect the motor (the curve can be set) and the inverter(150%/1min) |
| Over Voltage | 200V class: DC Voltage > 410V, 400V class: DC Voltage > 820V |
| Under Voltage | 200V class: DC Voltage < 190V, 400V class: DC Voltage > 380V |
| Momentary Power Loss Restart | Restart can be initiated with spin start after momentary power loss in Max 2 sec. |
| Stall Prevention | Stall prevention for Acceleration/ Deceleration/Operation. |
| Short-circuit output terminal | Electronic Circuit Protection |
| Grounding Fault | Electronic Circuit Protection |
| Other Function | Protection for overheating of heat sink, over torquedetection, errorcontact control, reverse prohibit, prohibit for direct start after power up and errorrecovery, parameter lock up. |
| Communication Control | 1.Control by RS485 2.One to one or one to many control. 3.Baud rate/stop bit/parity bit can be set. |
| Braking Torque | About 20%, with built-in braking transistor and the specified external braking resistors can provide 100% |
| Operation temperature | 14-120°F (-10 ~ 50°C) |
| Storage temperature | 4-140°F (-20 ~ 60°C) |
| Humidity | 0 – 95% Relative Humidity(Non-condense) |
| Vibration | 1G (9.8m/S2) |
| Enclosure | IP20 |

Dimension



Unit:mm(inch)

| Model | W | H | D | W1 | H1 | D1 |
|-------------|-----------|-----------|-------------|-----------|-----------|-----------|
| E310-2P5-H | 107(4.21) | 162(6.37) | 149.9(5.9) | 96(3.78) | 150(5.9) | 139(5.47) |
| E310-201-H | 107(4.21) | 162(6.37) | 149.9(5.9) | 96(3.78) | 150(5.9) | 139(5.47) |
| E310-202-H | 107(4.21) | 162(6.37) | 149.9(5.9) | 96(3.78) | 150(5.9) | 139(5.47) |
| E310-401-H3 | 107(4.21) | 162(6.37) | 149.9(5.9) | 96(3.78) | 150(5.9) | 139(5.47) |
| E310-402-H3 | 107(4.21) | 162(6.37) | 149.9(5.9) | 96(3.78) | 150(5.9) | 139(5.47) |
| E310-403-H3 | 149(5.87) | 184(7.24) | 162.1(6.38) | 138(5.43) | 174(6.85) | 151(5.94) |
| E310-405-H3 | 149(5.87) | 184(7.24) | 162.1(6.38) | 138(5.43) | 174(6.85) | 151(5.94) |

TECO INVERTER

- EV series : 0.25~1HP(110V),0.25~3HP(220V), 1~3HP(440V)
- CV series : 0.5~40HP(220V),1~75HP(440V)
- MA series : 1~40HP(220V),1~75HP(440V)
- GS series : 25~100HP(220V),25~400HP(440V)
- N310 series : 0.5~3HP(220V),1~215HP(440V)
- S310 series : 0.25~1HP(220V)



TECO PLC / PLR

- TP03 series : 14/20/26/30/36/40/60 I/O MAX256points
- SG2 series : 10/12/20points



TECO SERVO

- JSDA series : 100W~15KW(220V)
- JSDE series : 50W~2KW(220V)



Distributor

TECO

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تهران، کیلومتر ۲۱ بزرگراه لشگری (جاده مخصوص کرج)

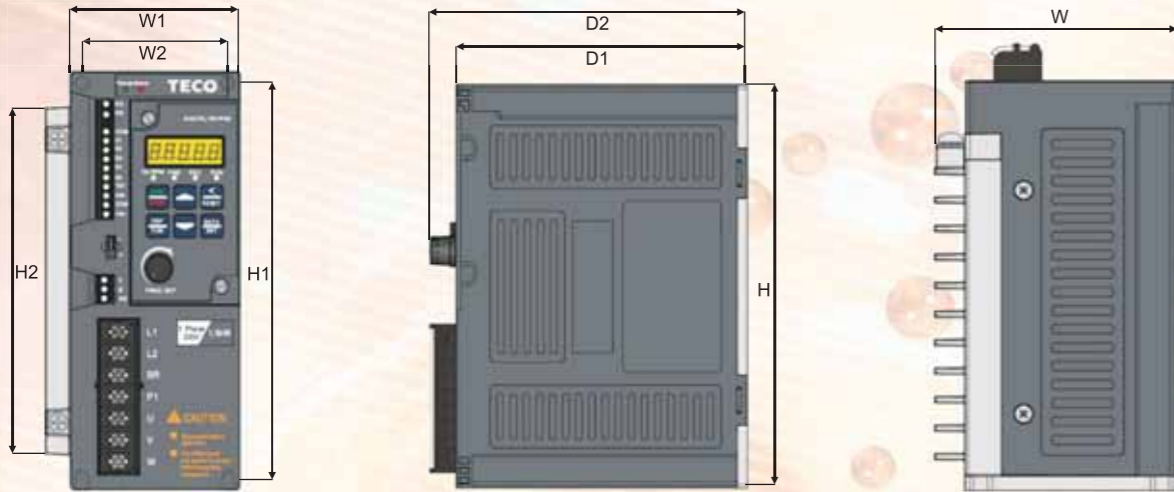
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Braking unit and braking resistor

| Model | AC inductance at input side | | Suitable Motor Capacity (HP) | Suitable Motor Capacity (KW) | Braking resistor Specification | | | Braking resistor Duty Cycle (%) | Braking torque (%) |
|----------------|-----------------------------|-----------------|------------------------------|------------------------------|--------------------------------|-----|-------------|---------------------------------|--------------------|
| | Current (A) | Inductance (mH) | | | (W) | (Ω) | Number used | | |
| S310-2P5-H1BCD | 5.2 | 4.2 | 0.5 | 0.375 | 60 | 200 | - | 8 | 218 |
| S310-201-H1BCD | 9.4 | 2.1 | 1 | 0.75 | 60 | 200 | - | 8 | 119 |

S310 Series

Dimension



Unit:mm(inch)

| Model | W | W1 | W2 | H | H1 | H2 | D | D1 |
|----------------------|----------|----------|----------|-----------|-----------|-----------|----------|-----------|
| S310-20P5/2001-H1BCD | 79(3.11) | 69(2.71) | 59(2.32) | 160(6.29) | 152(5.98) | 133(5.23) | 145(5.7) | 133(5.23) |

TECO INVERTER

- EV series : 0.25~1HP(110V),0.25~3HP(220V),1~3HP(440V)
- CV series : 0.5~40HP(220V),1~75HP(440V)
- MA series : 1~40HP(220V),1~75HP(440V)
- GS series : 25~100HP(220V),25~400HP(440V)



TECO PLC / PLR

- TP03 series : 14/20/26/30/36/40/60 I/O MAX256points
- SG2 series : 10/12/20points



Distributor

TECO SERVO

- JSDA series : 100W~15KW(220V)
- JSDE series : 50W~2KW(220V)



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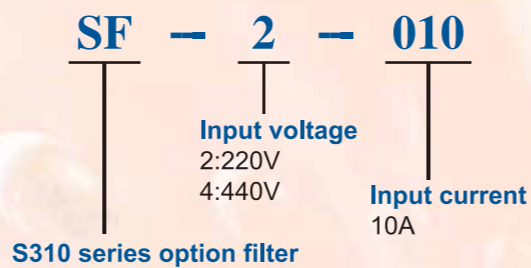
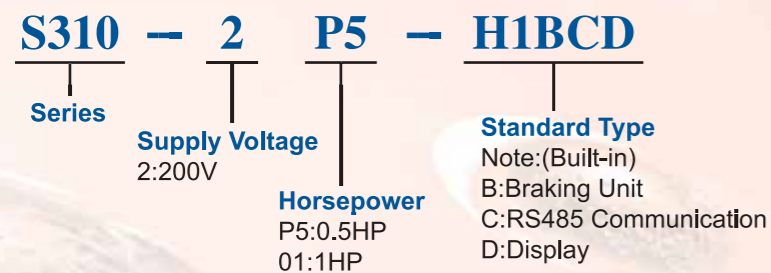
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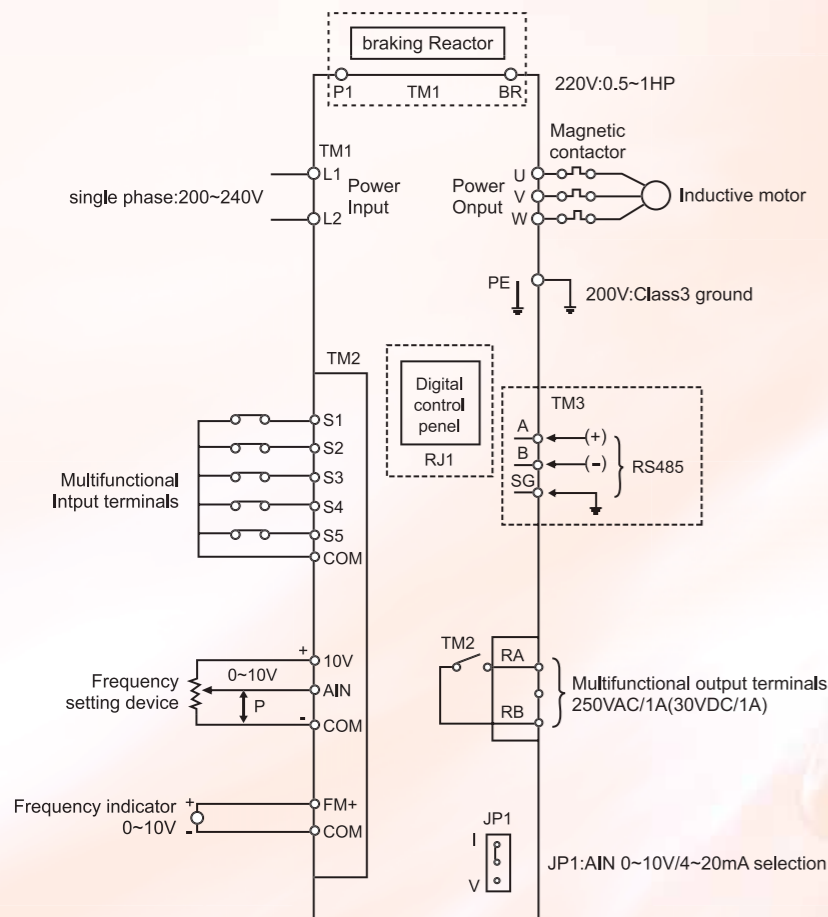
Product Features

- ▶ With auto torque boost, 150% torque output at 6 Hz
- ▶ Output frequency up to 400Hz
- ▶ Ultra low noise operation with built-in SOFT-PWM
- ▶ Improved braking Capability by Built-in Braking Transistor
- ▶ Built-in RS485 communication
- ▶ 5 digit 7 segment removable keypad with standard RJ45 interface
- ▶ Natural cooling, eliminating noise from fan
- ▶ Economic blind type model (Without display/keypad) is available

Definition of model / filter



Wiring Diagram



Application

Application for Cutting Machine

- **High Environment Immunity**
 - Without fan
 - Heat sink outside designing for dusty environment
 - Less trip at low voltage
 - Coated PCB
- **High Performance**
 - High braking ability without braking resistor
 - High torque at low speed
 - Fast response time



Flat Knitting Machine



Cone Winding Machine



Gloves Knitting Machine



Socks Knitting Machine

Product Specifications

Single / Three phase, 200-240V model

| S310-□□□□-XXX | 2P5 | 201 |
|--|--|------|
| Horsepower (HP) | 0.5 | 1 |
| Max Applicable Motor Output (KW) | 0.4 | 0.75 |
| Rated Output Current (A) | 3.1 | 4.2 |
| Rated Capacity (KVA) | 0.88 | 1.60 |
| Max. Input Voltage | Single Phase: 200~240V +10% -15%, 50/60Hz ± 5% | |
| Max. Output Voltage | Single Phase: 200~240V | |
| Input Current (A) | 5.4 | 10.4 |
| Net Weight (KG) | 0.97 | 0.97 |
| Net Weight (KG)(keypad) | 1.0 | 1.0 |
| Allowable momentary power loss time (second) | 1.0 | 1.0 |

General Specifications

| Item | S310 TYPE |
|------------------------------|--|
| Control Mode | V/F |
| Control Mode | V/F |
| Range | 0.01~400.00 Hz |
| Setting resolution | Digital: 0.01Hz (Note*1), Analog: 0.06Hz/ 60Hz (10bits) |
| Keypad setting | Set directly with ▲▼ keys or the VR on the keypad |
| Display Function | Five digital LED and status indicator: display frequency / Inverter parameter/ Fault Log/ Program Version |
| External signal setting | 1. External potentiometer 0-10V/ 0-20mA 2. Provides up/down controls, speed control with multifunctional contacts on the terminal block (TM2) |
| Frequency Limit Function | Upper/lower frequency limits |
| Carrier frequency | 1 ~ 12 kHz |
| V/F pattern | 6 fixed patterns, 1 programable curve |
| Acc/Dec control | Acc/Dec time (0.1 ~ 3,600 seconds) |
| Multifunction analog output | 4 functions (refer to description on 2-12) |
| Multifunction input | 9 functions (refer to description on 01-00~01-04) |
| Multifunction output | 3 functions (refer to description on 01-09) |
| Other Functions | Momentary Power Loss Restart, Overload Detection, 8 preset speeds, 2/3-wire Control, torque boost, Slip Compensation, Frequency Upper/Lower Limit, Modbus slave and PC/PDA Link, Auto Restart. |
| Communication Control | 1. Control by RS485 2. One to one or one to many (RS485 ONLY) control. 3. BAUD RATE/STOP BIT/PARITY/bit can be set |
| Braking Torque | About 20%, standard model the specified external braking resistors can provide 100% |
| Operation temperature | 14-120°F (-10 ~ 50°C) (Note*2) |
| Storage temperature | 4-140°F (-20 ~ 60°C) |
| Humidity | 0-95% Relative Humidity (Non-condense) |
| Vibration | 1G (9.8m/s ²) |
| Enclosure | IP20 |
| FUSE protection | The motor stops after FUSE melt |
| Over Voltage | 200V class: DC Voltage > 410V |
| Under Voltage | 200V class: DC Voltage < 190V |
| Momentary Power Loss Restart | Restart can be initiated with spin start after momentary power loss in Max 2 sec. |
| Other Function | Over torque detection, error contact control, reverse prohibit, prohibit for direct start after power up and error recovery. |



Ideal For Fan & Pump

Distributor

TECO

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<http://www.teco.com.tw/sa/en>

Specifications covered in this brochure may be subject to change

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F510

Fan & Pump Drive

IP 20 / NEMA 1

IP 55 / NEMA 12

تهران، کیلومتر ۲۱ بزرگراه لشگری (جاده مخصوص کرج)

روبروی پالایشگاه نفت پارس، پلاک ۱۲



F510

Mechanical Features

F510 realizes modular design, not only for applications of high protection level, but also for maintaining equipment inclusive of Hot plug display, communication card, removable fan, and etc...

IP55

Water and Dust Protection Design

Teco launches the all new drives for fan and pump control which meet protection level-IP55 to provide various options for harsh environment.

Enclosure



IP20

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IP55 / NEMA 12

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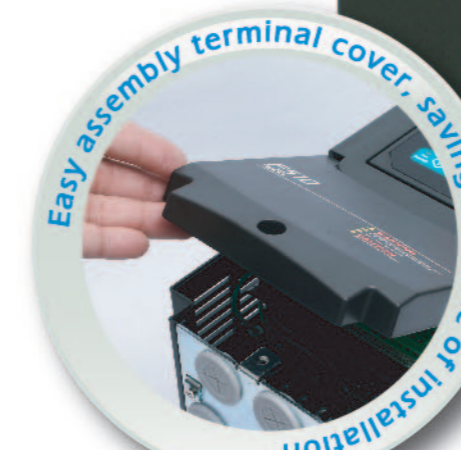
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Hand/Auto/Off

Hand/Auto selection is a very convenient function when system failure, test and inspection. F510 provides friendly user interface of Hand/Auto selection. To get this function by using optional HOA digital operator.





Excellent Pump Control

Built-in multi-pump control mode.

According to the load of water supply system, use intelligent control to coordinate pumps. It distributes running hours evenly across master and slave pumps to increase system efficiency and extend the life of drive.

Pump Cascade Control

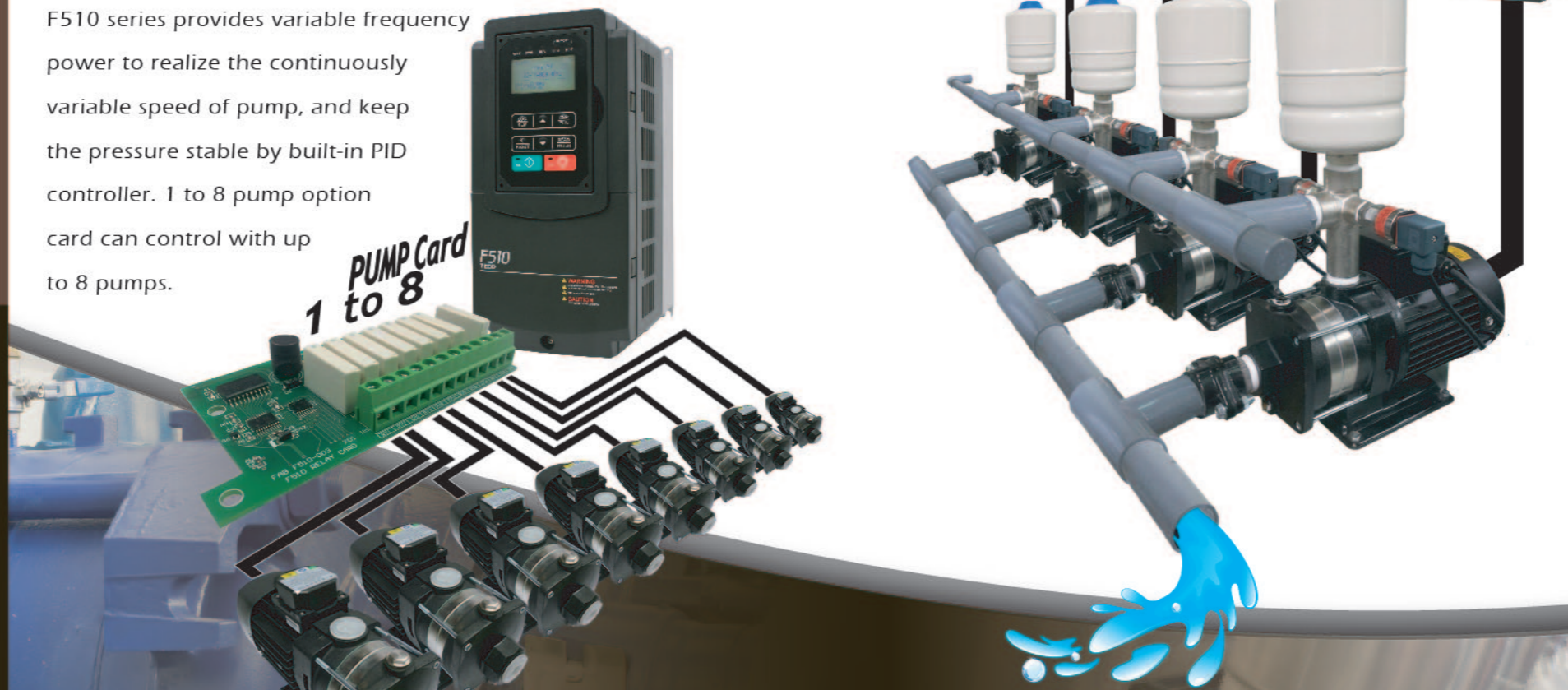
1 to 8 pump card is available for a larger water supply and constant pressure applications. It is sophisticated in water supply industry by built-in PID controller and simple PLC of the advantages of drive.

F510 series provides variable frequency power to realize the continuously variable speed of pump, and keep the pressure stable by built-in PID controller. 1 to 8 pump option card can control with up to 8 pumps.

- Possess constant pressure control technology.
- Provide quick parameter setting, favorable for most of water supply applications.
- Pump Cascade Control via optional pump card.

F510

Energy Efficient Pump Control



Blockage Inspection

F510 can detect clog of pump and give alarm to prevent overload pressure to damage pipes.

Sleep Mode

Sleep mode saves energy by detecting when flow is low or zero. It can stop system to extend the life of drive.

Dry Pump Protection

F510 can evaluate the system pressure and detect pump running dry. It will shut off pump immediately to protect it from heat and friction damage.

F510

High Efficient
Fan Control

With hardware safe torque off function and fire override mode for emergency.



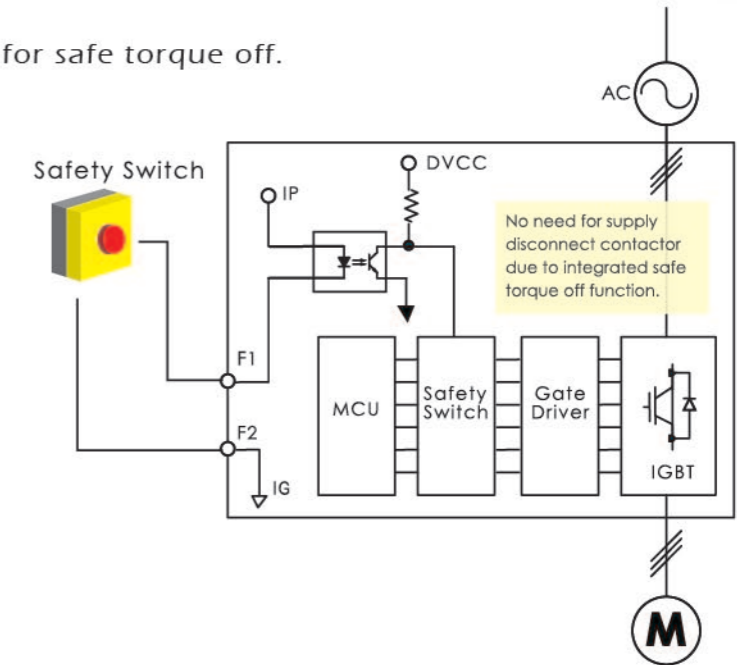
Fire Override Mode

This feature is crucial for ensuring smoke extraction from building by air conditioner or fume extractor. In Fire mode, the drive will be used in full load operation as either forward or reverse direction and ignore all software protection until trigger hardware protection or drive damaged, to achieve the requirements of smoke extraction and reduce smoke damage to human as possible.

Hardware Safe Torque Off Function

Built-in high reliable hardware circuit for safe torque off.

The operator can use the safety switch to protect staff or system in emergency timely.



Skip Frequency

F510 can avoid resonance by quick parameter setting. Preventing mechanical damage to system and fans.

F510

Communication Network Protocol

Advanced network functions for building automation inclusive of BACnet, Metasys N2 and Modbus. F510 can reduce the cost of installing automatic central air conditioning system.

METASYS is a communication protocol developed by Johnson Controls Inc. It is according to the actual needs of user and manager in building. Metasys N2 is easy to install, use, and adjust. System maintenance becomes very convenient. Metasys N2 may also collect, record, preserve and manage important message and data of the system, to achieve the best automatic management and energy saving effect.

Modbus has become a de facto standard communication protocol, and it is now amongst the most commonly available means of connecting industrial electronic devices.

BACnet is a communications protocol for building automation and control networks. It is an ASHRAE, ANSI, and ISO standard protocol. BACnet was designed to allow communication of building automation and control systems for applications such as heating, ventilating, and air-conditioning control, lighting control, access control, and fire detection systems and their associated equipment. The BACnet protocol provides mechanisms for computerized building automation devices to exchange information, regardless of the particular building service they perform.

The issue of saving energy and emission reduction become popular in recent years. The importance of relative technologies grows as time. F510 provides various technologies of saving energy.

Permanent-Magnet Motor Control Technology

Permanent-magnet motor control technology avoids energy wasting. PM motor with high efficiency rises importance for present trend of energy saving and emission reduction.

Conformity To Global Standards

Conformity to ROHS directive and international recognized certification.

RoHS

UL/cUL approval and CE certification.



RTC Function / Simple PLC

Automatic control has been mainstream. It is not only saving human resource cost, but also handling system load more efficiently. To adjust load to avoid unnecessary expense by built-in simple PLC with Real Time Clock Function. It can modulate load easily to achieve the purpose of daylight saving.

※ The RTC function only for LCD keypad.

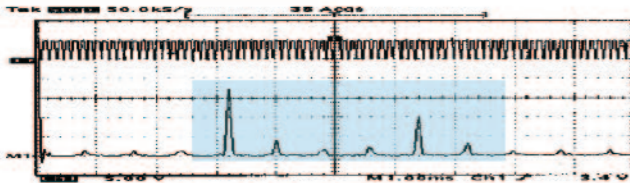
Automatic Energy Saving Function

F510 can adjust the optimum output voltage, and lower the output current of the drive according to the load automatically. The output power changes by the load proportion. In light duty, the AES has highest efficiency.

Ultra Low Motor Noise

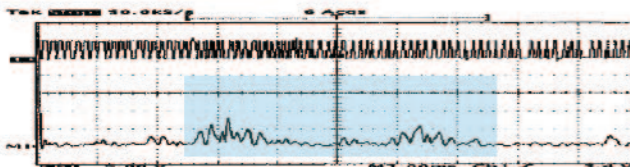
Soft PWM technology reduces common-mode voltage to restrain EMI and make motor noise down significantly.

Traditional PWM modulation method



Unique Soft PWM modulation technology lowers the audible motor noise for quieter industrial environment.

Soft PWM modulation method



※ The Value of saving 25% consumption at 20% Load and used 30HP VFD to drive the motor as the same level.

BASIC SPECIFICATIONS

220V Class

| Inverter Capacity (HP) | | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 | 150 | 175 | |
|-------------------------------|---|-----------------------------------|-----|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|
| Output Rated | Rated Output Capacity (KVA) | 5.5 | 8 | 11.4 | 15.2 | 21.3 | 26.2 | 30 | 41.9 | 52.5 | 64.3 | 76.2 | 95.2 | 119 | 152 | 171 | |
| | Rated Output Current (A) | 14.5 | 21 | 30 | 40 | 56 | 69 | 79 | 110 | 138 | 169 | 200 | 250 | 312 | 400 | 450 | |
| | Maximum Applicable Motor | (HP) | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 | 150 | 175 |
| | | (KW) | 3.7 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 | 37 | 45 | 55 | 75 | 90 | 110 | 130 |
| | Maximum Output Voltage (V) | Three Phase, 200V~240V | | | | | | | | | | | | | | | |
| Maximum Output Frequency (Hz) | Based on parameter setting 0.1~400.0 Hz ⁻³ | | | | | | | | | | | | | | | | |
| Input Power | Rated Voltage, Frequency | Three Phase, 380V ~ 480V, 50/60Hz | | | | | | | | | | | | | | | |
| | Allowable Voltage Fluctuation | -15% ~ +10% | | | | | | | | | | | | | | | |
| | Allowable Frequency Fluctuation | ±5% | | | | | | | | | | | | | | | |

440V Class

| Inverter Capacity (HP) | | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 | 150 | 175 | 215 | 250 | 300 | 375 | 425 | 535 ² | 670 ² | 800 ² | | |
|-------------------------------|--|-----------------------------------|-----|-----|-----|----|------|------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|------------------|------------------|-----|--|
| Output Rated | Rated Output Capacity (KVA) | 7 | 8.4 | 13 | 18 | 24 | 28.9 | 34 | 41 | 55 | 67 | 78 | 110 | 125 | 158 | 190 | 225 | 250 | 331 | 392 | 445 | 525 | 640 | 731 | | |
| | Rated Output Current (A) | 9.2 | 11 | 18 | 23 | 31 | 38 | 44 | 54 | 72 | 88 | 103 | 145 | 165 | 208 | 250 | 296 | 328 | 435 | 515 | 585 | 690 | 840 | 960 | | |
| | Maximum Applicable Motor | (HP) | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 | 150 | 175 | 215 | 250 | 300 | 375 | 425 | 535 | 670 | 800 | |
| | | (KW) | 4 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 | 37 | 45 | 55 | 75 | 90 | 110 | 132 | 160 | 185 | 220 | 280 | 315 | 400 | 500 | 600 | |
| | Maximum Output Voltage (V) | Three Phase, 380V~480V | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum Output Frequency (Hz) | Based on parameter setting 0.1~400.0Hz ⁻³ | | | | | | | | | | | | | | | | | | | | | | | | | |
| Input Power | Rated Voltage, Frequency | Three Phase, 380V ~ 480V, 50/60Hz | | | | | | | | | | | | | | | | | | | | | | | | |
| | Allowable Voltage Fluctuation | -15% ~ +10% | | | | | | | | | | | | | | | | | | | | | | | | |
| | Allowable Frequency Fluctuation | ±5% | | | | | | | | | | | | | | | | | | | | | | | | |

Remarks :

1. Based on the standard 4-pole induction motor. Selecting inverter must have a higher output current rating than motor.
2. 440V 535HP models or above are under development.
3. The maximum output frequency of each control mode is different, please refer to user manual for more details.

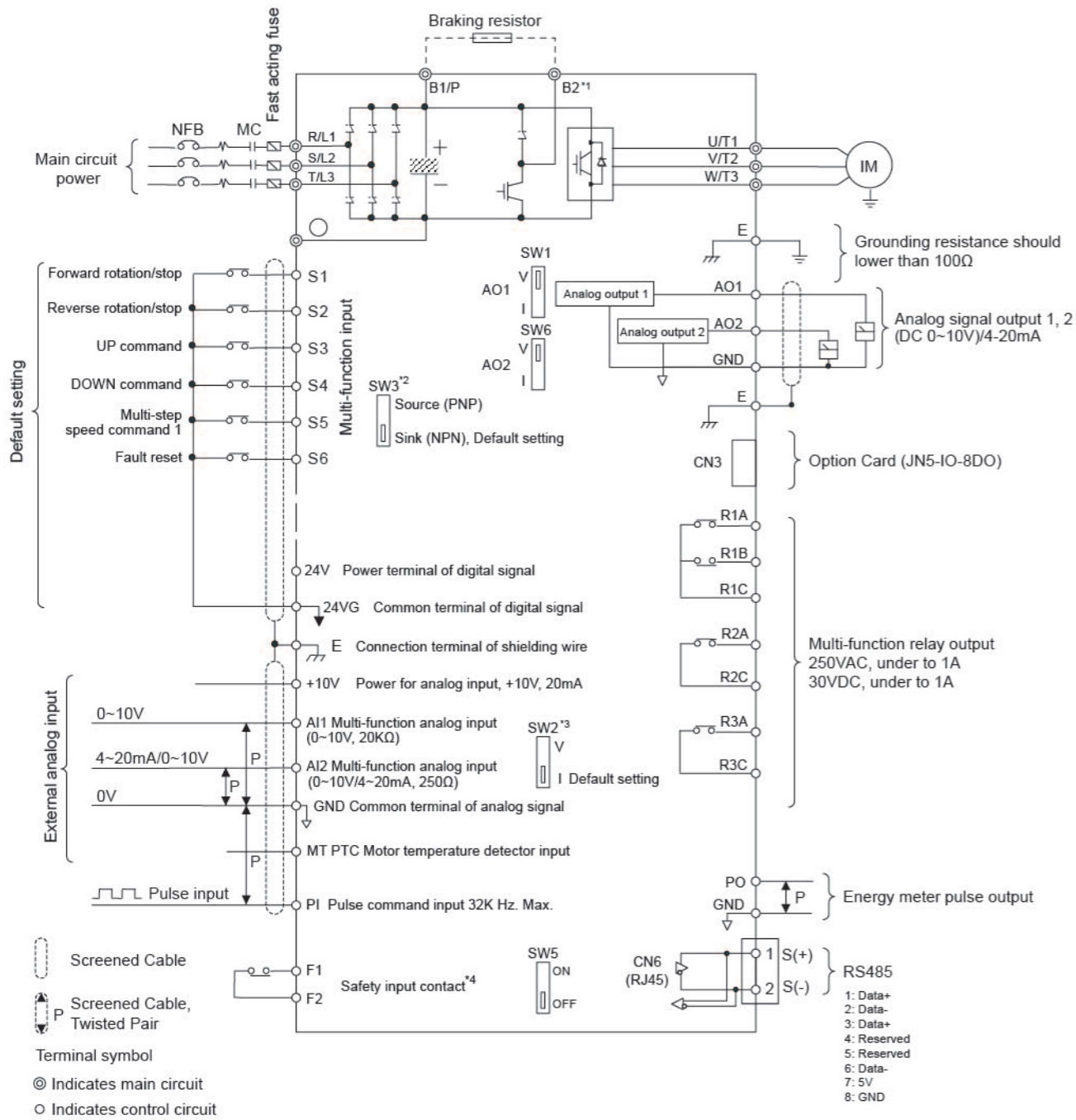
GENERAL SPECIFICATIONS

| | | |
|--------------------------------------|---|--|
| Control Characteristics | Display | LED keypad with 5-digits seven-segment display or LCD keypad (HOA LCD keypad option)all LCD keypad with parameter copy function |
| | Control Modes | V/F, SLV, PMSLV with Space Vector PWM Mode |
| | Output Frequency | 0.1Hz ~ 400.0Hz |
| | Frequency Accuracy | Digital references : ±0.01%(-10 ~ +40°C), Analog references : ±0.1% (25°C ±10°C) |
| | Speed Control Accuracy | ±0.5% (Sensorless Vector Control Mode) ¹ |
| | Frequency Setting Resolution | Digital references : 0.01Hz, Analog references : 0.06Hz/60Hz |
| | Output Frequency Resolution | 0.01Hz |
| | Overload Tolerance | 120% / 1 min |
| | Frequency Setting Signal | DC 0 ~ +10V / -10V ~ +10V or 4 ~ 20mA |
| | Acceleration / Deceleration Time | 0.0 ~ 6000.0 second (separately set acceleration and deceleration time) |
| Voltage / Frequency Characteristics | Can arbitrarily set V / F curve based on parameters | |
| | Braking Torque | About 20% |
| Main Control Functions | Auto Tuning, Soft-PWM, Over-Voltage Protection, Dynamic Braking, Speed Search, Momentary Power Loss Restart, 2 Sets of PID Control, Slide Difference Compensation, RS-485 Communication Standard, Simple PLC Function, 2 Sets of Analog Output, Safety Switch | |
| | Other Functions | Records of Power On and Operation Time, 4 Fault History Records and Latest Fault Record State, Energy-Saving Function, Phase Loss protection, Smart Braking, DC Braking, Dwell, S Curve Acceleration and Deceleration, Up / Down Operation, Modbus, BACnet MS/TP, and Metasys N2 Communication Protocol, Display of Multi- Engineering Unit, Local / Remote Switch, SINK / SOURCE Input Selection, User Parameter Settings |
| Protection Functions | Stall Protection | Current level can be set (in acceleration or constant speed, it can be set separately. In deceleration, it can be set with or without protection) |
| | Over Current (OC) and Output Short-circuit (SC) Protection | It stops when the current exceeds 160% of the inverter rated current |
| | Inverter Overload Protection (OL2) | Inverter will be stopped when the output higher than 120% rated current for 1 min, Carrier frequency is 2~4KHZ ² |
| | Motor Overload Protection (OL1) | Electrical overload protection curve |
| | Over Voltage Protection (OV) | If the main circuit DC voltage is over 410V (220V class) / 820V (440V class), the motor stops running |
| | Under Voltage Protection (UV) | If the main circuit DC voltage is under 190V (220V class) / 380V (440V class), the motor stops running |
| | Momentary Power Loss Restart | Power loss exceeds 15ms. You can set the function of momentary power loss restart up to 2sec |
| Environment Specification | Overheat Protection(OH) | Thermistor sensor on heatsink |
| | Ground Fault Protection(GF) | Protection by current detection circuit |
| | Charge Indicator | When main circuit DC voltage ≥50V, the CHARGE LED is on |
| | Output Phase Loss Protection (OPL) | If the OPL function acts, the motor stops rotation automatically |
| | Location | Indoor (protected from corrosive gases and dust) |
| Communication Function | Ambient Temperature | -10 ~ +40°C (IP20/NEMA1 and IP55/NEMA12), -10 ~ +50°C (IP00), with de-rating, its maximum operation temperature is 60°C |
| | Storage Temperature | -20 ~ +70°C |
| | Humidity | 95%RH or less (no condensation) |
| | Altitude and Vibration | Altitude of 1000 meters or lower, below 5.9m/s ² (0.6G) |
| PLC Function | Built-in RS-485 as standard (Modbus protocol with RJ45 / BACnet / Metasys N2) | |
| Electromagnetic Interference (EMI) | Meet EN61800-3 Standard, IP20 400V 75HP or below and IP55 400V 60HP can be built in | |
| Electromagnetic Susceptibility (EMS) | Meet EN61800-3 Standard | |
| Certification | CE | Meet EN61800-3(CE & RE) and EN61800-5-1(LVD) |
| | UL | UL508C |
| Option Card | 1 to 8 Pump card, HOA LCD keypad, Profibus card | |

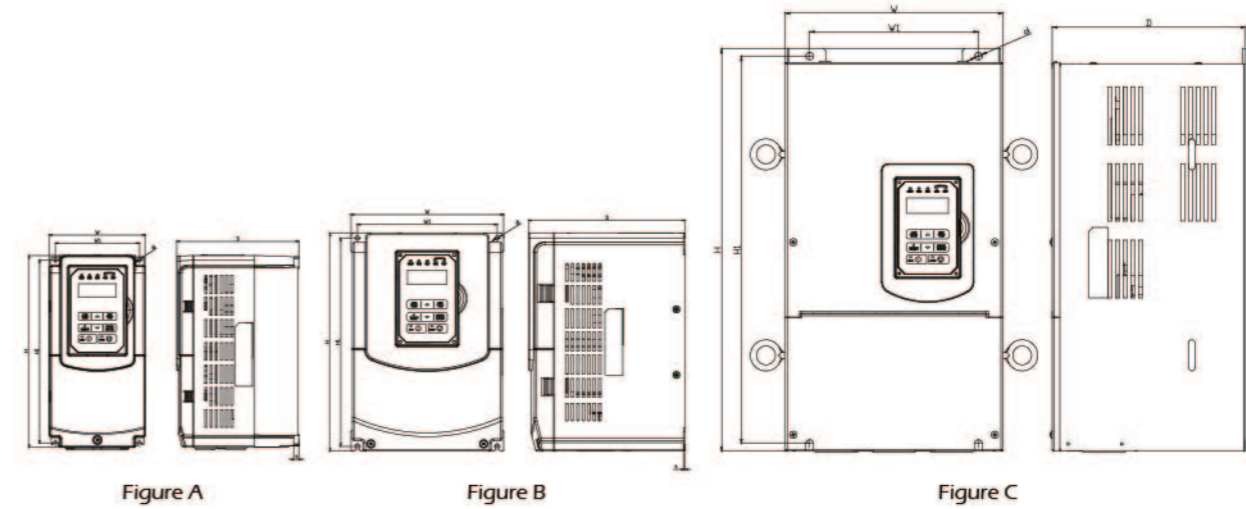
Remarks :

- 1.Speed control accuracy will be influenced when the motor and installation condition are different.
- 2.The default setting of carrier frequency is different from models.

WIRING DIAGRAM



DIMENSIONS

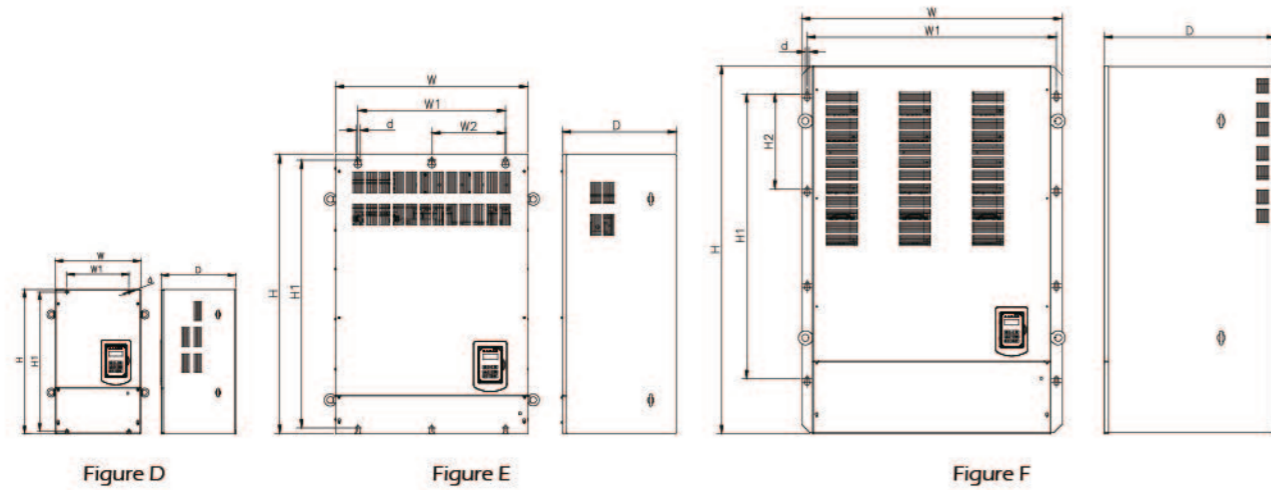


| Figure | Enclosure | Frame | Models | Dimensions(mm) | | | | | | | Weight (kg) |
|--------|----------------------|---------|--------------|----------------|-----|-----|-----|-----|-----|----|-------------|
| | | | | W | H | D | W1 | H1 | t | d | |
| A | IP00/ IP20(NEMA1) | Frame2 | F510-2005-H3 | 140 | 279 | 177 | 122 | 267 | 7 | M6 | 3.8 |
| | | | F510-2008-H3 | 140 | 279 | 177 | 122 | 267 | 7 | M6 | 3.8 |
| | | | F510-4005-H3 | 140 | 279 | 177 | 122 | 267 | 7 | M6 | 3.8 |
| | | | F510-4008-H3 | 140 | 279 | 177 | 122 | 267 | 7 | M6 | 3.8 |
| | | | F510-4010-H3 | 140 | 279 | 177 | 122 | 267 | 7 | M6 | 3.8 |
| B | IP00/ IP20(NEMA1) | Frame 3 | F510-2010-H3 | 210 | 300 | 215 | 192 | 286 | 1.6 | M6 | 6.2 |
| | | | F510-2015-H3 | 210 | 300 | 215 | 192 | 286 | 1.6 | M6 | 6.2 |
| | | Frame 4 | F510-2020-H3 | 265 | 360 | 225 | 245 | 340 | 1.6 | M8 | 10 |
| | | | F510-2030-H3 | 265 | 360 | 225 | 245 | 340 | 1.6 | M8 | 10 |
| | | | F510-4015-H3 | 210 | 300 | 215 | 192 | 286 | 1.6 | M6 | 6.2 |
| | | Frame 4 | F510-4020-H3 | 210 | 300 | 215 | 192 | 286 | 1.6 | M6 | 6.2 |
| | | | F510-4025-H3 | 265 | 360 | 225 | 245 | 340 | 1.6 | M8 | 10 |
| | | | F510-4030-H3 | 265 | 360 | 225 | 245 | 340 | 1.6 | M8 | 10 |
| | | | F510-4040-H3 | 265 | 360 | 225 | 245 | 340 | 1.6 | M8 | 10 |
| | | | F510-4075-H3 | 284 | 525 | 252 | 220 | 505 | 1.6 | M8 | 30 |
| C | IP00/ IP20(NEMA1) | Frame 5 | F510-2040-H3 | 284 | 525 | 252 | 220 | 505 | 1.6 | M8 | 30 |
| | | | F510-2050-H3 | 284 | 525 | 252 | 220 | 505 | 1.6 | M8 | 30 |
| | | | F510-4050-H3 | 284 | 525 | 252 | 220 | 505 | 1.6 | M8 | 30 |
| | | | F510-4060-H3 | 284 | 525 | 252 | 220 | 505 | 1.6 | M8 | 30 |
| | | | F510-4075-H3 | 284 | 525 | 252 | 220 | 505 | 1.6 | M8 | 30 |

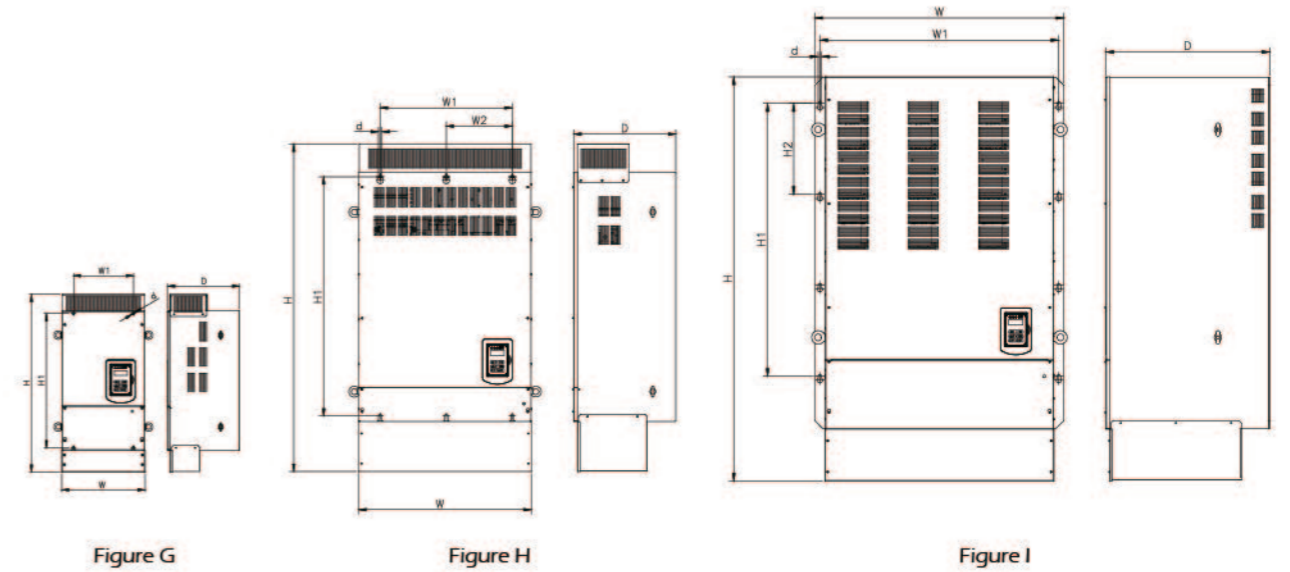
Remark:

- *1: Only the main circuit of IP20 220V 5~30HP, 440V 5~40HP (included) and IP55 440V 5~25HP with built-in braking transistor provide terminal B2. The braking transistor can be connected directly between B1 and B2.
- *2: The multi-function digital input terminals S1~S6 can be set to source (PNP) or sink (NPN) mode by SW3.
- *3: The multi-function analog input 2 (AI2) can be set to the voltage command input (0~10V) or the current command input (4~20mA) through the SW2.
- *4: When integrated safety function is NOT used, connect a link across terminals F1 & F2 for the inverter output to function. External safety circuits can be interfaced with inverter using terminals F1 and F2.

DIMENSIONS



DIMENSIONS



| Figure | Enclosure | Frame | Models | Dimensions(mm) | | | | | | | | | | Weight (kg) |
|--------|-----------|---------|--------------|----------------|------|-----|-----|-----|------|-----|-----|-----|------|-------------|
| | | | | W | H | D | W1 | W2 | H1 | H2 | t | d | | |
| D | IP00 | Frame 6 | F510-2060-H3 | 344 | 580 | 300 | 250 | N/A | 560 | N/A | 1.6 | M10 | 40.5 | |
| | | | F510-2075-H3 | 344 | 580 | 300 | 250 | N/A | 560 | N/A | 1.6 | M10 | 40.5 | |
| | | Frame 7 | F510-2100-H3 | 459 | 790 | 325 | 320 | N/A | 760 | N/A | 1.6 | M10 | 74 | |
| | | | F510-2125-H3 | 459 | 790 | 325 | 320 | N/A | 760 | N/A | 1.6 | M10 | 74 | |
| | | Frame 6 | F510-4100-H3 | 344 | 580 | 300 | 250 | N/A | 560 | N/A | 1.6 | M10 | 40.5 | |
| | | | F510-4125-H3 | 344 | 580 | 300 | 250 | N/A | 560 | N/A | 1.6 | M10 | 40.5 | |
| | | Frame 7 | F510-4150-H3 | 459 | 790 | 325 | 320 | N/A | 760 | N/A | 1.6 | M10 | 74 | |
| | | | F510-4175-H3 | 459 | 790 | 325 | 320 | N/A | 760 | N/A | 1.6 | M10 | 74 | |
| | | | F510-4215-H3 | 459 | 790 | 325 | 320 | N/A | 760 | N/A | 1.6 | M10 | 74 | |
| | | | F510-4250-H3 | 459 | 790 | 325 | 320 | N/A | 760 | N/A | 1.6 | M10 | 74 | |
| E | IP00 | Frame 8 | F510-2150-H3 | 690 | 1000 | 410 | 530 | 265 | 960 | N/A | 1.6 | M12 | 184 | |
| | | | F510-2175-H3 | 690 | 1000 | 410 | 530 | 265 | 960 | N/A | 1.6 | M12 | 184 | |
| | | | F510-4300-H3 | 690 | 1000 | 410 | 530 | 265 | 960 | N/A | 1.6 | M12 | 184 | |
| | | | F510-4375-H3 | 690 | 1000 | 410 | 530 | 265 | 960 | N/A | 1.6 | M12 | 184 | |
| | | | F510-4425-H3 | 690 | 1000 | 410 | 530 | 265 | 960 | N/A | 1.6 | M12 | 184 | |
| F | IP00 | Frame 9 | F510-4535-H3 | 960 | 1356 | 632 | 920 | N/A | 1050 | 350 | 3 | M12 | 290 | |
| | | | F510-4670-H3 | 960 | 1356 | 632 | 920 | N/A | 1050 | 350 | 3 | M12 | 290 | |
| | | | F510-4800-H3 | 960 | 1356 | 632 | 920 | N/A | 1050 | 350 | 3 | M12 | 290 | |

| Figure | Enclosure | Frame | Models | Dimensions(mm) | | | | | | | | | | Weight (kg) |
|--------|-------------|---------|--------------|----------------|------|-------|-----|-----|------|-----|-----|-----|-----|-------------|
| | | | | W | H | D | W1 | W2 | H1 | H2 | t | d | | |
| G | IP20(NEMA1) | Frame 6 | F510-2060-H3 | 348.5 | 740 | 300 | 250 | N/A | 560 | N/A | 1.6 | M10 | 44 | |
| | | | F510-2075-H3 | 348.5 | 740 | 300 | 250 | N/A | 560 | N/A | 1.6 | M10 | 44 | |
| | | Frame 7 | F510-2100-H3 | 463.5 | 1105 | 324.5 | 320 | N/A | 760 | N/A | 1.6 | M10 | 81 | |
| | | | F510-2125-H3 | 463.5 | 1105 | 324.5 | 320 | N/A | 760 | N/A | 1.6 | M10 | 81 | |
| | | Frame 6 | F510-4100-H3 | 348.5 | 740 | 300 | 250 | N/A | 560 | N/A | 1.6 | M10 | 44 | |
| | | | F510-4125-H3 | 348.5 | 740 | 300 | 250 | N/A | 560 | N/A | 1.6 | M10 | 44 | |
| | | Frame 7 | F510-4150-H3 | 463.5 | 1105 | 324.5 | 320 | N/A | 760 | N/A | 1.6 | M10 | 81 | |
| | | | F510-4175-H3 | 463.5 | 1105 | 324.5 | 320 | N/A | 760 | N/A | 1.6 | M10 | 81 | |
| | | | F510-4215-H3 | 463.5 | 1105 | 324.5 | 320 | N/A | 760 | N/A | 1.6 | M10 | 81 | |
| | | | F510-4250-H3 | 463.5 | 1105 | 324.5 | 320 | N/A | 760 | N/A | 1.6 | M10 | 81 | |
| H | IP20(NEMA1) | Frame 8 | F510-2150-H3 | 690 | 1313 | 410 | 530 | 265 | 960 | N/A | 1.6 | M12 | 194 | |
| | | | F510-2175-H3 | 690 | 1313 | 410 | 530 | 265 | 960 | N/A | 1.6 | M12 | 194 | |
| | | | F510-4300-H3 | 690 | 1313 | 410 | 530 | 265 | 960 | N/A | 1.6 | M12 | 194 | |
| | | | F510-4375-H3 | 690 | 1313 | 410 | 530 | 265 | 960 | N/A | 1.6 | M12 | 194 | |
| | | | F510-4425-H3 | 690 | 1313 | 410 | 530 | 265 | 960 | N/A | 1.6 | M12 | 194 | |
| I | IP20(NEMA1) | Frame 9 | F510-4535-H3 | 960 | 1556 | 632 | 920 | N/A | 1050 | 350 | 3 | M12 | 300 | |
| | | | F510-4670-H3 | 960 | 1556 | 632 | 920 | N/A | 1050 | 350 | 3 | M12 | 300 | |
| | | | F510-4800-H3 | 960 | 1556 | 632 | 920 | N/A | 1050 | 350 | 3 | M12 | 300 | |

DIMENSIONS

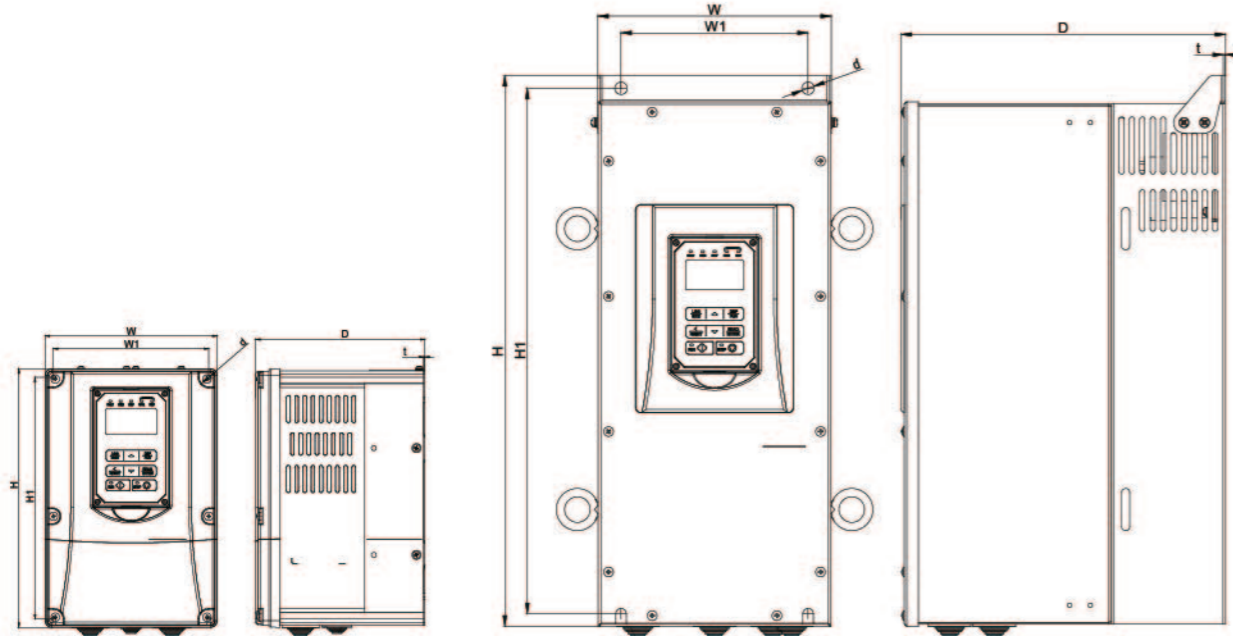
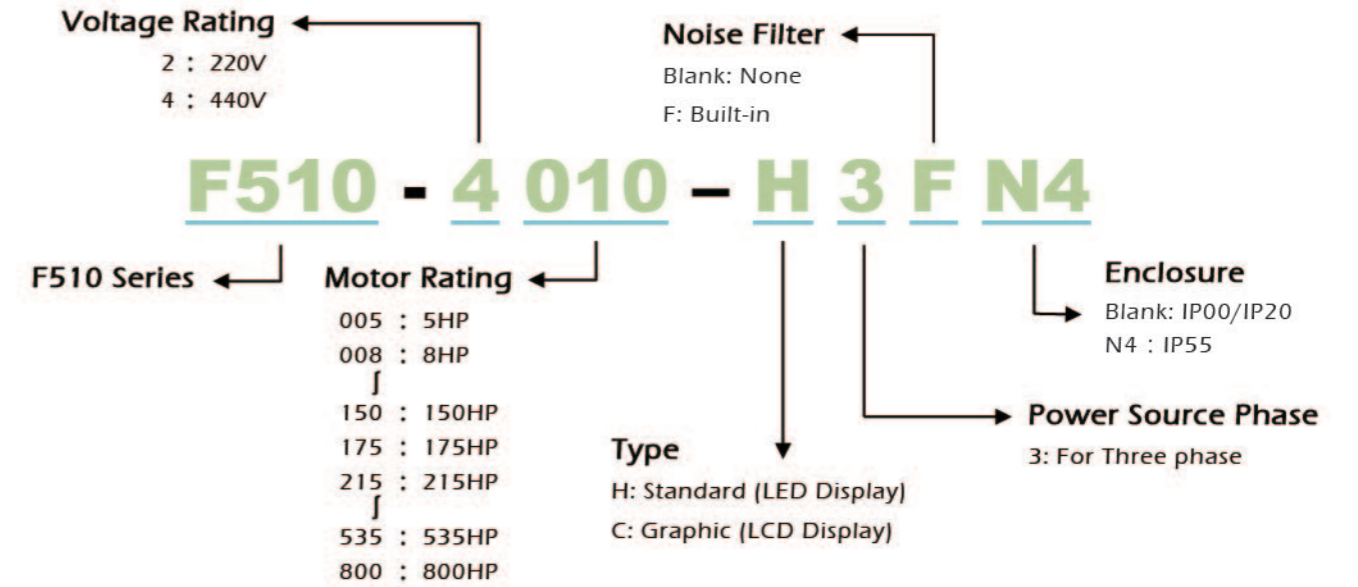


Figure J

Figure K

| Figure | Enclosure | Frame | Models | Dimensions(mm) | | | | | | | Weight (kg) | |
|--------|--------------|--------------|-----------------|-----------------|-----|-----|-----|-----|-----|-----|-------------|------|
| | | | | W | H | D | W1 | H1 | t | d | | |
| J | IP55(NEMA12) | Frame 1 | F510-4005-C3FN4 | 189 | 284 | 186 | 171 | 266 | 1.2 | M5 | 7 | |
| | | | F510-4008-C3FN4 | 189 | 284 | 186 | 171 | 266 | 1.2 | M5 | 7 | |
| | | Frame 2 | F510-4010-C3FN4 | 230 | 320 | 210 | 210 | 305 | 2 | M5 | 10.5 | |
| | | | F510-4015-C3FN4 | 230 | 320 | 210 | 210 | 305 | 2 | M5 | 10.5 | |
| | | Frame 3 | F510-4020-C3FN4 | 265 | 396 | 227 | 249 | 380 | 2 | M5 | 17 | |
| | | | F510-4025-C3FN4 | 265 | 396 | 227 | 249 | 380 | 2 | M5 | 17 | |
| K | | IP55(NEMA12) | Frame 4 | F510-4030-C3FN4 | 224 | 527 | 311 | 180 | 505 | 2 | M10 | 32.5 |
| | | | | F510-4040-C3FN4 | 224 | 527 | 311 | 180 | 505 | 2 | M10 | 32.5 |
| | | | Frame 4 | F510-4050-C3FN4 | 224 | 527 | 311 | 180 | 505 | 2 | M10 | 32.5 |
| | | | | F510-4060-C3FN4 | 326 | 695 | 343 | 276 | 671 | 2.3 | M10 | 55 |
| | | | Frame 5 | F510-4075-C3N4 | 326 | 695 | 343 | 276 | 671 | 2.3 | M10 | 55 |
| | | | | F510-4100-C3N4 | 326 | 695 | 343 | 276 | 671 | 2.3 | M10 | 55 |

MODEL DESIGNATION



NOISE FILTER

| Series | Capacity(HP) | Noise Filter | | |
|------------------------|-----------------------|-----------------|------------------|-------------------|
| | | Models | Rated Current(A) | Notes |
| IP00 / IP20 3φ 220V | 5 / 7.5 | FS32124-23-99 | 23 | External |
| | 10 / 15 | FS32123-42-99 | 42 | External |
| | 20 | FS32125-61-99 | 61 | External |
| | 25 / 30 | FS32125-86-99 | 86 | External |
| | 40 / 50 | FS32125-150-99 | 150 | External |
| | 60 / 75 | FS32125-232-99 | 232 | External |
| IP00 / IP20 3φ 440V | 100 / 125 | FS32125-343-99 | 343 | External |
| | 150 / 175 | FN3270H-600-99 | 600 | Under development |
| | 5 / 7.5 / 10 | JN5-FLT-19A | 19 | |
| | 15 / 20 | JN5-FLT-33A | 33 | |
| | 25 / 30 / 40 | JN5-FLT-63A | 63 | |
| | 50 / 60 / 75 | JN5-FLT-112A | 112 | |
| | 100 / 125 | FS32126-181-99 | 181 | External |
| | 150 / 175 / 215 / 250 | FS32126-361-99 | 361 | External |
| | 300 / 375 / 425 | FN3270H-800-99 | 800 | Under development |
| | 535 / 670 / 800 | | | Under development |
| IP55 3φ 440V | 10 / 15 | FS29040-30-99*1 | 30 | External |

Remarks :

- The external noise filter for F510 IP55 4010/4015 models (FS29040-30-99) do not have IP55 enclosure .
- F510 IP55 4010/4015 models meet EN61800-3 requirements for category c2 with external filter and category c3 without additional external mitigation.

EXTERNAL BRAKING RESISTOR AND DETECTION MODULE

| Drive | | Braking Detection Module*1 | | Braking Resistor | | | | Braking Torque |
|------------------------|---------------|----------------------------|-----------------|------------------|-----------------|-------------------|---------------------------------|----------------|
| Series | Capacity (HP) | Models | Parallel Number | Models | Specification*2 | Used Model Number | Dimensions(mm) (Total Number)*3 | |
| IP00 / IP20 3φ 220V | 5 | - | - | JNBR-390W40 | 390W/40Ω | 1 | 395×34×78 | 126%,10%ED |
| | 7.5 | - | - | JNBR-520W30 | 520W/30Ω | 1 | 400×40×100 | 114%,10%ED |
| | 10 | - | - | JNBR-780W20 | 780W/20Ω | 1 | 400×40×100 | 126%,10%ED |
| | 15 | - | - | JNBR-2R4KW13R6 | 2400W/13.6Ω | 1 | 535×50×110 (2 pcs) | 124%, 10%ED |
| | 20 | - | - | JNBR-3KW10 | 3000W/10Ω | 1 | 615×50×110 (2 pcs) | 126%, 10%ED |
| | 25 | - | - | JNBR-4R8KW8 | 4800W/8Ω | 1 | 535×50×110 (4 pcs) | 126%, 10%ED |
| | 30 | - | - | JNBR-4R8KW6R8 | 4800W/6.8Ω | 1 | 535×50×110 (4 pcs) | 124%, 10%ED |
| | 40 | JNTBU-230 | 2 | JNBR-3KW10 | 3000W/10Ω | 2 | 615×50×110 (4 pcs) | 126%, 10%ED |
| | 50 | JNTBU-230 | 2 | JNBR-3KW10 | 3000W/10Ω | 2 | 615×50×110 (4 pcs) | 105%, 10%ED |
| | 60 | JNTBU-230 | 2 | JNBR-4R8KW6R8 | 4800W/6.8Ω | 2 | 535×50×110 (8 pcs) | 124%, 10%ED |
| | 75 | JNTBU-230 | 3 | JNBR-4R8KW8 | 4800W/8Ω | 3 | 535×50×110 (12 pcs) | 124%, 10%ED |
| | 100 | JNTBU-230 | 3 | JNBR-4R8KW6R8 | 4800W/6.8Ω | 3 | 535×50×110 (12 pcs) | 116%, 10%ED |
| | 125 | JNTBU-230 | 4 | JNBR-4R8KW6R8 | 4800W/6.8Ω | 4 | 535×50×110 (16 pcs) | 119%,10%ED |
| | 150 | JNTBU-230 | 5 | JNBR-4R8KW8 | 4800W/8Ω | 5 | 535×50×110 (20 pcs) | 108%, 10%ED |
| | 175 | JNTBU-230 | 6 | JNBR-4R8KW8 | 4800W/8Ω | 6 | 535×50×110 (24 pcs) | 113%, 10%ED |
| IP00 / IP20 3φ 440V | 5 | - | - | JNBR-400W150 | 400W/150Ω | 1 | 395×34×78 | 133%, 10%ED |
| | 7.5 | - | - | JNBR-600W130 | 600W/130Ω | 1 | 400×40×100 | 107%,10%ED |
| | 10 | - | - | JNBR-800W100 | 800W/100Ω | 1 | 535×50×110 | 105%,10%ED |
| | 15 | - | - | JNBR-1R6KW50 | 1600W/50Ω | 1 | 615×50×110 | 133%, 10%ED |
| | 20 | - | - | JNBR-1R5KW40 | 1500W/40Ω | 1 | 615×50×110 | 126%, 10%ED |
| | 25 | - | - | JNBR-4R8KW32 | 4800W/32Ω | 1 | 535×50×110 (4 pcs) | 126%, 10%ED |
| | 30 | - | - | JNBR-4R8KW27R2 | 4800W/27.2Ω | 1 | 535×50×110 (4 pcs) | 124%, 10%ED |
| | 40 | - | - | JNBR-6KW20 | 6000W/20Ω | 1 | 615×50×110 (4 pcs) | 124%, 10%ED |
| | 50 | JNTBU-430 | 2 | JNBR-4R8KW32 | 4800W/32Ω | 2 | 535×50×110 (8 pcs) | 126%, 10%ED |
| | 60 | JNTBU-430 | 2 | JNBR-4R8KW27R2 | 4800W/27.2Ω | 2 | 535×50×110 (8 pcs) | 124%, 10%ED |
| | 75 | JNTBU-430 | 2 | JNBR-6KW20 | 6000W/20Ω | 2 | 615×50×110 (8 pcs) | 133%, 10%ED |
| | 100 | JNTBU-430 | 3 | JNBR-4R8KW27R2 | 4800W/27.2Ω | 3 | 535×50×110 (12 pcs) | 113%, 10%ED |
| | 125 | JNTBU-430 | 3 | JNBR-6KW20 | 6000W/20Ω | 3 | 615×50×110 (12 pcs) | 121%, 10%ED |
| | 150 | JNTBU-430 | 3 | JNBR-6KW20 | 6000W/20Ω | 3 | 615×50×110 (12 pcs) | 104%, 10%ED |
| | 175 | JNTBU-430 | 5 | JNBR-4R8KW27R2 | 4800W/27.2Ω | 5 | 535×50×110 (20 pcs) | 109%, 10%ED |
| | 215 | JNTBU-430 | 6 | JNBR-4R8KW27R2 | 4800W/27.2Ω | 6 | 535×50×110 (24 pcs) | 107%, 10%ED |
| | 250 | JNTBU-430 | 5 | JNBR-6KW20 | 6000W/20Ω | 5 | 615×50×110 (20 pcs) | 105%,10%ED |
| | 300 | JNTBU-430 | 6 | JNBR-6KW20 | 6000W/20Ω | 6 | 615×50×110 (24 pcs) | 105%,10%ED |
| | 375 | JNTBU-430 | 7 | JNBR-6KW20 | 6000W/20Ω | 7 | 615×50×110 (28 pcs) | 100%,10%ED |
| | 425 | JNTBU-430 | 8 | JNBR-6KW20 | 6000W/20Ω | 8 | 615×50×110 (32 pcs) | 100%,10%ED |
| | 535 | JNTBU-430 | 10 | JNBR-6KW20 | 6000W/20Ω | 10 | 615×50×110 (40 pcs) | 99%,10%ED |
| | 670 | JNTBU-430 | 11 | JNBR-6KW20 | 6000W/20Ω | 11 | 615×50×110 (44 pcs) | 90%,10%ED |
| | 800 | JNTBU-430 | 13 | JNBR-6KW20 | 6000W/20Ω | 13 | 615×50×110 (52 pcs) | 90%,10%ED |

EXTERNAL BRAKING RESISTOR AND DETECTION MODULE

| Drive | | Braking Detection Module*1 | | Braking Resistor | | | | Braking Torque |
|-----------------|---------------|----------------------------|-----------------|------------------|-----------------|-------------------|---------------------------------|----------------|
| Series | Capacity (HP) | Models | Parallel Number | Models | Specification*2 | Used Model Number | Dimensions(mm) (Total Number)*3 | |
| IP55 3φ 440V | 5 | - | - | JNBR-400W150 | 400W/150Ω | 1 | 395×34×78 | 133%, 10%ED |
| | 7.5 | - | - | JNBR-600W130 | 600W/130Ω | 1 | 400×40×100 | 107%,10%ED |
| | 10 | - | - | JNBR-800W100 | 800W/100Ω | 1 | 535×50×110 | 105%,10%ED |
| | 15 | - | - | JNBR-1R6KW50 | 1600W/50Ω | 1 | 615×50×110 | 133%, 10%ED |
| | 20 | - | - | JNBR-1R5KW40 | 1500W/40Ω | 1 | 615×50×110 | 126%, 10%ED |
| | 25 | - | - | JNBR-4R8KW32 | 4800W/32Ω | 1 | 535×50×110 (4 pcs) | 126%, 10%ED |
| | 30 | JNTBU-430 | 1 | JNBR-4R8KW27R2 | 4800W/27.2Ω | 1 | 535×50×110 (4 pcs) | 124%, 10%ED |
| | 40 | JNTBU-430 | 1 | JNBR-6KW20 | 6000W/20Ω | 1 | 615×50×110 (4 pcs) | 126%, 10%ED |
| | 50 | JNTBU-430 | 2 | JNBR-4R8KW32 | 4800W/32Ω | 2 | 535×50×110 (8 pcs) | 126%, 10%ED |
| | 60 | JNTBU-430 | 2 | JNBR-4R8KW27R2 | 4800W/27.2Ω | 2 | 535×50×110 (8 pcs) | 124%, 10%ED |
| | 75 | JNTBU-430 | 2 | JNBR-6KW20 | 6000W/20Ω | 2 | 615×50×110 (8 pcs) | 133%, 10%ED |
| | 100 | JNTBU-430 | 3 | JNBR-4R8KW27R2 | 4800W/27.2Ω | 3 | 535×50×110 (12 pcs) | 113%, 10%ED |

BRAKING DETECTION MODULE (TBU-230/430)

| MODEL | Dimensions(mm) | | | | | Diagram |
|---------|----------------|-----|-----|-----|-----|---------|
| | W | H | D | W1 | H1 | |
| TBU-230 | 149 | 184 | 146 | 138 | 174 | |
| TBU-430 | | | | | | |

Remarks :

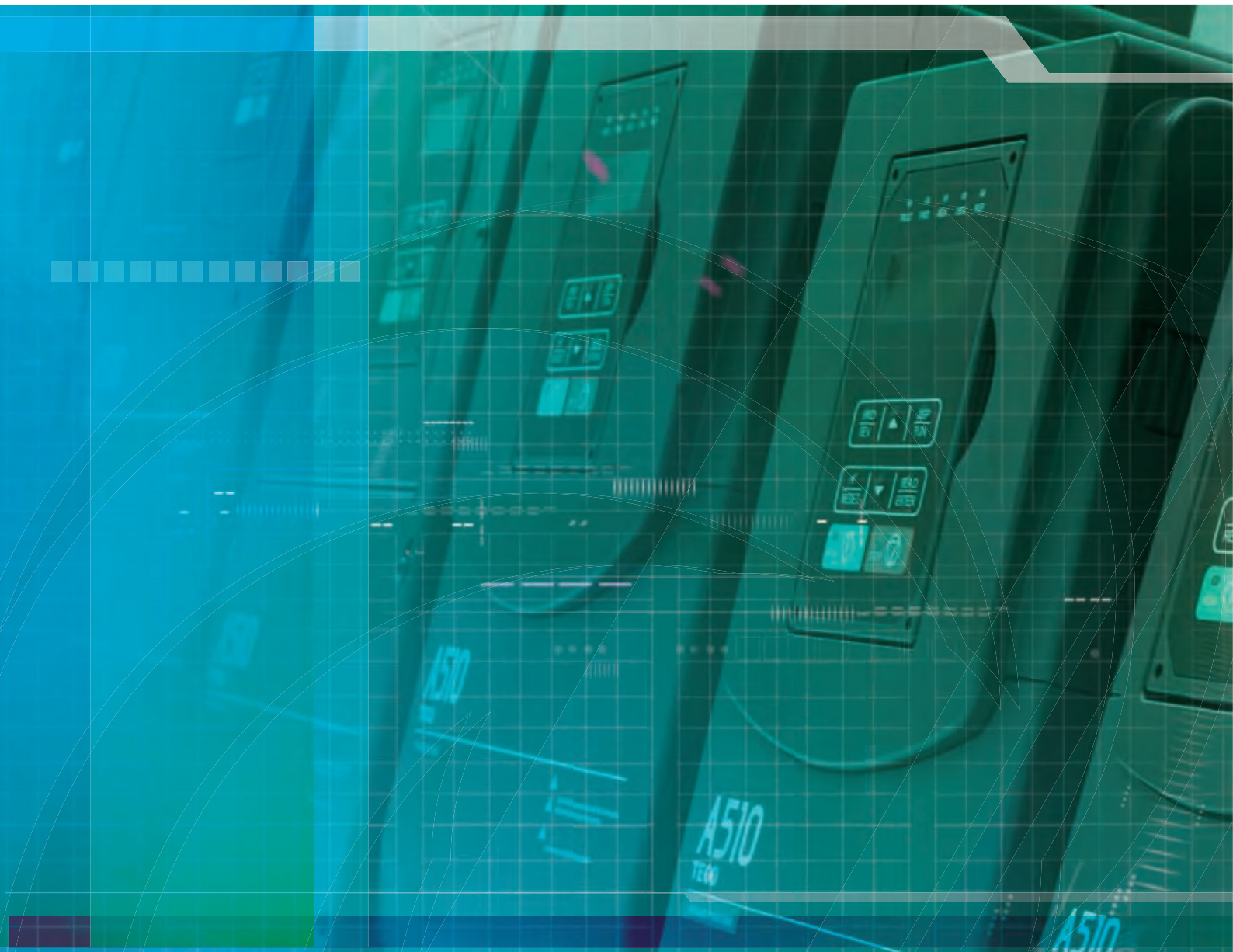
- If you have any requirements of braking module, please contact your local TECO Sales Representative for additional details.
- For the minimum suggestion value of braking resistor, please refer to the F510 manual and the attached user manual of braking module.
- It shows the total numbers of resistors. The IP00/20 2075 model is suggested to use 3pcs JNBR-4R8KW8, each JNBR-4R8KW8 includes 4pcs of resistors. Thus, it needs 12pcs of resistors. (each resistor size: 535×50×110 mm)
- Other option braking module for IP55 4050 model : JUVPHV-0060+JNBR-9R6KW16.
Other option braking module for IP55 4060 model : JUVPHV-0060+JNBR-9R6KW13R6.
- The external braking resistors and detection modules do not have IP55 enclosure.



A510

Advanced Current Vector Control Drive





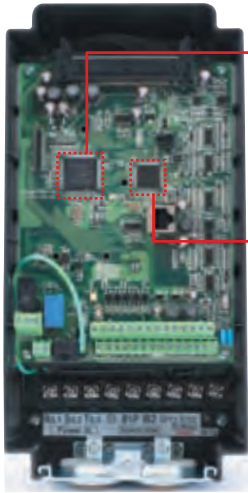
The Complete Motor Control Solution



Contents

| | |
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| Features..... | 03 |
| Applications..... | 05 |
| Selection Guide..... | 06 |
| Wiring Diagram..... | 07 |
| Specifications..... | 08 |
| Dimensions..... | 10 |
| Accessories..... | 12 |

DUAL CORE PROCESSORS



ASIC *Above frame2 models

Prevents inrush current damage to IGBT module. Enhances the reliability and life expectancy of motor drive.

32Bit MCU

Mass computing capability for advanced current vector control technology. Minimizes the internal loop time for higher control response.

Enhanced Performance & Reliability!

HIGH EFFICIENCY PM MOTOR DRIVING

- Simple parameter settings for easy switching between induction and permanent magnet motors.
- High performance current vector control for induction and permanent magnet motors.



Induction Motor (IM)

- Cost Effective
- Mechanical Robust



Surface Permanent Magnet Motor (SPM)

- Highly Efficient
- Compact Size
- Low Cogging Torque



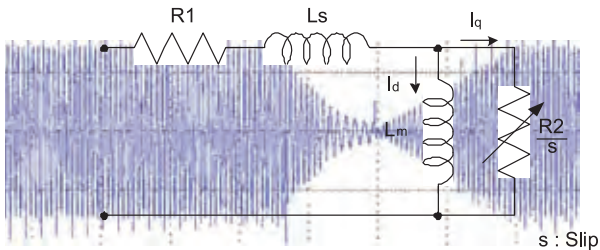
Interior Permanent Magnet Motor (IPM)

- Highly Efficient
- Compact Size
- With Reluctance Torque

ADVANCED MOTOR AUTO-TUNE FUNCTION

Multiple Auto-tune Modes

| | |
|--------------------------------------|--|
| Rotational auto-tune mode | Rotary-type auto-tune for higher performance for precise control. |
| Static auto-tune mode | The motor shaft will be locked in static auto-tune mode. |
| Stator resistance measurement | Auto measure the resistor within cable and compensate accordingly. |



Motor Equivalent Circuit

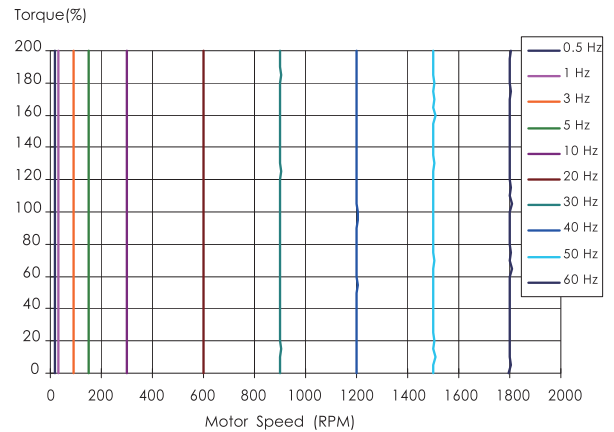
5th
Kernel

A510 is loaded with 5th generation kernel has the most advanced motor tuning function to build accurate motor equivalent model automatically.

Optimized current vector control performance provides faster commissioning.

200% 0.5Hz STARTING TORQUE

SensorLess Vector (SLV) control mode achieves incredible 200% torque performance at extreme low speed 0.5Hz. Provides stable control experience for wide range of applications.



Sensor Vector Mode (SV) can output 200% holding torque.

CONFORMITY TO GLOBAL STANDARDS

- Conformity to RoHS directive and international recognized certification

RoHS



DOWN SIZE DESIGN

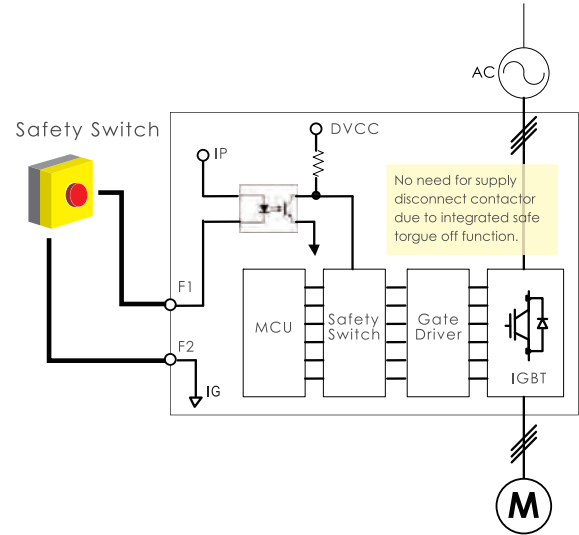
- New design with effective heat dissipation reduced size requiring less panel space.



*base on A510 440V 7.5HP comparison

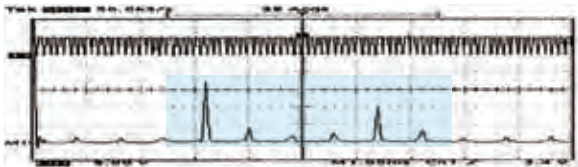
HARDWARE SWITCH OFF FUNCTION

- Built-in high reliable hardware circuit for PWM cut-off.



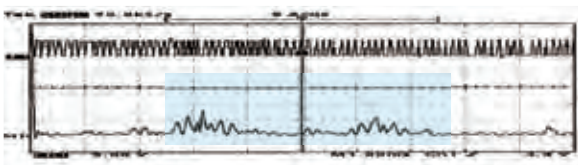
ULTRA LOW MOTOR NOISE

Traditional PWM modulation method



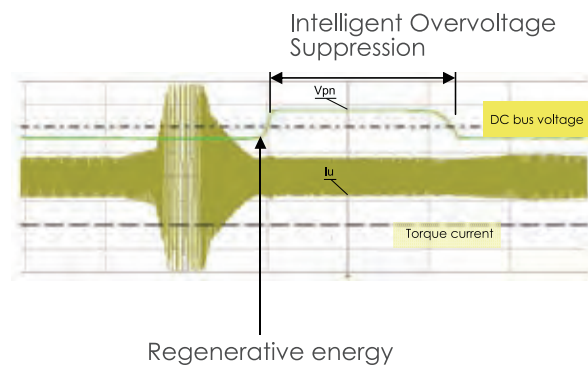
Unique Soft PWM modulation technology lowers the audible motor noise for quieter industrial environment

Soft PWM modulation method



INTELLIGENT OVER VOLTAGE SUPPRESSION

- Suppress over voltage caused by regenerative loads and redirect regenerative energy back to the load. Intelligent overvoltage suppression will not only protect the drive but also removes the need for costly braking units.



The Complete Motor Control Solution

with powers for a wide range of applications



Gravitational Handling Equipment

| Crane, Elevator

Metal Processing Machine

| Press, Lathes

Plastics/Rubber Processing Machine

| Extruder, Injection Molding Machine

Tension Control Equipment

| Printing Machine, Reeling Machine

Textile Machine

| Dyeing and Finishing Machine

Wire/Cable Making Machine

| Wire Drawing Machine

SELECTION GUIDE

Dual rating design for heavy duty and normal duty applications.

ND. Selection Guide

Overload Capability Up To 120%/60sec

Driving higher horsepower motor in normal duty mode includes fans, pumps, HVAC, etc.

Example:
Select A510-2002-H model for 3HP motor in pump application. Sets 00-27=1 (ND Mode)

*Motor parameters need to be adjusted.

HD. Selection Guide

Overload Capability Up To 150%/60sec and 200%/2sec

Driving the same horsepower motor in heavy duty mode includes lifts, press, machine tools, etc.

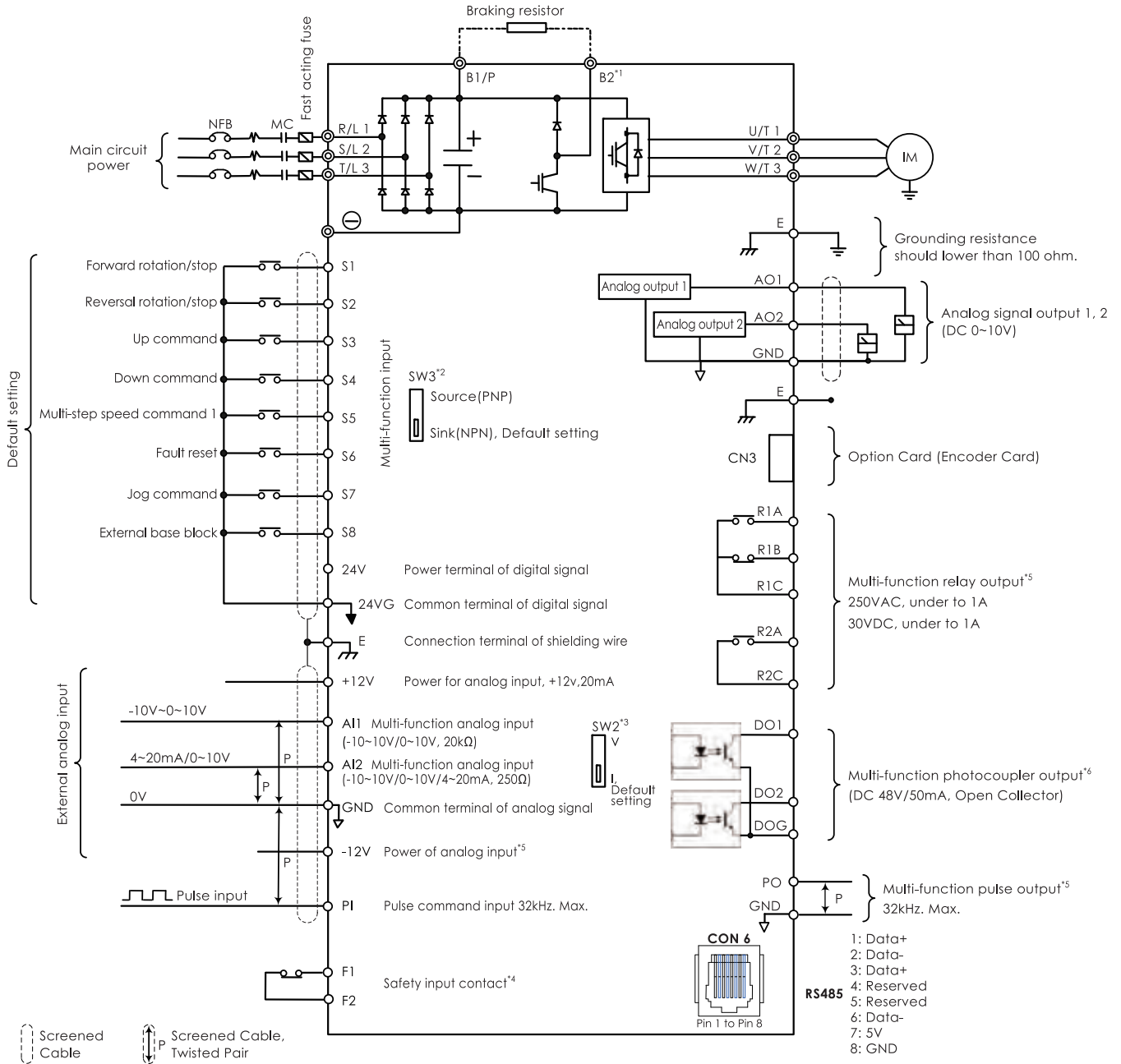
Example:
Select A510-2015-H3 model for 15HP motor in conveyor application. Sets 00-27=0 (HD Mode)

| Maximum Applicable Motor (HP) (kW) | | Three-Phase 200V | | | | Three-Phase 400V | | | |
|---------------------------------------|------|------------------|----------------------|-----------------|----------------------|------------------|----------------------|-----------------|----------------------|
| | | Normal Duty (ND) | | Heavy Duty (HD) | | Normal Duty (ND) | | Heavy Duty (HD) | |
| | | A510 Model | Rated Output Current | A510 Model | Rated Output Current | A510 Model | Rated Output Current | A510 Model | Rated Output Current |
| 1 | 0.75 | | | A510-2001-H | 5A | | | A510-4001-H3(F) | 3.4A |
| 1.5 | 1.1 | A510-2001-H | 6A | | | | | | |
| 2 | 1.5 | | | A510-2002-H | 8A | A510-4001-H3(F) | 4.1A | A510-4002-H3(F) | 4.2A |
| 3 | 2.2 | A510-2002-H | 9.6A | A510-2003-H | 11A | A510-4002-H3(F) | 5.4A | A510-4003-H3(F) | 5.5A |
| 5 | 3.7 | A510-2003-H | 12A | A510-2005-H3 | 17.5A | A510-4003-H3(F) | 6.9A | A510-4005-H3(F) | 9.2A |
| 7.5 | 5.5 | A510-2005-H3 | 21A | A510-2008-H3 | 25A | A510-4005-H3(F) | 11.1A | A510-4008-H3(F) | 14.8A |
| 10 | 7.5 | A510-2008-H3 | 30A | A510-2010-H3 | 33A | A510-4008-H3(F) | 17.5A | A510-4010-H3(F) | 18A |
| 15 | 11 | A510-2010-H3 | 40A | A510-2015-H3 | 47A | A510-4010-H3(F) | 23A | A510-4015-H3(F) | 24A |
| 20 | 15 | A510-2015-H3 | 56A | A510-2020-H3 | 60A | A510-4015-H3(F) | 31A | A510-4020-H3(F) | 31A |
| 25 | 18.5 | A510-2020-H3 | 69A | A510-2025-H3 | 73A | A510-4020-H3(F) | 38A | A510-4025-H3(F) | 39A |
| 30 | 22 | A510-2025-H3 | 79A | A510-2030-H3 | 85A | A510-4025-H3(F) | 44A | A510-4030-H3(F) | 45A |
| 40 | 30 | A510-2030-H3 | 110A | A510-2040-H3 | 115A | A510-4030-H3(F) | 58A | A510-4040-H3(F) | 60A |
| 50 | 37 | A510-2040-H3 | 138A | A510-2050-H3 | 145A | A510-4040-H3(F) | 72A | A510-4050-H3(F) | 75A |
| 60 | 45 | A510-2050-H3 | 169A | A510-2060-H3 | 180A | A510-4050-H3(F) | 88A | A510-4060-H3(F) | 91A |
| 75 | 55 | A510-2060-H3 | 200A | A510-2075-H3 | 215A | A510-4060-H3(F) | 103A | A510-4075-H3 | 118A |
| 100 | 75 | A510-2075-H3 | 250A | A510-2100-H3 | 283A | A510-4075-H3 | 145A | A510-4100-H3 | 150A |
| 125 | 94 | A510-2100-H3 | 312A | A510-2125-H3 | 346A | A510-4100-H3 | 165A | A510-4125-H3 | 180A |
| 150 | 112 | A510-2125-H3 | 400A | A510-2150-H3 | 415A | A510-4125-H3 | 208A | A510-4150-H3 | 216A |
| 175 | 130 | A510-2150-H3 | 450A | | | A510-4150-H3 | 250A | A510-4175-H3 | 260A |
| 215 | 160 | | | | | A510-4175-H3 | 296A | A510-4215-H3 | 295A |
| 250 | 185 | | | | | A510-4215-H3 | 328A | A510-4250-H3 | 370A |
| 270 | 200 | | | | | A510-4250-H3 | 435A | | |
| 300 | 220 | | | | | | | A510-4300-H3 | 450A |
| 335 | 250 | | | | | A510-4300-H3 | 515A | | |
| 375 | 280 | | | | | | | A510-4375-H3 | 523A |
| 425 | 315 | | | | | A510-4375-H3 | 585A | A510-4425-H3 | 585A |

Model Identification

| | | | | | | | | | | |
|-------------|---|---|---|--|---|---|---|---|---|--|
| A510 | - | 2 | - | 001 | - | H | - | 3 | - | F |
| A510 Series | | Input Voltage 2 : 200V Class 4 : 400V Class | | Horse Power 001 : 1HP 425 : 425HP | | Type H : Standard Type (LED Display) C : Graphic Type (LCD Display) | | Power Supply Blank : Single/Three-Phase 3 : Three-Phase | | Noise Filter Blank : None F : Built-in |

WIRING DIAGRAM



Terminal symbol
 ● indicates main circuit ○ indicates control circuit

Notes:

- *1: The main circuit of 200V 1~25HP and 400V 1~30HP (included) with built-in braking transistor provide terminal B2. The braking resistor can be connected directly between B1 and B2. Optional braking module is available for the other models.
- *2: The multi-function digital input terminals S1~S8 can be set to Source (PNP) or Sink (NPN) mode by SW3.
- *3: Multi-function analog input 2 (AI2) can be set to the voltage command input (0~10/-10~10v) or the current command input (4~20mA) through SW2.
- *4: When integrated safety function is NOT used, connect a link across terminals F1 & F2 for the inverter output to function. External safety circuits can be interfaced with inverter using terminals F1 and F2.
- *5: Terminals -12V, R2A-R2C and PO-GND are provided for 200V 3HP and 400V 5HP ratings or above.
- *6: Terminals DO2 and DOE are provided for 200V 2HP and 400V 3HP ratings or below.

BASIC SPECIFICATIONS

200V Class

| Inverter Capacity (HP) | | | 1 | 2 | 3 | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 | 150 | |
|-------------------------------|---------------------------------|--|---|------------|------------|--------------|--------------|-------------|------------------------------------|--------------|-------------------------|------------|------------|------------|------------|-------------|-------------|--------------|--------------|--|
| Output Rating ³ | HD*3 | Rated Output Capacity (KVA) | 1.9 | 3 | 4.2 | 6.7 | 9.5 | 12.6 | 17.9 | 22.9 | 27.8 | 32.4 | 43.8 | 55.3 | 68.6 | 81.9 | 108 | 132 | 158 | |
| | | Rated Output Current (A) | 5 | 8 | 11 | 17.5 | 25 | 33 | 47 | 60 | 73 | 85 | 115 | 145 | 180 | 215 | 283 | 346 | 415 | |
| | | Maximum Applicable Motor ¹ HP (KW) | 1 (0.75) | 2 (1.5) | 3 (2.2) | 5 (3.7) | 7.5 (5.5) | 10 (7.5) | 15 (11) | 20 (15) | 25 (18.5) | 30 (22) | 40 (30) | 50 (37) | 60 (45) | 75 (55) | 100 (75) | 125 (90) | 150 (110) | |
| | ND*4 | Rated Output Capacity (KVA) | 2.3 | 3.7 | 4.6 | 8.0 | 11.4 | 15.2 | 21.3 | 26.3 | 30.1 | 41.9 | 52.6 | 64.4 | 76.2 | 95.3 | 118.9 | 137.2 | 172 | |
| | | Rated Output Current (A) | 6 | 9.6 | 12 | 21 | 30 | 40 | 56 | 69 | 79 | 110 | 138 | 169 | 200 | 250 | 312 | 400 | 450 | |
| | | Maximum Applicable Motor ¹ HP (KW) | 1.5 (1.1) | 3 (2.2) | 4 (3) | 7.5 (5.5) | 10 (7.5) | 15 (11) | 20 (15) | 25 (18.5) | 30 (22) | 40 (30) | 50 (37) | 60 (45) | 75 (55) | 100 (75) | 125 (90) | 150 (110) | 175 (130) | |
| Maximum Output Voltage (V) | | Three-Phase, 200V to 240V | | | | | | | | | | | | | | | | | | |
| Maximum Output Frequency (Hz) | | Based on parameter setting 0.1~400.0 (1200.0) Hz | | | | | | | | | | | | | | | | | | |
| Input Power | Rated Voltage, Frequency | | Single/Three-Phase, 200V to 240V, 50/60Hz | | | | | | Three-Phase, 200V to 240V, 50/60Hz | | | | | | | | | | | |
| | Allowable Voltage Fluctuation | | -15% ~ +10% | | | | | | | | | | | | | | | | | |
| | Allowable Frequency Fluctuation | | ±5% | | | | | | | | | | | | | | | | | |
| Braking Transistor | | Built-in | | | | | | | | | Option (Braking Module) | | | | | | | | | |
| Frame Size | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | |

400V Class

| Inverter Capacity (HP) | | | 1 | 2 | 3 | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 | 150 | 175 | 215 | 250 | 300 | 375 | 425 | |
|-------------------------------|---------------------------------|---|------------------------------------|------------|------------|--------------|--------------|-------------|------------|--------------|-------------------------|------------|------------|------------|------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--|
| Output Rating ³ | HD*3 | Rated Output Capacity (KVA) | 2.6 | 3.2 | 4.2 | 7 | 11.3 | 13.7 | 18.3 | 23.6 | 29.7 | 34.3 | 45.7 | 57.2 | 69.3 | 89.9 | 114 | 137 | 165 | 198 | 225 | 282 | 343 | 400 | 461 | |
| | | Rated Output Current (A) | 3.4 | 4.2 | 5.5 | 9.2 | 14.8 | 18 | 24 | 31 | 39 | 45 | 60 | 75 | 91 | 118 | 150 | 180 | 216 | 260 | 295 | 370 | 450 | 523 | 585 | |
| | | Maximum Applicable Motor ¹ HP (KW) | 1 (0.75) | 2 (1.5) | 3 (2.2) | 5 (4) | 7.5 (5.5) | 10 (7.5) | 15 (11) | 20 (15) | 25 (18.5) | 30 (22) | 40 (30) | 50 (37) | 60 (45) | 75 (55) | 100 (75) | 125 (90) | 150 (110) | 175 (132) | 215 (160) | 250 (185) | 300 (220) | 375 (280) | 425 (315) | |
| | ND*4 | Rated Output Capacity (KVA) | 3.1 | 4.1 | 5.3 | 8.5 | 13.3 | 17.5 | 23.6 | 29.0 | 33.5 | 44.2 | 54.9 | 67.1 | 78.5 | 111 | 126 | 159 | 191 | 226 | 250 | 332 | 393 | 446 | 446 | |
| | | Rated Output Current (A) | 4.1 | 5.4 | 6.9 | 11.1 | 17.5 | 23 | 31 | 38 | 44 | 58 | 72 | 88 | 103 | 145 | 165 | 208 | 250 | 296 | 328 | 435 | 515 | 585 | 585 | |
| | | Maximum Applicable Motor ¹ HP (KW) | 2 (1.5) | 3 (2.2) | 4 (3) | 7.5 (5.5) | 10 (7.5) | 15 (11) | 20 (15) | 25 (18.5) | 30 (22) | 40 (30) | 50 (37) | 60 (45) | 75 (55) | 100 (75) | 125 (90) | 150 (110) | 175 (132) | 215 (160) | 250 (185) | 270 (200) | 335 (250) | 425 (315) | 425 (315) | |
| Maximum Output Voltage (V) | | Three-Phase, 380V to 480V | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum Output Frequency (Hz) | | Based on parameter setting 0.1~400.0(1200.0) Hz | | | | | | | | | | | | | | | | | | | | | | | | |
| Input Power | Rated Voltage, Frequency | | Three-Phase, 380V to 480V, 50/60Hz | | | | | | | | | | | | | | | | | | | | | | | |
| | Allowable Voltage Fluctuation | | -15% ~ +10% | | | | | | | | | | | | | | | | | | | | | | | |
| | Allowable Frequency Fluctuation | | ±5% | | | | | | | | | | | | | | | | | | | | | | | |
| Braking Transistor | | Built-in | | | | | | | | | Option (Braking Module) | | | | | | | | | | | | | | | |
| Frame Size | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | |

Notes:

- Based on the standard 4-pole induction motor. The selected inverter must have a higher output current rating than the motor.
- The default setting of A510 takes HD (heavy duty mode) as the base. To switch A510 to ND (normal duty mode) set parameter (00-27) to 1.
- The default setting of carrier frequency in HD mode is shown in right side table, if the setting value is higher than default setting, de-rating may be required.
- The default setting of carrier frequency in ND mode is 2kHz, if the setting value is higher than default setting, de-rating may be required.
- If control mode is set to SLV mode and maximum frequency is larger than 80Hz, the carrier frequency range is 2~8kHz.

| Inverter Voltage and Capacity | | HD mode carrier freq range | HD mode carrier freq default setting |
|-------------------------------|------------|----------------------------|--------------------------------------|
| 200V class | 400V class | | |
| 1~20HP | 1~30HP | 2~16kHz | 8kHz |
| 25HP | - | 2~12kHz | 6kHz |
| 30~40HP | 40~50HP | 2~12kHz ⁵ | 5kHz |
| 50~100HP | 60~175HP | 2~10kHz ⁵ | 5kHz |
| - | 215HP | 2~8kHz | 3kHz |
| 125~150HP | - | 2~5kHz | 5kHz |
| | 250~375HP | 2~5kHz | 4kHz |
| | 425HP | 2~5kHz | 2kHz |

GENERAL SPECIFICATIONS

| | | | |
|--|-------------------------------------|---|--|
| Control Characteristics | Display | LED keypad with 5-digits seven-segment display (LCD keypad option) | |
| | Control Modes | V/F, V/F+PG, SLV, SV, PMSV, PMSLV ^{*1} (SVPWM Modulation) | |
| | Output Frequency | 0.1Hz~400.0Hz ² | |
| | Frequency Accuracy | Digital references: $\pm 0.01\%$ (-10 to +40°C), Analog references: $\pm 0.1\%$ (25°C $\pm 10^\circ\text{C}$) | |
| | Speed Control Accuracy | $\pm 0.1\%$ (Sensor Vector Control Mode, SV) ^{*3} + $\pm 0.5\%$ (Sensorless Vector Control Mode, SLV) ^{*3} | |
| | Frequency Setting Resolution | Digital References: 0.01Hz, Analog References: 0.06Hz at 60Hz | |
| | Output Frequency Resolution | 0.01Hz | |
| | Overload Tolerance | Heavy Duty Mode (HD.) : 150% rated current for 60sec, 200% rated current for 2 sec. (Factory default) Normal Duty Mode (ND.) : 120% rated current for 60sec | |
| | Frequency Setting Signal | 0 to +10V , 4 to 20mA, -10V to +10V or pulse train input | |
| | Acceleration / Deceleration Time | 0.0~6000.0 sec (separately set acceleration and deceleration time) | |
| | Voltage / Frequency Characteristics | 15 fixed and one customized v/f pattern | |
| | Braking Torque | Approximate 20% | |
| | Protection Functions | Main Control Functions | Auto Tuning, Zero Servo, Torque Control, Position Control, Droop, Soft-PWM, Over-Voltage Protection, Dynamic Braking, Speed Search, Frequency Traversing, Momentary Power Loss Restart, PID Control, Automatic Torque Compensation, Slip Compensation, RS-485 Communication, Close Loop Control with PG, Simple PLC Function ^{*4} , Two Analog Output, Safety input contact |
| Other Functions | | Records of Power ON and Operation Time, Four Fault History Records and Latest Fault State Record, Energy-Saving Function, Phase Loss Protection, DC Braking, Dwell, S Curve Acceleration and Deceleration, Up / Down Operation, Modbus Communication Protocol, Output of Pulse Multiple, Display of Engineering Unit, SINK / SOURCE Selection | |
| Stall Prevention | | Current level can be adjusted. (In acceleration or constant speed, it can be set separately. In deceleration, it can be set with or without stall protection) | |
| Over Current (OC) and Output Short-Circuit (SC) Protection | | It stops when the current exceeds 200% of the inverter rated current. | |
| Inverter Overload Protection (OL2) | | Inverter will be stopped when the output is higher than below conditions. Heavy Duty Mode (HD.) : 150% rated current for 60sec, 200% rated current for 2 sec. (Factory default), Carrier frequency is from 2kHz to 8kHz. Normal Duty Mode (ND.) : 120% rated current for 60sec, Carrier frequency is 2kHz. | |
| Motor Overload Protection (OL1) | | Electrical overload protection curve | |
| Over Voltage Protection (OV) | | If the main circuit DC voltage is over 410V (200V class) / 820V (400V class), the motor stops running. | |
| Under Voltage (UV) | | If the main circuit DC voltage is under 190V (200V class) / 380V (400V class), the motor stops running. | |
| Momentary Power Loss Restart | | Power loss exceeds 15ms You can set the function of momentary power loss restart to up to 2 sec | |
| Overheat Protection (OH) | | Thermistor sensor on heatsink | |
| Ground Fault Protection (GF) | | Protection by current detection circuit | |
| Charge Indicator | | When main circuit DC voltage $\geq 50\text{V}$, the CHARGE LED is on. | |
| Output Phase Loss Protection (OPL) | | If the OPL function acts, the motor stops rotation automatically | |
| Environment Specification | Location | Indoor (Protected from corrosive gases and dust) | |
| | Ambient Temperature | -10 to +40°C without de-rating (IP20/NEMA1), -10 to +50°C (IP00), with de-rating, its maximum operation temperature is 60°C | |
| | Storage Temperature | -20~+70°C | |
| | Humidity | 95%RH or less (no condensation) | |
| Communication Function | Allitude and Vibration | Allitude of 1000 meters or lower ; 1.0G, in compliance with IEC 60068-2-6 | |
| | Communication Function | Built-in RS-485 as standard (Modbus protocol with standard RJ45) | |
| | Electromagnetic Interference (EMI) | In compliance with EN61800-3 standard, 400V 60HP or below can be built in. | |
| | Electromagnetic Compatibility (EMS) | In compliance with EN61800-3 standard | |
| | Certification | CE | In compliance with EN61800-3 (CE & RE) and EN61800-5-1 (LVD) |
| | | UL | UL508C |
| | Option Card | Open collector type(IM) , line driver type(IM) and Line driver type for PM motor | |

Notes:

*1. PM sensorless(PMSLV) control mode is under development.

*2. The maximum output frequency of each control modes is different, please read user manual for more details.

*3. Speed control accuracy will be influenced when the motor and installation condition are different.

*4. The A510 dedicated model is not built-in this function.

DIMENSIONS

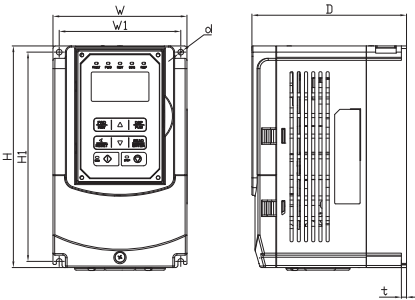


Figure A

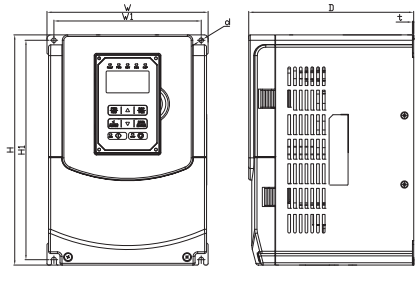


Figure B

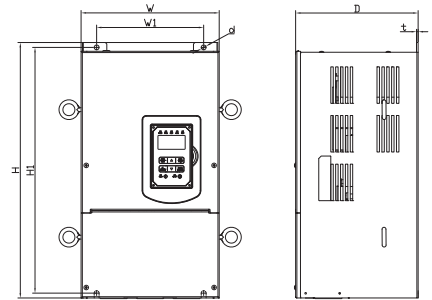


Figure C

| Figure | Enclosure | Frame | Models | Dimensions (mm) | | | | | | | Weight (kg) |
|--------------|-----------|---------|--------------|-----------------|-----|-----|-----|-----|-----|----|-------------|
| | | | | W | H | D | W1 | H1 | t | d | |
| A | IP20 | Frame 1 | A510-2001-H | 130 | 215 | 150 | 118 | 203 | 5 | M5 | 2.2 |
| | | | A510-2002-H | | | | | | | | |
| | | | A510-4001-H3 | | | | | | | | |
| | | | A510-4002-H3 | | | | | | | | |
| B | IP20 | Frame 2 | A510-2003-H | 140 | 279 | 177 | 122 | 267 | 7 | M6 | 3.8 |
| | | | A510-2005-H3 | | | | | | | | |
| | | | A510-4005-H3 | | | | | | | | |
| | | | A510-4008-H3 | | | | | | | | |
| | | Frame 3 | A510-2008-H3 | 210 | 300 | 215 | 192 | 286 | 1.6 | M6 | 6.2 |
| | | | A510-2010-H3 | | | | | | | | |
| | | | A510-4010-H3 | | | | | | | | |
| | | Frame 4 | A510-4015-H3 | 265 | 360 | 225 | 245 | 340 | 1.6 | M8 | 10 |
| | | | A510-2015-H3 | | | | | | | | |
| | | | A510-2020-H3 | | | | | | | | |
| A510-2025-H3 | | | | | | | | | | | |
| C | IP20 | Frame 5 | A510-2030-H3 | 284 | 525 | 252 | 220 | 505 | 1.6 | M8 | 30 |
| | | | A510-2040-H3 | | | | | | | | |
| | | | A510-4040-H3 | | | | | | | | |
| | | | A510-4050-H3 | | | | | | | | |
| | | | A510-4060-H3 | | | | | | | | |

Figure D

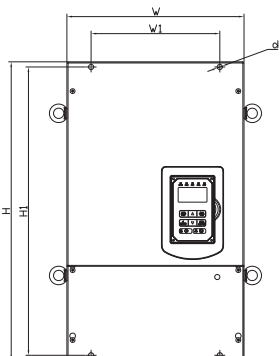
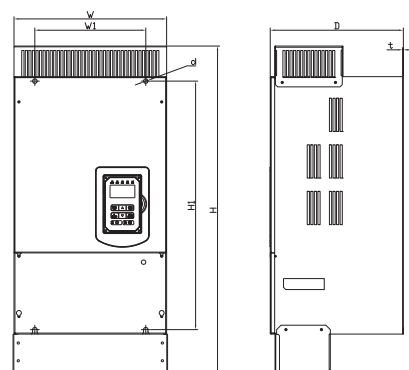


Figure E



| Figure | Enclosure | Frame | Models | Dimensions (mm) | | | | | | | |
|--------------|-----------|---------|--------------|-----------------|------|-------|-----|-----|-----|-----|-------------|
| | | | | W | H | D | W1 | H1 | t | d | Weight (kg) |
| D | IP00 | Frame 6 | A510-2050-H3 | 344 | 580 | 300 | 250 | 560 | 1.6 | M10 | 40.5 |
| | | | A510-2060-H3 | | | | | | | | |
| | | | A510-4075-H3 | | | | | | | | |
| | | | A510-4100-H3 | | | | | | | | |
| E | IP20 | Frame 6 | A510-2050-H3 | 348.5 | 740 | 300 | 250 | 560 | 1.6 | M10 | 44 |
| | | | A510-2060-H3 | | | | | | | | |
| | | | A510-4075-H3 | | | | | | | | |
| | | | A510-4100-H3 | | | | | | | | |
| D | IP00 | Frame 7 | A510-2075-H3 | 459 | 790 | 324.5 | 320 | 760 | 1.6 | M10 | 74 |
| | | | A510-2100-H3 | | | | | | | | |
| | | | A510-4125-H3 | | | | | | | | |
| | | | A510-4150-H3 | | | | | | | | |
| | | | A510-4175-H3 | | | | | | | | |
| E | IP20 | Frame 7 | A510-2075-H3 | 463.5 | 1105 | 324.5 | 320 | 760 | 1.6 | M10 | 81 |
| | | | A510-2100-H3 | | | | | | | | |
| | | | A510-4125-H3 | | | | | | | | |
| | | | A510-4150-H3 | | | | | | | | |
| | | | A510-4175-H3 | | | | | | | | |
| A510-4215-H3 | | | | | | | | | | | |

Figure F

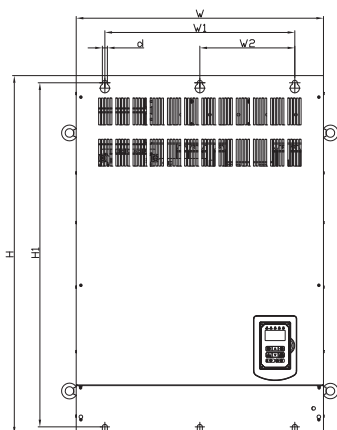
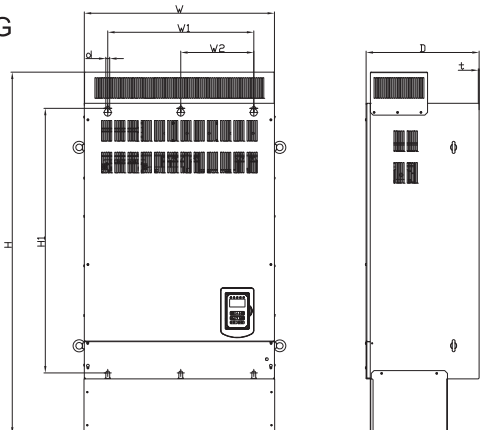


Figure G




| Figure | Enclosure | Frame | Models | Dimensions (mm) | | | | | | | | |
|--------------|-----------|---------|--------------|-----------------|------|-----|-----|-----|-----|-----|-----|-------------|
| | | | | W | H | D | W1 | W2 | H1 | t | d | Weight (kg) |
| F | IP00 | Frame 8 | A510-2125-H3 | 690 | 1000 | 410 | 530 | 265 | 960 | 1.6 | M12 | 184 |
| | | | A510-2150-H3 | | | | | | | | | |
| | | | A510-4250-H3 | | | | | | | | | |
| | | | A510-4270-H3 | | | | | | | | | |
| | | | A510-4300-H3 | | | | | | | | | |
| | | | A510-4375-H3 | | | | | | | | | |
| A510-4425-H3 | | | | | | | | | | | | |
| G | IP20 | Frame 8 | A510-2125-H3 | 690 | 1313 | 410 | 530 | 265 | 960 | 1.6 | M12 | 194 |
| | | | A510-2150-H3 | | | | | | | | | |
| | | | A510-4250-H3 | | | | | | | | | |
| | | | A510-4270-H3 | | | | | | | | | |
| | | | A510-4300-H3 | | | | | | | | | |
| A510-4375-H3 | | | | | | | | | | | | |
| A510-4425-H3 | | | | | | | | | | | | |


* The enclosure type of IP00 model is standard for frame 6 to frame 8. It is required to purchase the installation accessories if user selects the enclosure type of IP20 model.


| | |
|---------|------------|
| Frame 6 | JN5-NK-A06 |
| Frame 7 | JN5-NK-A07 |
| Frame 8 | JN5-NK-A08 |

ACCESSORIES


Encoder Feedback Option Card

| JN5-PG-O | Terminals | Description |
|---|------------|--|
|  <ul style="list-style-type: none"> For IM motor Support Open Collector type and Complementary type pulse signal | Vcc | Power Supply for PG: 12V/5V±5%, 200mA |
| | IG24 | Power Source and Input Signal Common |
| | A, B, Z | PG Signal Input Terminal (Open Collector Type) |
| | AO, BO, ZO | Pulse monitor output: Open Collector Type, 24V, 30mA |
| | E | Grounding Terminal |


| JN5-PG-L | Terminals | Description |
|---|--------------------------------|---|
|  <ul style="list-style-type: none"> For IM motor Support Line Driver type pulse signal | Vcc | Power Supply for PG: 12V/5V±5%, 200mA |
| | GND | Power Source and Input Signal Common |
| | A, A \ , B, B \ , Z, Z \ | PG Signal Input Terminal (Line Driver Type), RS-422 Level Input |
| | AO, AO \ , BO, BO \ , ZO, ZO \ | Pulse monitor output: Line Driver Type, RS-422 Level Input |
| | E | Grounding Terminal |

| JN5-PG-PM | Terminals | Description |
|---|---|---|
|  <ul style="list-style-type: none"> For PM motor Support Line Driver type pulse signal | Vcc | Power Supply for PG: 5V±5%, 200mA |
| | GND | Power Source and Input Signal Common |
| | A, A \ , B, B \ , Z, Z \ , U, U \ , V, V \ , W, W \ | PG Signal Input Terminal (Line Driver Type), RS-422 Level Input |
| | AO, AO \ , BO, BO \ , ZO, ZO \ | Pulse monitor output: Line Driver Type, RS-422 Level Input |
| | E | Grounding Terminal |

Copy Unit

| JN5-CU | Features |
|---|--|
|  | <ul style="list-style-type: none"> ▲ Duplicating parameters setting in one AC drive to another AC drive. ▲ As a remote digital operator. ▲ Standard RJ45 network cable. |

Cables

| RJ45 to USB connecting cable | | Features |
|---|------------|---|
| JN5-CM-USB | 1.8 meters | <ul style="list-style-type: none"> ▲ Using with the TECO exclusive PC-software. ▲ Make adjusting and copying parameters of AC drive through PC available. |
| JN5-CM-USB-3 | 3 meters | |
|  | | |



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GJ-66-04 2013-11-22

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روبروی پالایشگاه نفت پارس، پلاک ۱۲