

Industrial Inverter for Fan and Pump **STARVERT iP5A**

5.5~30kW(7.5~40HP) 3Phase 200~230Volts
5.5~450kW(7.5~600HP) 3Phase 380~480Volts



Drive Solution





STARVERT iP5A

LS Starvert iP5A is basically created for centrifugal fan and pump, so iP5A can help construct competitive system in your various applications.



Specialized
Functions for
Fan and Pump

Marine Type
Certification
From DNV

Energy
Saving and High
Efficiency

**STARVERT
iP5A**

User-friendly
Interface
and Easy
Maintenance

Intelligent
Control
Mechanism

Contents

| | |
|----|--|
| 4 | Overview |
| 8 | Model & Type |
| 9 | Standard Specifications |
| 11 | Wiring |
| 15 | Terminal Configurations (Power Circuit Terminal) |
| 17 | Terminal Configurations (Control Circuit Terminal) |
| 20 | Programming Keypad |
| 21 | Programming Keypad (Parameter Navigation) |
| 22 | Parameter Description |
| 33 | Trial Run |
| 35 | Dimensions |
| 40 | DB (Dynamic Braking) Unit |
| 45 | External DB Resistor / Peripheral Device |



Specialized Functions for Fan and Pump

iP5A is designed for Fans and Centrifugal Pumps. So it can support system stability and cost effectiveness to meet customer needs.

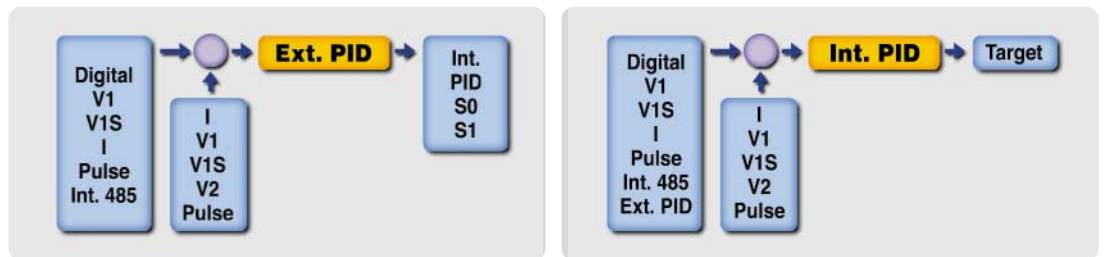


PID Control

In the centrifugal fan and pump field, PID control is provided as a standard function in order to maintain a constant process control of pressure, flow and oil level. This function includes Pre-PID, Sleep and Wake up and output inverse sub-functions.

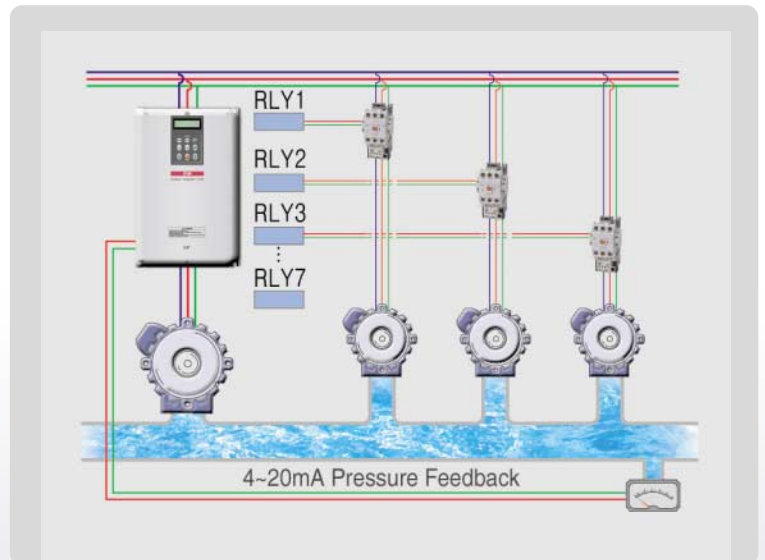
Dual PID

In case of an external PID control needed or cascade PID control, the built-in Dual PID function of iP5A can construct various systems.



Multi Motor Control (5.5~90kW)

With this Multi Motor Control function, a number of motors can be controlled simultaneously without having any extra controllers. MMC function surely provides energy savings and cost down effect.



Marine Type Certification From DNV

iP5A meets the marine/shipping related requirements and passed designing/operating tests which are necessary to obtain certifications in the marine/shipping related field.

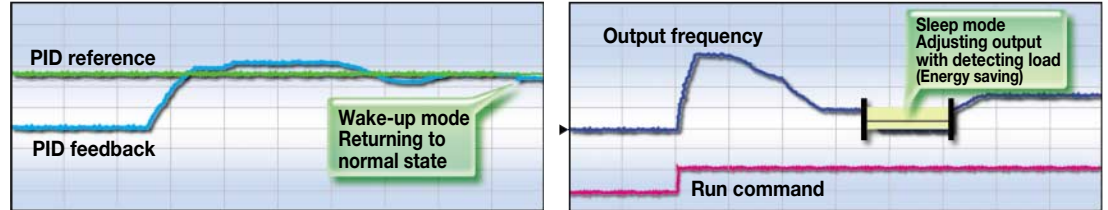
Energy Saving and High Efficiency

iP5A, uniquely designed for fan and pump, guarantees a certain degree of energy saving by realizing system effectiveness optimization.



Sleep and Wake-up Function

Sleep and Wake-up function can stop inverter's operation in extremely low weighted load situation. And if the load is restored to a normal situation, inverter will restart. This mechanism ultimately brings energy saving result of entire system.



Pre Heating Function

When inverter is used in damp places such as green-house, this function can protect motor from damage and inverter's failure from damp.



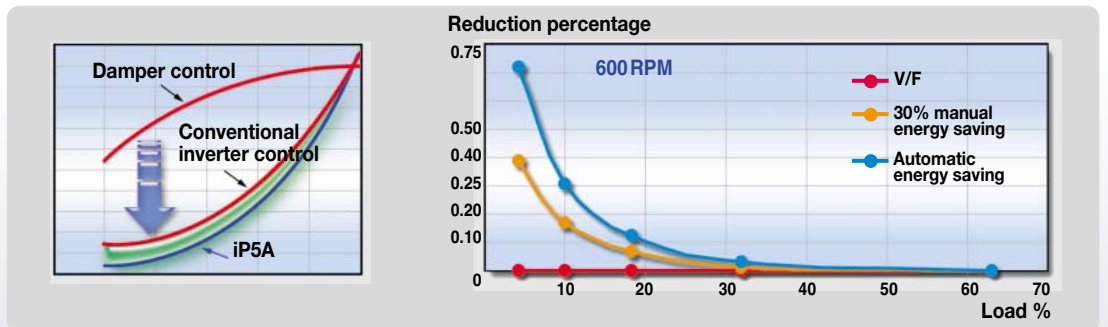
Flying Start Function

In case of more than 2 fans operated in one system or heavy fan spinning by inertia, iP5A detects motor's speed and is able to control motor effectively.



Automatic Energy Saving

Load change may incur energy losses but the optimized flux control of iP5A results in more outstanding energy saving compared to previous models.



Intelligent Control

Regardless of outside alteration affecting inverter's performance, iP5A generates constant performance with effectual functions and protection methods.



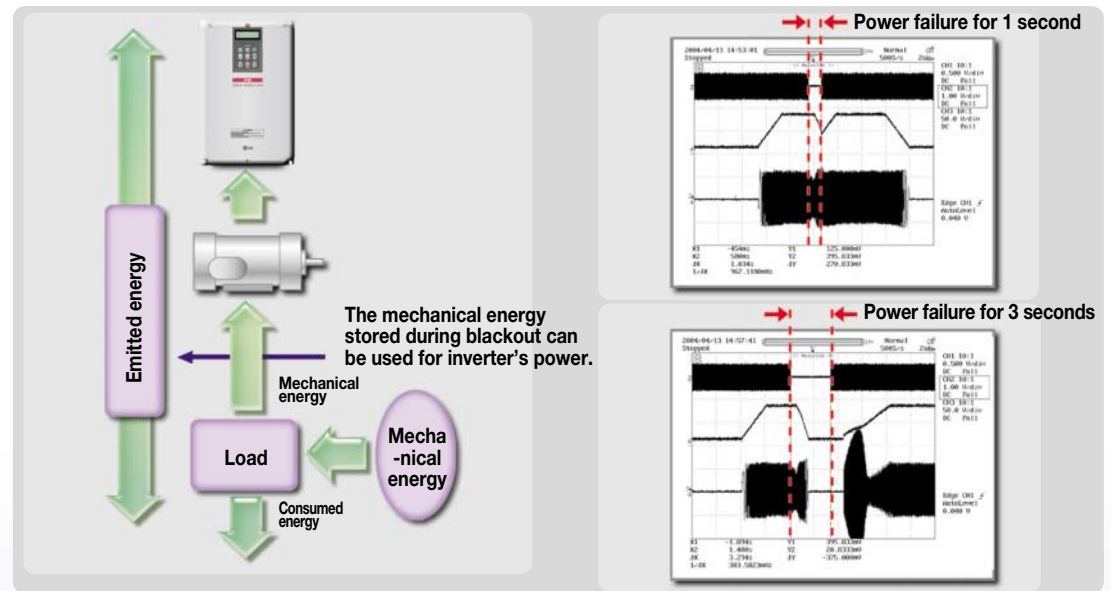
Constant and Stable Performance

Regardless of outside alteration such as input voltage variation by load change or weather effect, iP5A can handle motor and load with best performance.



Improved Management from Instant Power-off and Power Dip Generation

During the power Dip or instant power-off, which is generated by lightening, ground fault and power-failure, loads still keep the mechanical energy and this energy flows back to inverter by regeneration. The power-failure guarantee time is extended by using this electrical character of inverter.



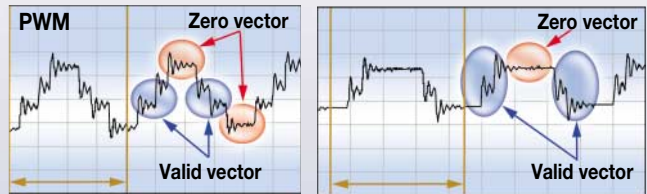
Safety Stop

When unexpected power-failure blocks power supply, inverter stops motor by using inertia energy of load that prevents unexpected second accident (Parameter setting is required).



Current Leakage Reduction Algorithm

Damp condition is subject to cause system failure due to current leakage. And iP5A invents LS PWM algorithm to blow out this danger.



Flux Braking Algorithm

This can make the deceleration time shorter than the regular one, so it enhances system efficiency.



Automatic Carrier Frequency Change

Considering ambient temperature, iP5A can adjust the carrier frequency automatically.

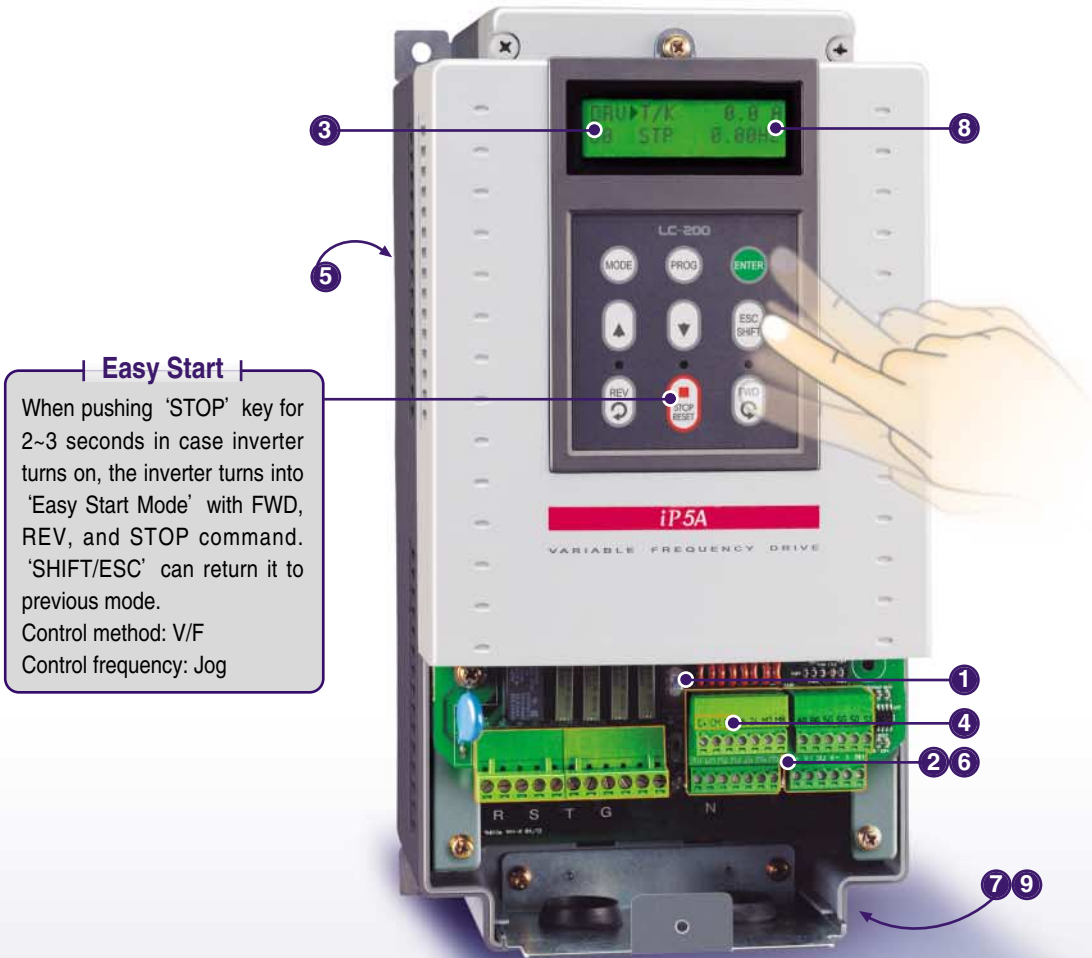


Protection

iP5A has optimum optimal protection functions such as safety stop and prior motor operation.

User-friendly Keypad & Easy Maintenance

iP5A provides user-friendly keypad supporting simple parameter editing. And iP5A's frame work is created for easy maintenance.



Easy Start

When pushing 'STOP' key for 2~3 seconds in case inverter turns on, the inverter turns into 'Easy Start Mode' with FWD, REV, and STOP command. 'SHIFT/ESC' can return it to previous mode.

Control method: V/F
Control frequency: Jog

1 NPN/PNP Input

iP5A has both NPN and PNP input, and you can select one of them easily.

2 Abundant I/O Suggestion

iP5A serves abundant I/O.

| | |
|---|------------------------|
| Digital Input/Output | 8 points / 4 points |
| Analog Input (Voltage + Current)/Output | (1+1) points /4 points |
| Pulse Input | 1 point |
| NTC/PTC Input | 1 point |

3 Various Units of I/O Display

Various units of I/O display are supported in iP5A, so users can recognize operation status easily.

| | |
|------------------------------------|------------------------------------|
| DRV_REF 500.0mBa 15 FBK 82.1mBa | DRV_REF 500.0kPa 15 FBK 82.1kPa |
|------------------------------------|------------------------------------|

4 Built-in 485 and Optional Communication

Built-in 485 of iP5A enables to set up communication system by itself without any additional device. And optional communication suggestion of iP5A can satisfy users who want to construct their own system.

5 Long-life Condenser and Simple Framework

iP5A adopts long-life condenser and enables easy maintenance in simple framework.

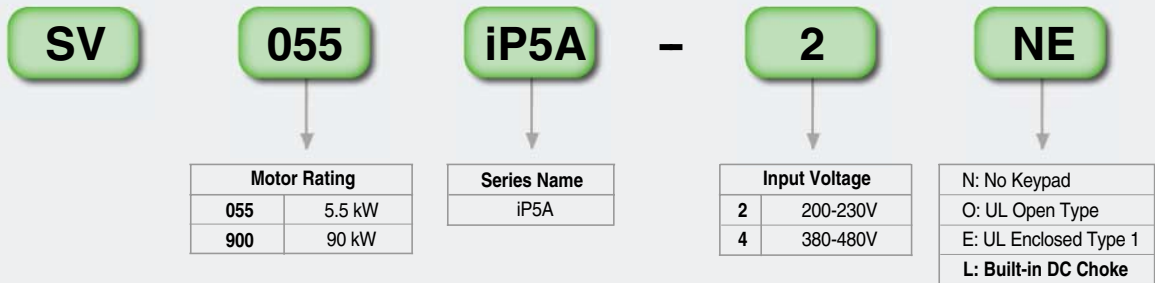
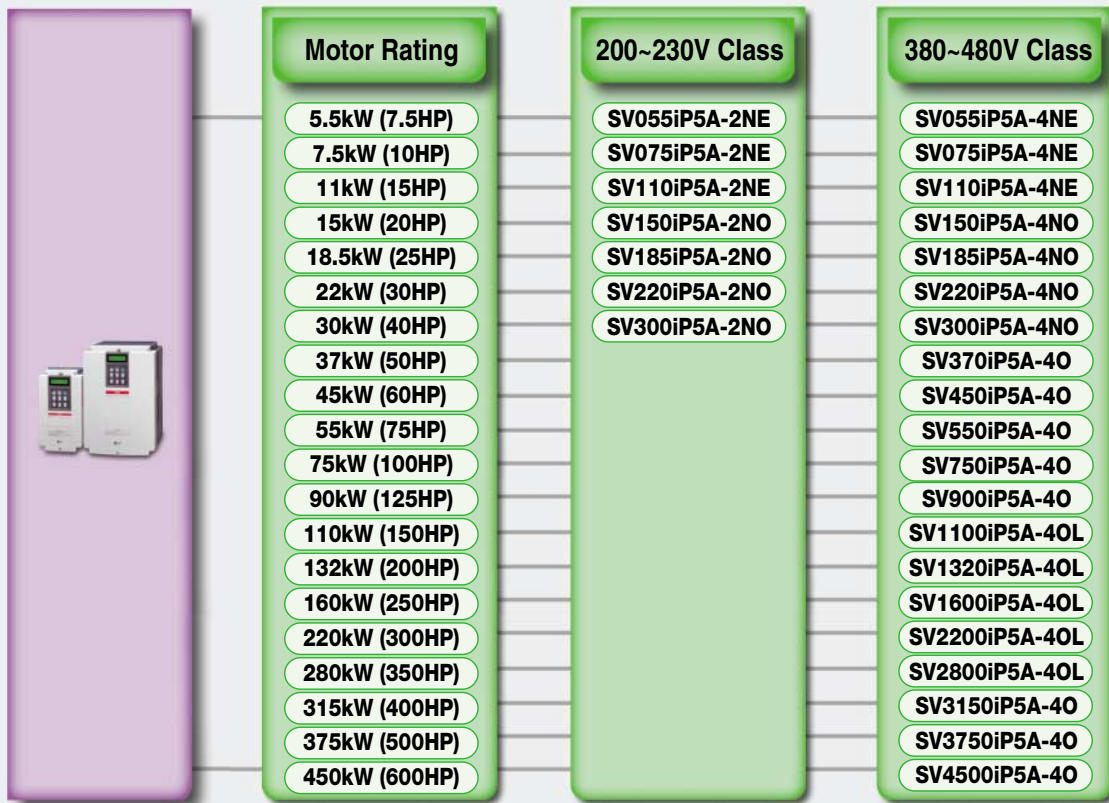
6 Consumption Time Display

iP5A displays consumption time of components so that users can replace them in time.

7 Others

- Removable terminal board
- External fan available
- Cooling fan on/off control

Model & Type



SV055iP5A-2NE

← Model Number

INPUT 200-230 V 3 Phase
25A 50/60HZ

← Input Rating

OUTPUT 0-Input V 3 Phase
24A 0.01-120HZ

← Output Rating

9.1KVA, Enclosed Type 1

← Protection Degree




← Bar Cord

90204000408

← Serial Number

LS Industrial Systems Co., Ltd. Made in Korea

 Marine Approved Drives needs additional ordering.

Standard Specifications

●● 200~230V Class (5.5~30kW / 7.5~40HP)

| Model Number (SV□□□ iP5A-2) | | | 055 | 075 | 110 | 150 | 185 | 220 | 300 | |
|---------------------------------|---------------------|--|----------------------------|-----------------------------|----------|-----------|---------------------------------|-----------|-----------|--|
| Capacity [kVA] ^{Note1} | | | 9.1 | 12.2 | 17.5 | 22.9 | 28.2 | 33.5 | 43.8 | |
| Output ratings | Fan or pump load | Motor rating ^{Note2} (HP) (kW) | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | |
| | | | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 | |
| | | Current [A] | 24 | 32 | 46 | 60 | 74 | 88 | 115 | |
| | (110% over current) | | | 110% 1 Minute (Normal Duty) | | | | | | |
| | General load | Motor rating (HP) (kW) | 5.5 | 7.5 | 10 | 15 | 20 | 25 | 30 | |
| | | | 3.7 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | |
| Current [A] | | 17 | 23 | 33 | 44 | 54 | 68 | 84 | | |
| (150% over current) | | | 150% 1 Minute (Heavy Duty) | | | | | | | |
| Frequency | | | 0.01~120 Hz | | | | | | | |
| Voltage | | | 200~230V ^{Note3} | | | | | | | |
| Input ratings | Voltage | | 3 φ 200~230V (-15%~+10%) | | | | | | | |
| | Frequency | | 50/60 Hz (± 5%) | | | | | | | |
| Protection degree | | | IP20 / UL Type1 | | | | IP00 / UL Open ^{Note4} | | | |
| Weight [kg (lbs.)] | | | 4.9 (10.8) | 6 (13.2) | 6 (13.2) | 13 (28.7) | 13.5 (29.8) | 20 (44.1) | 20 (44.1) | |

●● 380~480V Class (5.5~90kW / 7.5~125HP)

| Model Number (SV□□□ iP5A-4) | | | 055 | 075 | 110 | 150 | 185 | 220 | 300 | 370 | 450 | 550 | 750 | 900 |
|---------------------------------|---------------------|--|----------------------------|-----------------------------|----------|-------------|---------------------------------|-------------|-------------|-----------|-----------|-----------|------------|------------|
| Capacity [kVA] ^{Note1} | | | 9.6 | 12.7 | 19.1 | 23.9 | 31.1 | 35.9 | 48.6 | 59.8 | 72.5 | 87.6 | 121.1 | 145.8 |
| Output ratings | Fan or pump load | Motor rating ^{Note2} (HP) (kW) | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 | 125 |
| | | | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 | 37 | 45 | 55 | 75 | 90 |
| | | Current [A] | 12 | 16 | 24 | 30 | 39 | 45 | 61 | 75 | 91 | 110 | 152 | 183 |
| | (110% over current) | | | 110% 1 Minute (Normal Duty) | | | | | | | | | | |
| | General load | Motor rating (HP) (kW) | 5.5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 75 | 100 |
| | | | 3.7 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 | 37 | 45 | 55 | 75 |
| Current [A] | | 8.8 | 12 | 16 | 22/24 | 28/30 | 34/39 | 44/45 | - | - | - | - | - | |
| (150% over current) | | | 150% 1 Minute (Heavy Duty) | | | | | | | | | | | |
| Frequency | | | 0.01~120 Hz | | | | | | | | | | | |
| Voltage | | | 380~480V ^{Note3} | | | | | | | | | | | |
| Input ratings | Voltage | | 3 φ 380~480V (-15%~+10%) | | | | | | | | | | | |
| | Frequency | | 50/60 Hz (± 5%) | | | | | | | | | | | |
| Protection degree | | | IP20 / UL Type1 | | | | IP00 / UL Open ^{Note4} | | | | | | | |
| Weight [kg (lbs.)] | Standard Type | | 4.9 (10.8) | 6 (13.2) | 6 (13.2) | 12.5 (27.6) | 13 (28.7) | 20 (44.1) | 20 (44.1) | 27 (59.5) | 27 (59.5) | 29 (64) | 42 (92.6) | 43 (94.8) |
| | Built-in DCL Type | | - | - | - | 19.5 (43.9) | 19.5 (42.9) | 26.5 (58.3) | 26.5 (58.3) | 39 (86) | 40 (88.2) | 42 (92.6) | 67 (147.4) | 68 (149.9) |

●● 380~480V Class (110~450kW / 50~125HP)

| Model Number (SV□□□ iP5A-4) | | | 1100 | 1320 | 1600 | 2200 | 2800 | 3150 | 3750 | 4500 |
|---------------------------------|---------------------|--|---------------------------------|-----------------------------|-------------|-------------|-----------------|-------------|-------------|-------------|
| Capacity [kVA] ^{Note1} | | | 178 | 210 | 259 | 344 | 436 | 488 | 582 | 699 |
| Output ratings | Fan or pump load | Motor rating ^{Note2} (HP) (kW) | 150 | 200 | 250 | 300 | 350 | 400 | 500 | 600 |
| | | | 110 | 132 | 160 | 220 | 280 | 315 | 375 | 450 |
| | | Current [A] | 223 | 264 | 325 | 432 | 547 | 613 | 731 | 877 |
| | (110% over current) | | | 110% 1 Minute (Normal Duty) | | | | | | |
| | General load | Motor rating (HP) (kW) | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 500 |
| | | | 90 | 10 | 132 | 160 | 220 | 280 | 315 | 375 |
| Current [A] | | 183 | 223 | 264 | 325 | 432 | 547 | 613 | 731 | |
| (150% over current) | | | 150% 1 Minute (Heavy Duty) | | | | | | | |
| Frequency | | | 0.01~120 Hz | | | | | | | |
| Voltage | | | 380~480V ^{Note3} | | | | | | | |
| Input ratings | Voltage | | 3 φ 380~480V (-15%~+10%) | | | | | | | |
| | Frequency | | 50/60 Hz (± 5%) | | | | | | | |
| Protection degree | | | IP00 / UL Open ^{Note4} | | | | | | | |
| DCL | | | Built-in | | | | External Option | | | |
| Weight [kg (lbs.)] | | | 101 (222.7) | 101 (222.7) | 114 (251.3) | 200 (441.9) | 200 (441.9) | 243 (535.7) | 380 (837.7) | 380 (837.7) |

^{Note 1} Rated capacity (v 3 × V × I) is based on 220V for 200V class and 460V for 400V class. ² Indicates the maximum applicable capacity when using a 4-Pole LS motor.

³ Maximum output voltage will not exceed the input voltage. An output voltage less than the input voltage may be programmed if necessary.

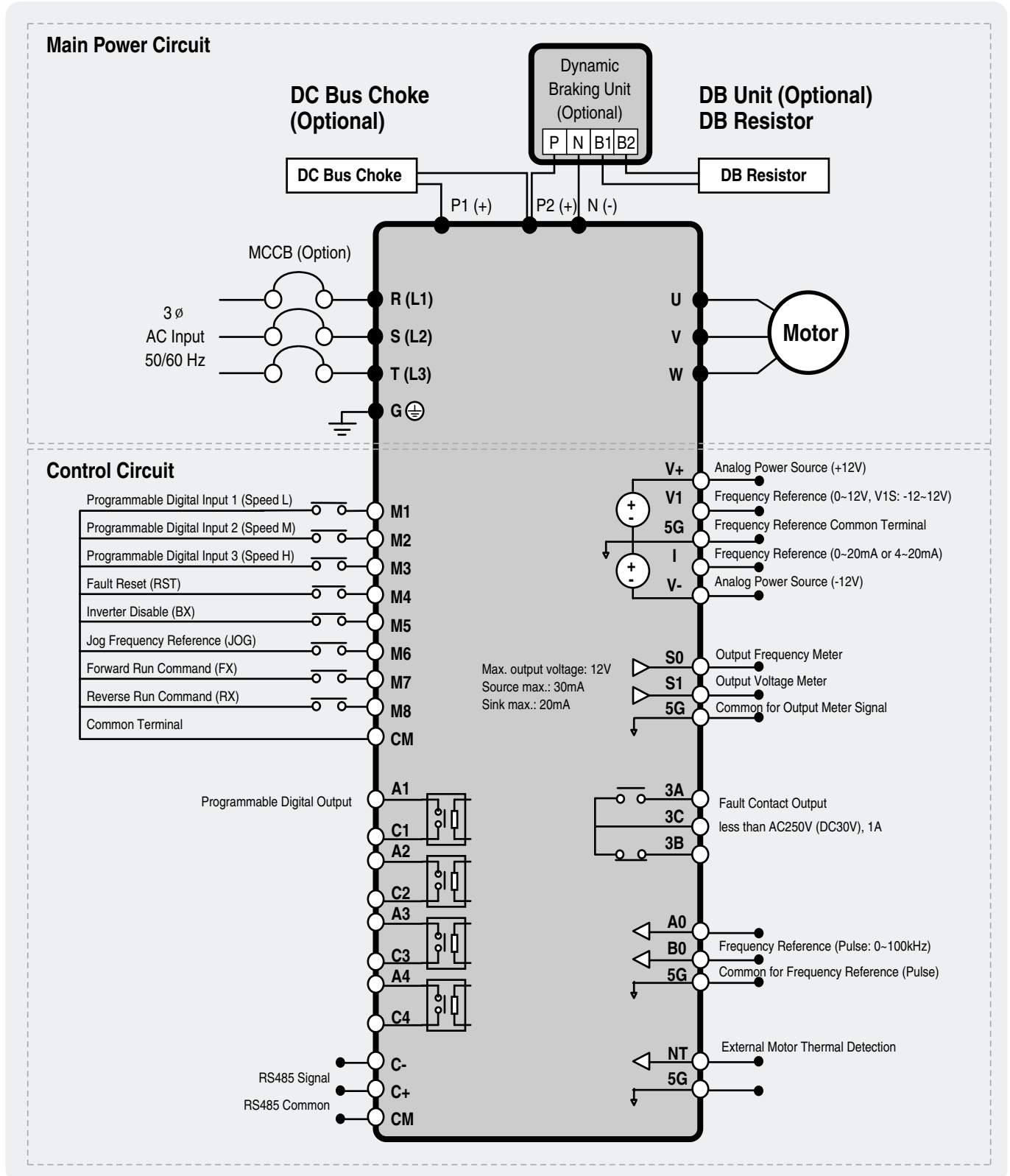
⁴ IP20/UL Type1 with optional conduit, it can be modified to UL Type1.

Common Specifications (External)

| | | | |
|----------------------------------|-------------------------|---|--------------------------------|
| Keypad | LCD | 32 character display keypad Download and Upload available | All units |
| Remote | Remote cable | 2m, 3m and 5m long keypad cable enables users to control the inverter from a distant area | Optional |
| Dynamic braking | DB resistor | To enhance the regenerative braking performance, it makes the inverter to accelerate/decelerate rapidly | According to inverter capacity |
| | DB unit | If it need a regenerative braking, it is used with DB resistor | |
| Conduit option | Conduit for NEMA TYPE 1 | Install it to fit for NEMA TYPE 1 Enclosure or IP20 | 15~90kW (20~125HP) |
| Communication option card | DEVICENET | DEVICENET optional communication card | All series (Above S/W V10) |
| | PROFIBUS | PROFIBUS optional communication card | All series (Above S/W V10) |
| | LS485/MODBUS_RTU | LS485/MODBUS_RTU optional communication card | All series (Above S/W V10) |
| | LonWorks | Lonworks optional communication card | All series (Above S/W V10) |
| | BACNet | BACNet optional communication card | All series (Above S/W V10) |
| | MODBUS_TCP | MODBUS_TCP optional communication card | All series (Above S/W V10) |
| | Metasys_N2 | Metasys_N2 optional communication card | All series (Above S/W V10) |
| | CCLink | CCLink optional communication card | All series (Above S/W V10) |
| | CANopen | CANopen optional communication card | All series (Above S/W V10) |

Wiring

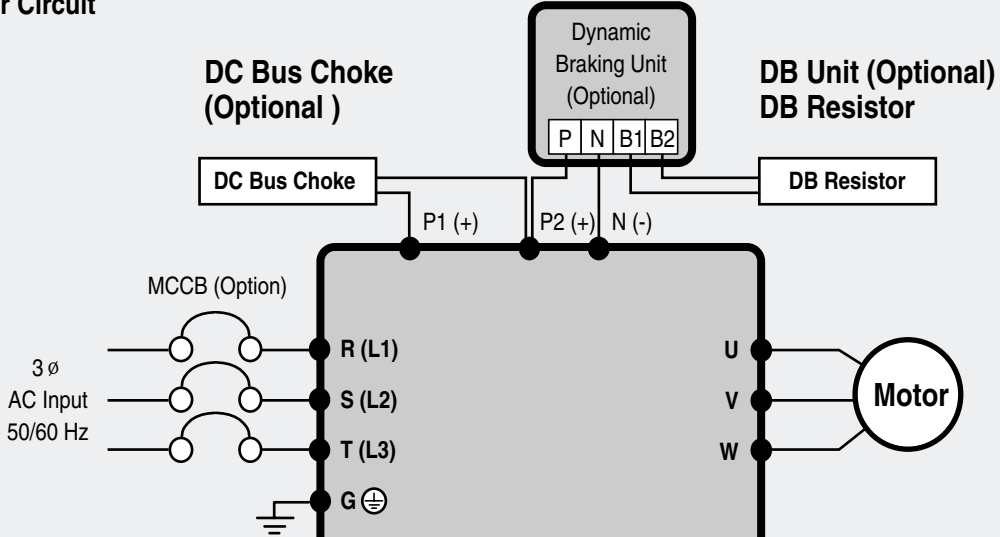
•• For 5.5~30kW (7.5~40HP)



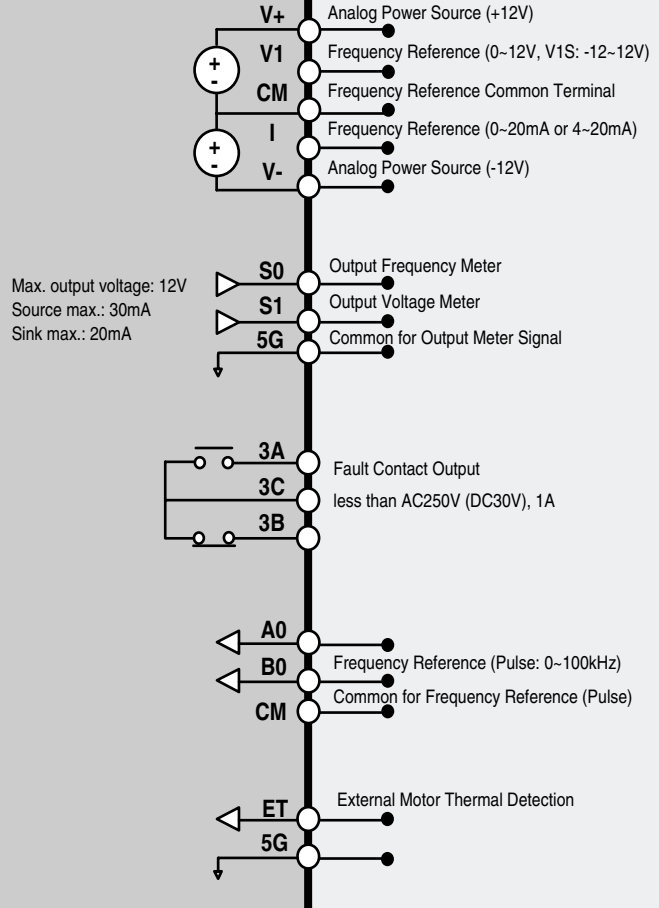
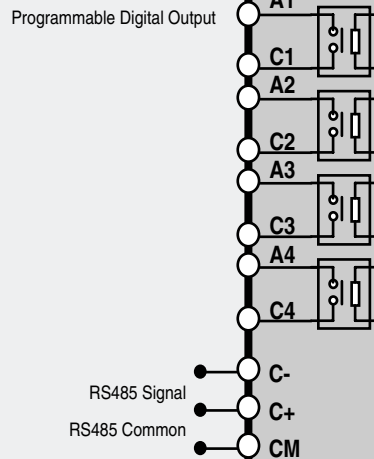
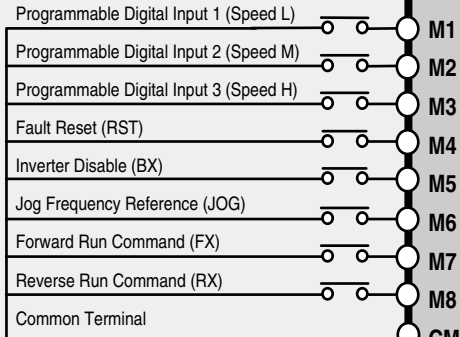
Note 1) 5G is Common Ground for Analog Input / Output.
2) Use terminal V1 for V1, V1S (0~12V, -12~12V) input.

For 37~90kW (50~125HP) / 315~450kW (400~600HP)

Main Power Circuit

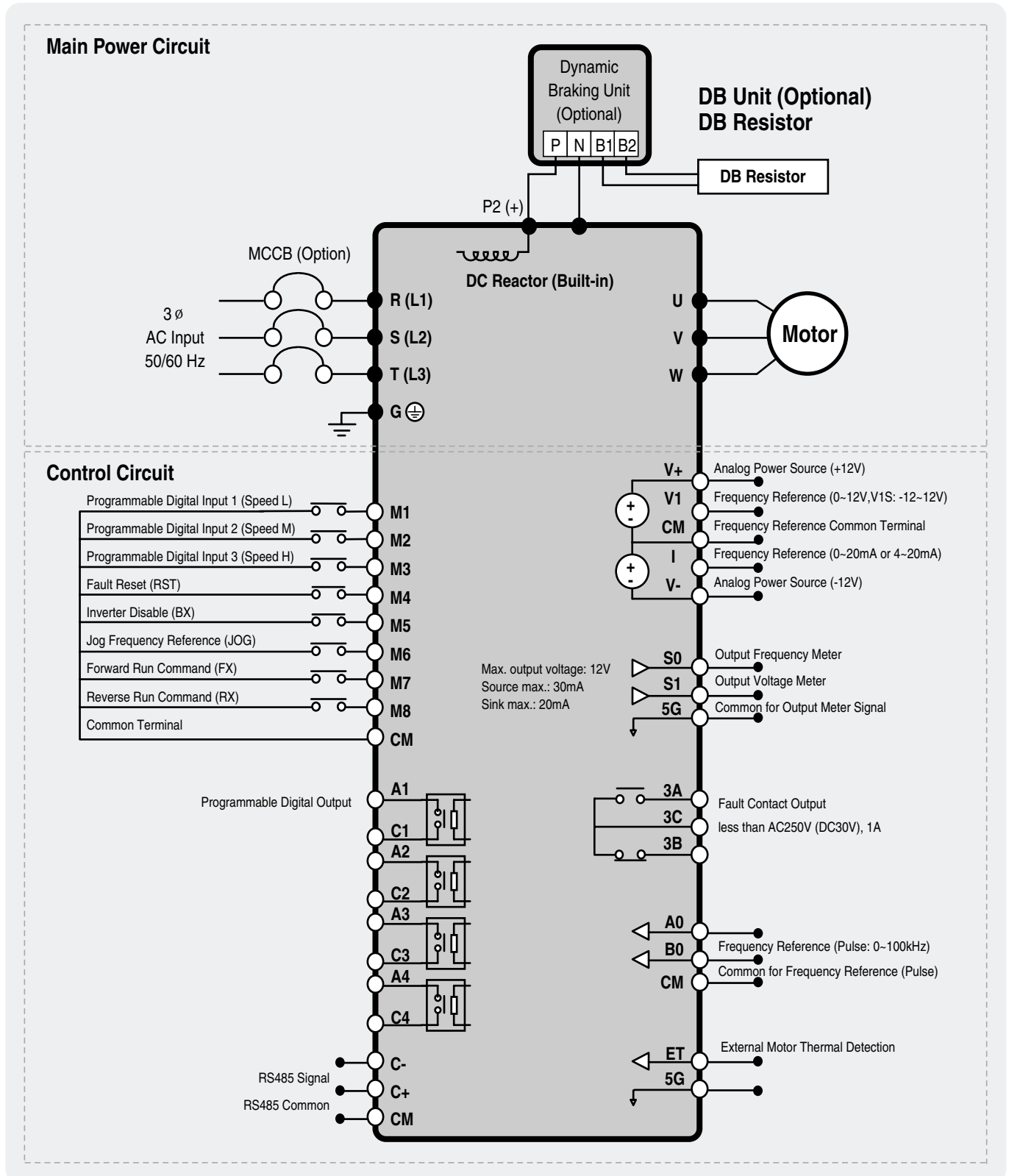


Control Circuit



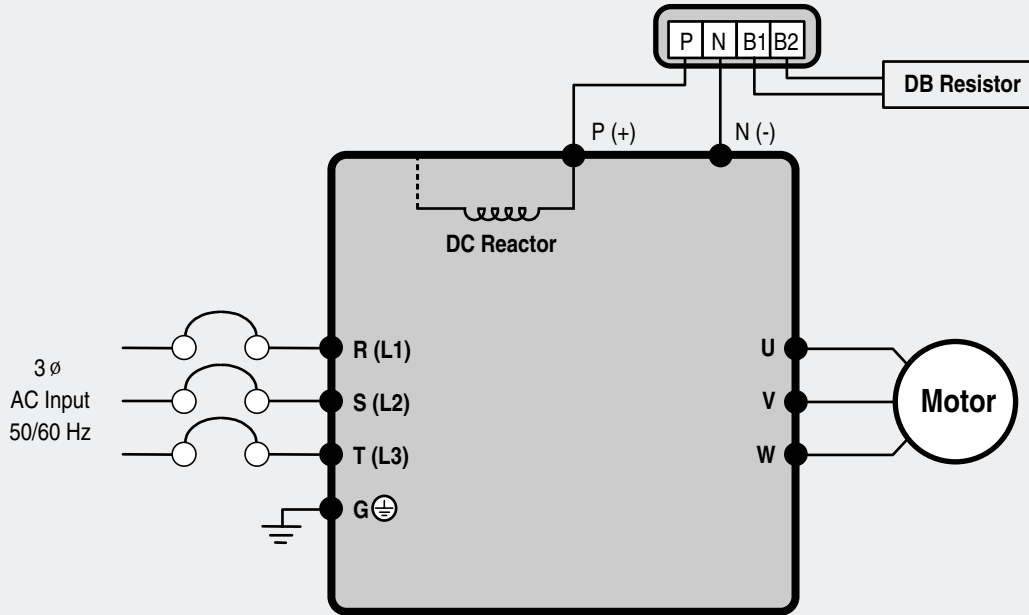
Note 1) 5G is Common Ground for Analog Meter Output (S0, S1) and External motor thermal detection (ET).
 2) Use terminal V1 for V1, V1S (0~12V, -12~-12V) input.
 3) DC Reactor is built basically in inverters for 15~280kW.

•• For 110~280kW (150~350HP)

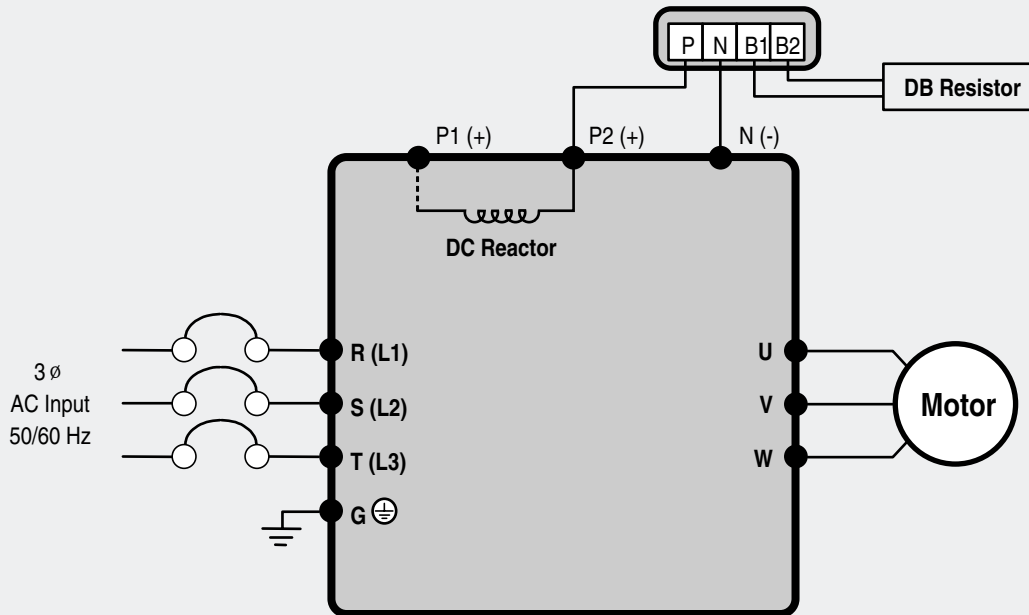


Note 1) 5G is Common Ground for Analog Meter Output (S0, S1) and External motor thermal detection (ET).
 2) Use terminal V1 for V1, V1S (0~12V, -12~-12V) input.
 3) DC Reactor is built basically in inverters for 15~280kW.

⚡ For 15~30kW (20~40HP) Built-in DCL Type



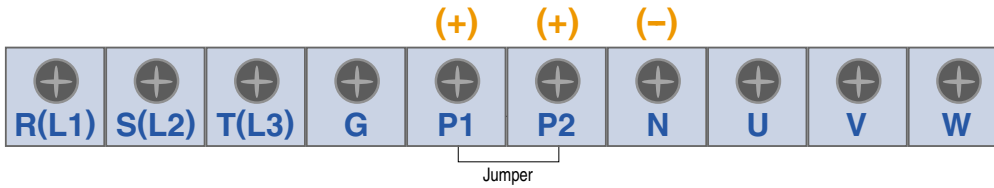
⚡ For 37~90kW (50~125HP) Built-in DCL Type



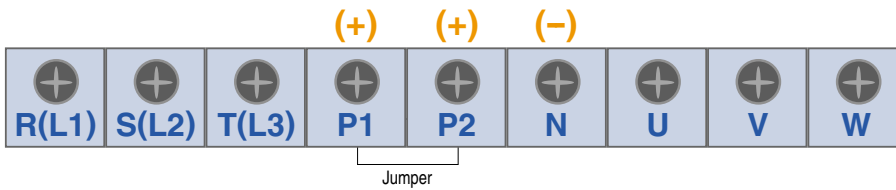
Note) P1 (+) is not provided for wiring.

Terminal Configurations (Power Circuit Terminal)

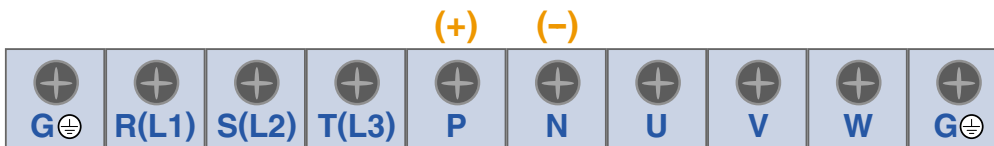
●● 5.5~30 kW (200V/400V Class)



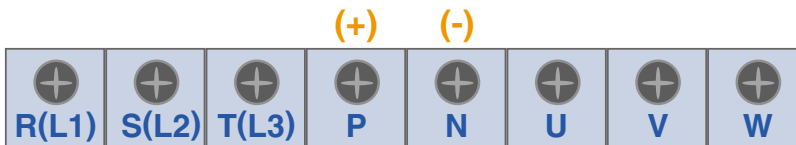
●● 37~90kW (50~125HP) / 315~450kW (400~600HP) <400V Class>



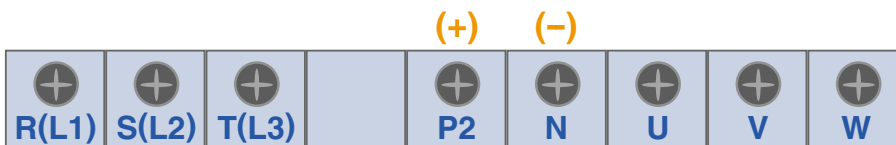
●● 15~18.5kW (20~25HP) <Built-in DC Reactor Type, 400V Class>



●● 22~30kW (30~40HP) <Built-in DC Reactor Type, 400V Class>



●● 37~90kW (50~125HP) / 110 ~280kW (150~350HP) <Built-in DC Reactor Type, 400V Class>



Note) P1 (+) is not provided for wiring.

| Symbol | Description |
|-------------------------------|--|
| R, S, T (L1, L2, L3) | AC Line Voltage Input |
| G | Earth Ground |
| P1 (+), P2 (+) | External DC Reactor [P1 (+)-P2 (+)] Connection Terminals (Jumper must be removed). |
| P2 (+), N (-) or P (+), N (-) | DB Unit [P2 (+)-N (-)] Connection Terminals |
| U, V, W | 3 Phase Power Output Terminals to Motor |

Terminal Configurations (Power Circuit Terminal)

Wires & Terminal lugs

Refer to below for wires, terminal lugs, and screws used to connect the inverter power input and output.

| Inverter Capacity | Terminal Screw Size | Screw Torque | | Wire | | | | |
|-------------------|-----------------------|--------------|---------|----------------------|---------|----------------------|---------|-----|
| | | | | mm ² | | AWG or kcmil | | |
| | | Kgf · cm | lb · in | R, S, T (L1, L2, L3) | U, V, W | R, S, T (L1, L2, L3) | U, V, W | |
| 200V Class | 5.5kW (7.5HP) | M4 | 17 | 15.2 | 5.5 | 5.5 | 10 | 10 |
| | 7.5kW (10HP) | M5 | 35 | 30.4 | 8 | 8 | 8 | 8 |
| | 11kW (15HP) | M5 | 35 | 30.4 | 14 | 14 | 6 | 6 |
| | 15kW (20HP) | M6 | 57 | 49.9 | 22 | 22 | 4 | 4 |
| | 18.5kW (25HP) | M6 | 57 | 49.9 | 38 | 38 | 2 | 2 |
| | 22kW (30HP) | M8 | 135 | 117.7 | 38 | 38 | 2 | 2 |
| | 30kW (40HP) | M8 | 135 | 117.7 | 60 | 60 | 1/0 | 1/0 |
| 400V Class | 5.5kW (7.5HP) | M4 | 17 | 15.2 | 3.5 | 3.5 | 12 | 12 |
| | 7.5Kw (10HP) | M5 | 35 | 30.4 | 3.5 | 3.5 | 12 | 12 |
| | 11 kW (15HP) | M5 | 35 | 30.4 | 5.5 | 5.5 | 10 | 10 |
| | 15 kW (20HP) | M6 | 57 | 49.9 | 8 | 8 | 8 | 8 |
| | 18.5kW (25HP) | M6 | 57 | 49.9 | 14 | 14 | 6 | 6 |
| | 22~30kW (30~40HP) | M8 | 135 | 117.7 | 22 | 22 | 4 | 4 |
| | 37~55kW (50~75HP) | M8 | 135 | 117.7 | 38 | 38 | 2 | 2 |
| | 75~90kW (100~125HP) | M10 | 269 | 234.5 | 60 | 60 | 1/0 | 1/0 |
| | 110~132kW (150~200HP) | M12 | 474 | 412.4 | 100 | 100 | 4/0 | 4/0 |
| | 160kW (250HP) | M12 | 474 | 412.4 | 150 | 150 | 300 | 300 |
| | 220kW (300HP) | M12 | 474 | 412.4 | 200 | 200 | 400 | 400 |
| | 280kW (350HP) | M12 | 474 | 412.4 | 250 | 250 | 500 | 500 |
| | 315kW (400HP) | M12 | 474 | 412.4 | 325 | 325 | 700 | 700 |
| 375kW (500HP) | M12 | 474 | 412.4 | 2 × 200 | 2 × 200 | 2 × 400 | 2 × 400 | |
| 450kW (600HP) | M12 | 474 | 412.4 | 2 × 250 | 2 × 250 | 2 × 500 | 2 × 500 | |

Note) • Apply the rated torque to terminal screws.

- Loose screws can cause of short circuit or malfunction. Tightening the screw too much can damage the terminals and cause a short circuit or malfunction.
- Use copper wires only with 600V, 75°C ratings. For 7.5~11kW 240V type inverters, R (L1), S (L2), T (L3) and U, V, W terminals are only for use with insulated ring type connector.

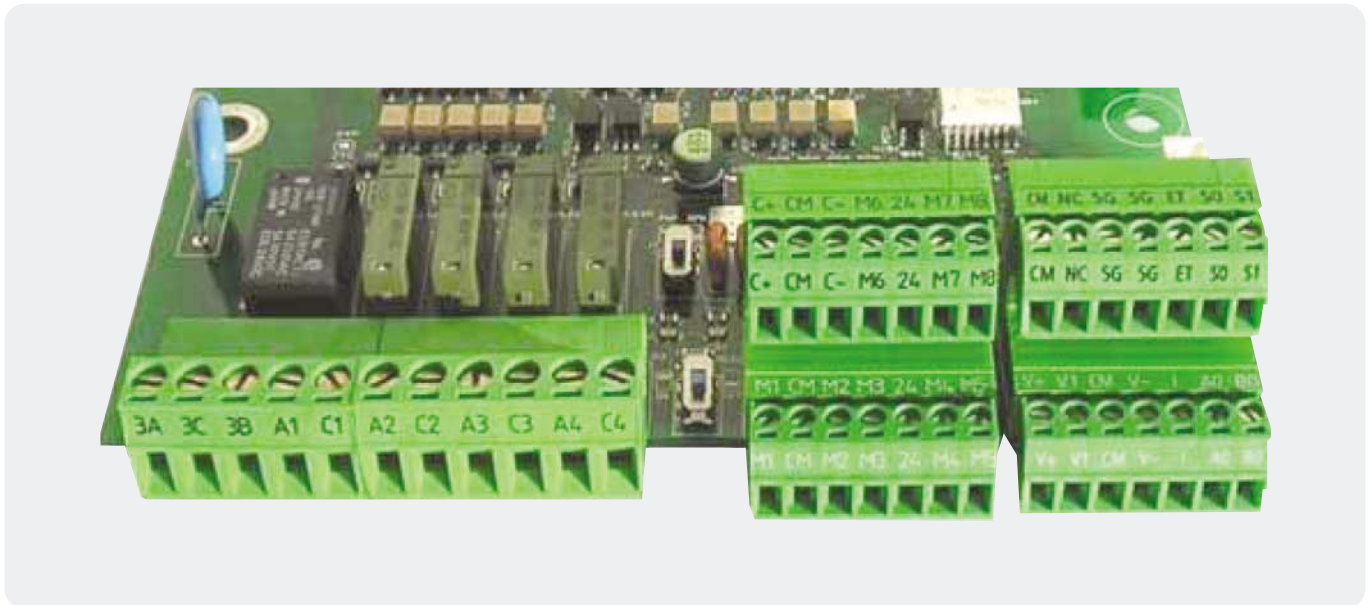
Terminal Configurations (Control Circuit Terminal)

•• 5.5~30kW/7.5~40HP (200V/400V Class)



| | | | | | | | | | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 3A | 3C | 3B | A1 | C1 | A2 | C2 | A3 | C3 | A4 | C4 | C+ | CM | C- | M6 | 24 | M7 | M8 | A0 | B0 | 5G | 5P | S0 | S1 |
| | | | | | | | | | | | M1 | CM | M2 | M3 | 24 | M4 | M5 | V+ | V1 | 5G | V- | I | NT |

•• 37~450 kW/50~600HP (400V Class)



| | | | | | | | | | | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 3A | 3C | 3B | A1 | C1 | A2 | C2 | A3 | C3 | A4 | C4 | C+ | CM | C- | M6 | 24 | M7 | M8 | CM | NC | 5G | 5G | ET | S0 | S1 |
| | | | | | | | | | | | M1 | CM | M2 | M3 | 24 | M4 | M5 | V+ | V1 | CM | V- | I | A0 | B0 |

Terminal Configurations (Control Circuit Terminal)

| Type | Symbol | Name | Description | |
|--------------|----------------------------------|---|--|---|
| Input Signal | Starting Contact Function Select | M1, M2, M3 | Programmable Digital Input 1, 2, 3 (Factory setting: Multi-step frequency 1, 2, 3) | |
| | | FX [M7] | Forward Run Command Forward run when closed and stopped when open. | |
| | | RX [M8] | Reverse Run Command Reverse run when closed and stopped when open. | |
| | | JOG [M6] | Jog Frequency Reference Runs at jog frequency when the jog signal is on. The direction is set by the FX (or RX) signal. | |
| | | BX [M5] | Inverter Disable When the BX signal is ON, the output of the inverter is turned off. When motor uses an electrical brake to stop, BX is used to turn off the output signal. Take caution when BX signal is off (Not turned off by latching) and FX signal (or RX signal) is on. If so, motor continues to run. | |
| | | RST [M4] | Fault Reset Used for fault reset. | |
| | | CM | Sequence Common (NPN) / 24V Com. Common terminal for NPN contact input and also common for the external 24V supply. | |
| | 24 | Sequence Common (PNP) / Ext. +24Vdc supply Common 24V terminal for PNP contact input. Can be also used as a 24Vdc external power supply (Maximum output : +24V, 50mA) | | |
| | Analog Frequency Setting | V+, V- | Analog Power Source (+12V, -12V) Power supply for analog frequency setting. Maximum output: +12V, 100mA, -12V, 100mA. | |
| | | V1 | Frequency Reference (Voltage) Used by a DC 0~12V or -12~12V input to set the frequency reference. (Input impedance is 20 k Ω) | |
| | | I | Frequency Reference (Current) Used by a 0-20mA input to set the frequency reference. (Input impedance is 249 Ω) | |
| | | A0, B0 | Frequency Reference (Pulse) Used by a pulse input to set the frequency reference. | |
| | | 5G (~30kW) CM (37kW~) | Frequency Reference Common Terminal Common terminal for analog frequency reference signal. | |
| | External Motor Thermal Detection | NT (~30kW) ET (37kW~) | External Motor Thermal Detection Motor thermal sensor input. Used to prevent motor from overheating by using a NTC or PTC thermal sensor. | |
| | | 5G | Common for NT (or ET) Common terminal for external motor thermal detection. | |
| | RS485 Terminal | C+, C- | RS485 signal High, Low RS485 signal (See RS485 communication in manual for more details.) | |
| | | CM | RS485 common Common ground. Terminal for RS485 interface. | |
| | Output Signal | Voltage | S0, S1, 5G Programmable Voltage Output Voltage output for one of the following: Output frequency, output current, output voltage, DC link voltage. Default is set to output frequency. (Maximum output voltage and output current are 0-12V and 1mA). | |
| | | Contact | 3A, 3C, 3B | Fault Contact Output Energizes when a fault is present. (AC250V, 1A: DC30V, 1A) Fault: 3A-3C closed (3B-3C Open) Normal: 3B-3C closed (3A-3C Open) |
| | | | A1~4, C1~4 | Programmable Digital Output Defined by programmable digital output terminal settings (AC250V, 1A: DC30V, 1A) |

Note) M1-M8 terminals are User Programmable.

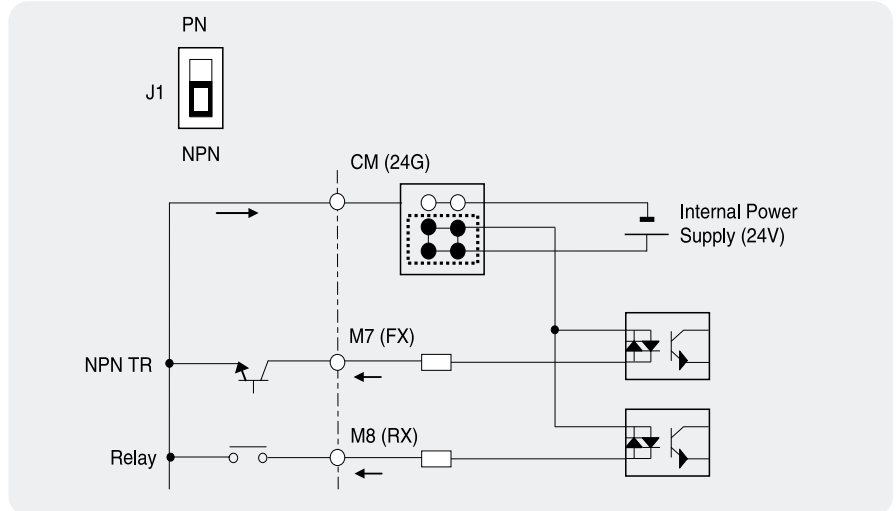
Terminal Configurations (Control Circuit Terminal)

iP5A provides Sink/Source (NPN/PNP) modes for sequence input terminal on the control circuit. The logic of the input terminal is settable to Sink mode (NPN mode)/Source mode (NPN mode) by using the J1 switch.

Connection method is shown below.

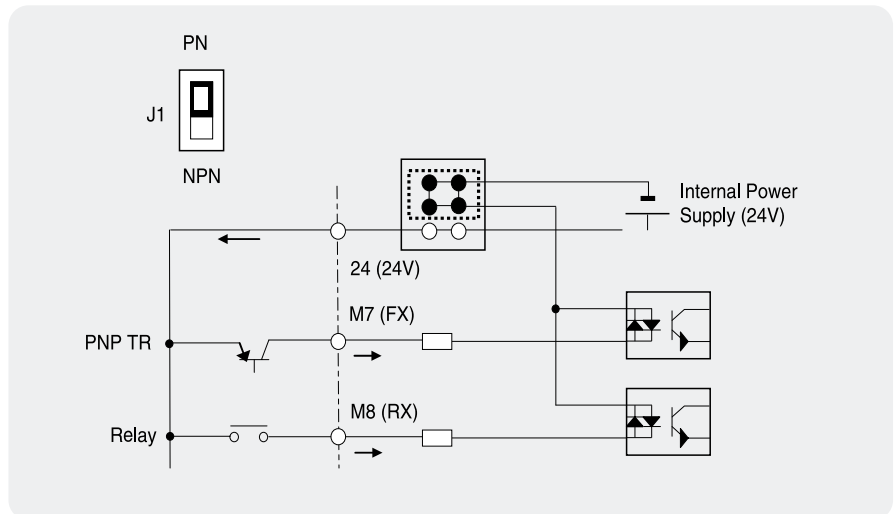
Sink mode (NPN mode)

- Put J1 switch down to set to Sink mode (NPN mode). CM terminal (24V GND) is common terminal for contact signal input.
- The factory default is Sink mode (NPN mode).



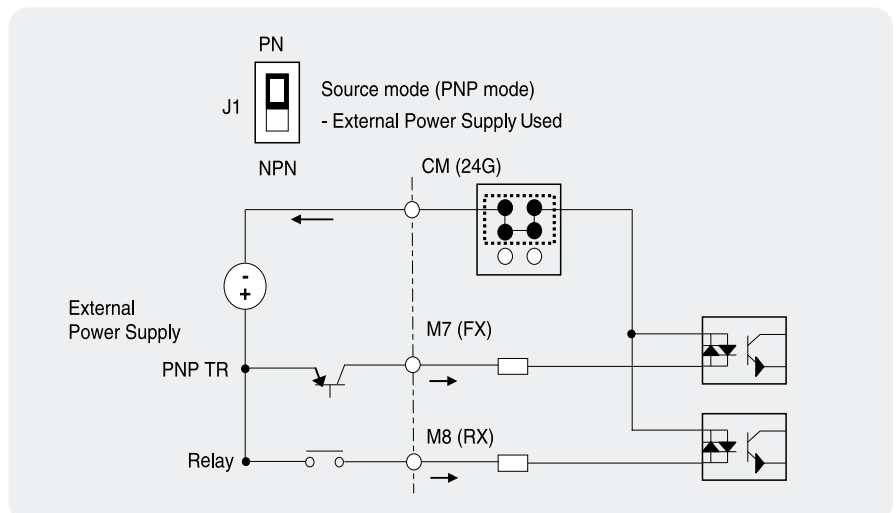
Source mode (PNP mode) Internal Power Supply Used

- Put J1 switch up to set to Source mode (PNP mode). Terminal 24 (24V Power Supply) is common terminal for contact input signal.



Source mode (PNP mode) External Power Supply Used

- Put J1 switch up to set to Source mode (PNP mode).
- To use external 24V Power Supply, make a sequence between external Power Supply (-) terminal and CM (24V GND) terminal.



Programming Keypad

●● LCD Loader

32 character, background light, LCD display. Background tone is adjustable.

Mode Button moves you through seven program groups:
 DRV [Mode]
 FUN1 [ENT] DRV

Reverse Run Button
 Reverse Run LED
 blinks when drive
 Accels or Decels.



Program Button is used to go into programming mode to change data.

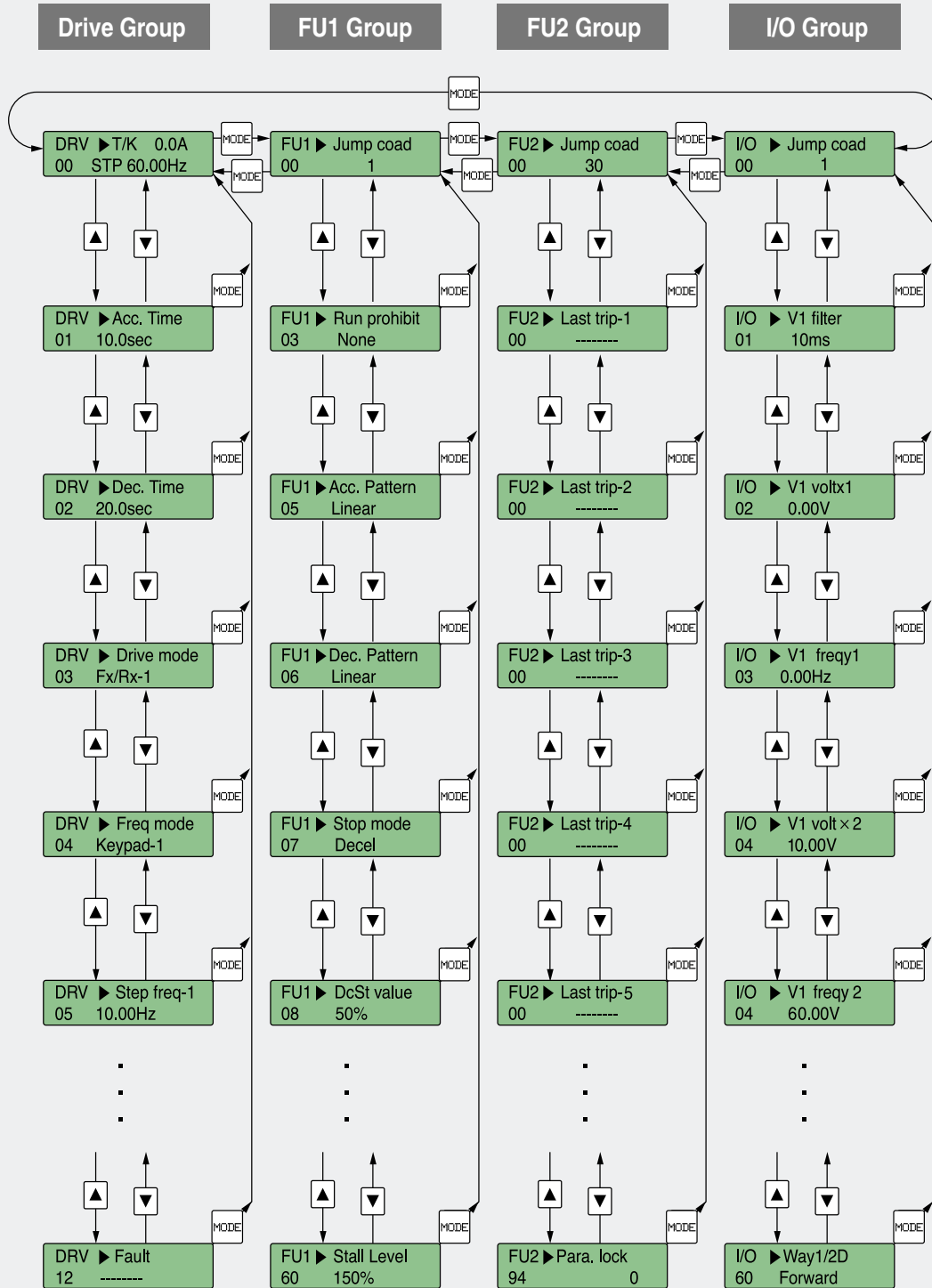
Enter Button is used to enter changed data within a parameter.
 DRV [ENT] APP
 [MODE] DRV

[SHIFT] This button is used to move cursor across display in programming mode.
 [ESC] This button is used to move the program code to DRV 00 from any program code.

Forward Run Button
 Forward Run LED
 blinks when drive
 Accels or Decels.

Programming Keypad (Parameter Navigation)

⚡ Parameter group moves directly to DRV group by pressing [SHIFT] key in any parameter code.



Note) This figure shows group and code navigation through LCD display keypad. It can be different from actual display due to the group addition or code change.

Parameter Description

DRV Group

| CODE | Comm. Addr | Description | LCD Keypad Display | Setting Range | Factory Default | Adj. During Run |
|------------------------------------|------------|---|------------------------------|---|----------------------|-----------------|
| DRV-00 <small>Note1</small> | 9100 | Command Frequency (Output Frequency during motor run, Reference Frequency during motor stop), Output Current(LCD) | Cmd. Freq | 0 to FU1-30 [Hz] | 0 [Hz] | ○ |
| DRV-01 | 9101 | Acceleration Time 5.5~90kW (7.5~125HP) 110~450kW (150~600HP) | Acc. Time | 0 to 6000 [sec] | 20 [sec] 60 [sec] | ○ |
| DRV-02 | 9102 | Deceleration Time 5.5~90kW (7.5~125HP) 110~450kW (150~600HP) | Dec. Time | 0 to 6000 [sec] | 30 [sec] 90 [sec] | ○ |
| DRV-03 | 9103 | Drive Mode (Run/Stop Method) | Drive Mode | 0 (Keypad) 1 (Fx/Rx-1) 2 (Fx/Rx-2) 3 (Int. 485) | 1 (Fx/Rx-1) | × |
| DRV-04 | 9104 | Frequency Mode (Frequency setting method) | Freq Mode | 0 (Keypad-1) 1 (Keypad-2) 2 (V1) 3 (V1S) 4 (I) 5 (V1+I) 6 (Pulse) 7 (Int. 485) 8 (Ext. PID) | 0 (Keypad-1) | × |
| DRV-05 | 9105 | Step Frequency 1 | Step freq-1 | | 10 [Hz] | ○ |
| DRV-06 | 9106 | Step Frequency 2 | Step freq-2 | 0 to FU1-30 [Hz] | 20 [Hz] | ○ |
| DRV-07 | 9107 | Step Frequency 3 | Step freq-3 | | 30 [Hz] | ○ |
| DRV-08 | 9108 | Output Current | Current | * [A] | * [A] | * |
| DRV-09 | 9109 | Motor Speed | Speed | * [rpm] | * [rpm] | * |
| DRV-10 | 910A | DC link Voltage | DC link V/tg | * [V] | * [V] | * |
| DRV-11 | 910B | User Display Selection | User disp | | Output voltage [V] | * |
| DRV-12 | 910C | Current Trip Display | Fault | * | * | * |
| DRV-13 | 910D | Motor Direction | Use Only 7-Segment Keypad | 0 (Forward)/1 (Reverse) | 0 | ○ |
| DRV-14 <small>Note2</small> | 910E | Target/Output Frequency Display | Tar. Out. Freq. | * [Hz] | * [Hz] | * |
| DRV-15 <small>Note2</small> | 910F | Reference/Feedback Frequency Display | Ref. Fbk. Freq. | * [Hz] | * [Hz] | * |
| DRV-16 | 9110 | Speed Unit Selection | Hz/Rpm Disp | Hz or Rpm | [Hz] | ○ |
| DRV-18 <small>Note2</small> | 9112 | PID Parameter | Pid Parameter | * [Hz] | * [Hz] | × |
| DRV-19 | 9113 | AD Parameter | AD Parameter | AD | AD | × |
| DRV-20 <small>Note3</small> | 9114 | EXT-PID Parameter | Ext Pid Para | [%] | % | × |
| DRV-91 <small>Note4</small> | 915B | Drive Mode 2 | Drive Mode2 | 0 (Keypad) 1 (Fx/Rx-1) 2 (Fx/Rx-2) | 1 (Fx/Rx-1) | × |
| DRV-92 <small>Note4</small> | 915C | Frequency Mode 2 | Freq Mode2 | 0 (Keypad-1) 1 (Keypad-2) 2 (V1) 3 (V1S) 4 (I) 5 (V1+I) 6 (Pulse) | 0 (Keypad-1) | × |

The gray-highlighted codes are hidden parameters and will appear when the related functions are to be set.

Note 1 The speed unit is changed from [Hz] to [%] when DRV-16 is set to [Rpm]. Only User Unit will be displayed when APP-02 is set to [Yes] and when APP-06 is set to either 1, V1 or Pulse and when one of I/O-86- I/O-88 is set to either [Speed], [Percent], [Bar], [mBar], [kPa] or [Pa].

Output Frequency is displayed in DRV-00 during the Inverter is running. User Unit reference is displayed in DRV-00 during the Inverter is not running.

2 DRV-15, DRV-18 will appear when APP-02 [Process PI Mode] is set to "Yes". Also User Unit is displayed when one of I/O-86-I/O-88 is set to either [Speed], [Percent], [Bar], [mBar], [kPa] or [Pa].

3 DRV-20 will appear when APP-80 [Ext Process PI Mode] is set to "Yes".

4 DRV-91/92 will appear only when one of I/O-20~27 is set to [Main drv] and DRV- 03/04 is set to [int485].

●● FU1 GROUP

| CODE | Comm. Addr | Description | LCD Keypad Display | Setting Range | Factory Default | Adj. During Run |
|--------------------------|------------|---|--------------------|---|-----------------|-----------------|
| FU1-00 | 9200 | Jump to Desired Code # | Jump Code | 1 to 74 (Use Only LCD Keypad) | 1 | ○ |
| FU1-01 | 9201 | Run Prevention | Run Prevention | 0 (None) 1 (Fwd prev) 2 (Rev prev) | 0 (None) | × |
| FU1-02 | 9202 | Acceleration Pattern | Acc. Pattern | 0 (Linear) 1 (S-curve) 2 (U-curve) | 0 (Linear) | × |
| FU1-03 | 9203 | Deceleration Pattern | Dec. Pattern | 0 (Linear) 1 (S-curve) 2 (U-curve) | 0 (Linear) | × |
| FU1-04 | 9204 | Start Curve for S-Curve Accel/Decel Pattern | Start Curve | 0 to 100 [%] | 50 [%] | × |
| FU1-05 ^{Note5)} | 9205 | End Curve for S-Curve Accel/Decel Pattern | End Curve | 0 to 100 [%] | 50 [%] | × |
| FU1-10 | 920A | Pre-Heat | Pre-Heat Mode | 0 (No) 1 (Yes) | 0 (No) | × |
| FU1-11 | 920B | Pre-Heat Value | Pre Heat Level | 1 to 50 [%] | 30 [%] | × |
| FU1-12 | 920C | Pre-Heat Duty | Pre Heat Perc | 1 to 100 [%] | 100 [%] | × |
| FU1-20 | 9214 | Start Mode | Start Mode | 0 (Accel) 1 (Dc-start) 2 (Flying-start) | 0 (Accel) | × |
| FU1-21 ^{Note6)} | 9115 | Starting DC Injection Braking Time | DcSt Time | 0 to 60 [sec] | 0 [sec] | × |
| FU1-22 | 9116 | Starting DC Injection Braking Value | DcSt Value | 0 to 150 [%] | 50 [%] | × |
| FU1-23 | 9217 | Stop Mode | Stop Mode | 0 (Decel) 1 (Dc-brake) 2 (Free-run) 3 (Flux-brake) | 0 (Decel) | × |
| FU1-24 ^{Note7)} | 9218 | DC Injection Braking On-delay Time | DcBlk Time | 0.1 to 60 [sec] | 0.1 [sec] | × |
| FU1-25 | 9219 | DC Injection Braking Frequency | DcBr Freq | 0.1 to 60 [Hz] | 5 [Hz] | × |
| FU1-26 | 921A | DC Injection Braking Time | DcBr Fime | 0 to 60 [sec] | 1 [sec] | × |
| FU1-27 | 921B | DC Injection Braking Value | DcBr Value | 0 to 200 [%] | 50 [%] | × |
| FU1-28 | 921C | Safety Stop | Safety Stop | 0 (No) 1 (Yes) | 0 (No) | × |
| FU1-29 | 921D | Power Source Freq | Line Freq | 40 to 120 [Hz] | 60 [Hz] | × |
| FU1-30 | 921E | Maximum Frequency | Max Treq | 40 to 120 [Hz] | 60 [Hz] | × |
| FU1-31 | 921F | Base Frequency | Base Treq | 30 to 120 [Hz] | 60 [Hz] | × |
| FU1-32 | 9220 | Starting Frequency | Start Treq | 0.1 to 10 [Hz] | 0.5 [Hz] | × |
| FU1-33 | 9221 | Frequency Limit Selection | Freq Limit | 0 (No) 1 (Yes) | 0 (No) | × |
| FU1-34 ^{Note8)} | 9222 | Low Limit Frequency | F-limit Lo | 0 to FU1-35 | 0.5 [Hz] | ○ |
| FU1-35 | 9223 | High Limit Frequency | F-limit Hi | FU1-34 to FU1-30 | 60 [Hz] | × |

□ The gray-highlighted codes are hidden parameters and will appear when the related functions are to be set.

Note 5) Only displayed when FU1-02, FU1-03 is set to [S-Curve].

6) Only displayed when FU1-20 is set to [DC-start].

7) Only displayed when FU1-23 is set to [DC-break].

8) Only displayed when FU1-33 is set to "Yes".

Parameter Description

⚙️ FU1 GROUP

| CODE | Comm. Addr | Description | LCD Keypad Display | Setting Range | | Factory Default | Adj. During Run |
|-------------------------------|------------|---|--------------------|-----------------------------|---------------|-----------------|-----------------|
| FU1-40 | 9228 | Volts/Hz Pattern | V/F Pattern | 0 | (Linear) | 0 (Linear) | × |
| | | | | 1 | (Square) | | |
| | | | | 2 | (User V/F) | | |
| FU1-41 <small>Note9)</small> | 9229 | User V/F – Frequency 1 | User Freq 1 | 0 to FU1-30 | | 15 [Hz] | × |
| FU1-42 | 922A | User V/F – Voltage 1 | User Volt 1 | 0 to 100 [%] | | 25 [%] | × |
| FU1-43 | 922B | User V/F – Frequency 2 | User Freq 2 | 0 to FU1-30 | | 30 [Hz] | × |
| FU1-44 | 922C | User V/F – Voltage 2 | User Volt 2 | 0 to 100 [%] | | 50 [%] | × |
| FU1-45 | 922D | User V/F – Frequency 3 | User Freq 3 | 0 to FU1-30 | | 45 [Hz] | × |
| FU1-46 | 922E | User V/F – Voltage 3 | User Volt 3 | 0 to 100 [%] | | 75 [%] | × |
| FU1-47 | 922F | User V/F – Frequency 4 | User Freq 4 | 0 to FU1-30 | | 60 [Hz] | × |
| FU1-48 | 9230 | User V/F – Voltage 4 | User Volt 4 | 0 to 100 [%] | | 100 [%] | × |
| FU1-49 | 9231 | Input Voltage Adjustment | VAC 440.0V | 73 to 115.0 [%] | | 100.0 [%] | × |
| FU1-50 | 9232 | Motor Rated Voltage | Motor Volt | 0 to 600 [V] | | 0 [V] | × |
| FU1-51 | 9233 | Energy Save | Energy Save | 0 | (None) | 0 (None) | × |
| | | | | 1 | (Manual) | | |
| | | | | 2 | (Auto) | | |
| FU1-52 <small>Note10)</small> | 9234 | Energy Save % | Manual Save % | 0 to 30 [%] | | 0 [%] | ○ |
| FU1-54 | 9236 | Integrating Wattmeter | Kilo Watt Hour | M kWh | | * | × |
| FU1-55 | 9237 | Inverter Temperature | Inv. Temp. | 0 to 160 [Degree] | | * | × |
| FU1-56 | 9238 | Motor Temperature | Motor Temp. | 0 to 160 [Degree] | | * | × |
| FU1-57 | 9239 | No Motor Selection | No Motor Sel | 0 | (No) | 1 [Yes] | × |
| | | | | 1 | (Yes) | | |
| FU1-58 | 923A | Trip Current Level | No Motor Level | 5 to 100 [%] | | 5 [%] | × |
| FU1-59 | 923B | Trip Time Setting | No Motor Time | 0.5 to 10.0 [sec] | | 3.0 [sec] | × |
| FU1-60 | 923C | Electronic Thermal Selection | ETH Select | 0 | (No) | 1 (Yes) | ○ |
| | | | | 1 | (Yes) | | |
| FU1-61 | 923D | Electronic Thermal Level for 1 Minute | ETH 1min | FU1-62 to 200 [%] | | 150 [%] | ○ |
| FU1-62 | 923E | Electronic Thermal Level for Continuous | ETH Cont | 50 to FU1-61 (Maximum 150%) | | 120 [%] | ○ |
| FU1-63 | 923F | Characteristic Selection (Motor Type) | Motor Type | 0 | (Self-cool) | 0 (Selfcool) | ○ |
| | | | | 1 | (Forced-cool) | | |
| FU1-64 | 9240 | Overload Warning Level | OL Level | 30 to 110 [%] | | 110 [%] | ○ |
| FU1-65 | 9241 | Overload Warning Time | OL Time | 0 to 30 [sec] | | 10 [sec] | ○ |
| FU1-66 | 9242 | Overload Trip Selection | OLT Select | 0 | (No) | 0 (No) | ○ |
| | | | | 1 | (Yes) | | |
| FU1-67 <small>Note11)</small> | 9243 | Overload Trip Level | OLT Level | 30 to 150 [%] | | 120 [%] | ○ |
| FU1-68 | 9244 | Overload Trip Delay Time | OLT Time | 0 to 60 [sec] | | 60 [sec] | ○ |
| FU1-69 | 9245 | Input/Output Phase Loss Protection | Trip Select | 000 to 111 (Bit Set) | | 100 | ○ |
| FU1-70 | 9246 | Stall Prevention Mode Selection | Stall Prev. | 000 to 111 (Bit) | | 000 (Bit) | × |
| FU1-71 | 9247 | Stall Prevention Level | Stall Level | 30 to 150 [%] | | 100 [%] | × |
| FU1-72 | 9248 | Accel/Decel Change Frequency | Acc/Dec Ch F | 0 to FU1-30 | | 0 [Hz] | × |
| FU1-73 | 9249 | Reference Frequency for Accel and Decel | Acc/Dec Freq | 0 | (Max freq) | 0 (Max freq) | × |
| | | | | 1 | (Delta freq) | | |
| FU1-74 | 924A | Accel/Decel Time Scale | Time Scale | 0 (0.01 sec) | | 1 (0.1 sec) | ○ |

□ The gray-highlighted codes are hidden parameters and will appear when the related functions are to be set.

Note 9) FU1-41~48 only displayed when FU1-40 is set to 'User V/F'.

10) Only displayed when FU1-51 is set to 'Manual'.

11) Only displayed when FU1-66 is set to 'Yes'.

FU2 GROUP

| CODE | Comm. Addr | Description | LCD Keypad Display | Setting Range | Factory Default | Adj. During Run |
|-------------------------------|------------|--|--------------------|---|-------------------------------------|-----------------|
| FU2-00 | 9300 | Jump to Desired Code # | Jump Code | 1 to 95 (Use Only LCD Keypad) | 40 | ○ |
| FU2-01 | 9301 | Last Trip 1 | Last Trip-1 | By pressing [PROG] and [▲] key, the frequency, current, and operational status at the time of fault can be seen. | 0 (None) | * |
| FU2-02 | 9302 | Last Trip 2 | Last Trip-2 | | 0 (None) | * |
| FU2-03 | 9303 | Last Trip 3 | Last Trip-3 | | 0 (None) | * |
| FU2-04 | 9304 | Last Trip 4 | Last Trip-4 | | 0 (None) | * |
| FU2-05 | 9305 | Last Trip 5 | Last Trip-5 | | 0 (None) | * |
| FU2-06 | 9306 | Erase Trips | Erase Trips | 0 (No) 1 (Yes) | 0 (No) | ○ |
| FU2-07 | 9307 | Dwell Frequency | Dwell Time | 0 to 10 [sec] | 0 [sec] | × |
| FU2-08 <small>Note12)</small> | 9308 | Dwell Frequency | Dwell Freq | FU1-32 to FU1-30 | 5 [Hz] | × |
| FU2-10 | 930A | Frequency Jump Selection | Jump Freq | 0 (No) 1 (Yes) | 0 (No) | × |
| FU2-11 <small>Note13)</small> | 930B | Jump Frequency 1 | Low Jump Lo 1 | 0 to FU2-12 | 10 [Hz] | ○ |
| FU2-12 | 930C | Jump Frequency 1 | High Jump Hi 1 | FU2-11 to FU1-30 | 15 [Hz] | ○ |
| FU2-13 | 930D | Jump Frequency 2 | Low Jump Lo 2 | 0 to FU2-14 | 20 [Hz] | ○ |
| FU2-14 | 930E | Jump Frequency 2 | High Jump Hi 2 | FU2-13 to FU1-30 | 25 [Hz] | ○ |
| FU2-15 | 930F | Jump Frequency 3 | Low Jump Lo 3 | 0 to FU2-16 | 30 [Hz] | ○ |
| FU2-16 | 9310 | Jump Frequency 3 | High Jump Hi 3 | FU2-15 to FU1-30 | 35 [Hz] | ○ |
| FU2-20 | 9314 | Power ON Start Selection | Power-ON Run | 0 (No) 1 (Yes) | 0 (No) | ○ |
| FU2-21 | 9315 | Restart after Fault Reset | RST Restart | 0 (No) 1 (Yes) | 0 (No) | ○ |
| FU2-22 | 9316 | Speed Search Selection | Speed Search | 0000 to 1111 (Bit Set) | 0000 | × |
| FU2-23 <small>Note14)</small> | 9317 | P Gain During Speed Search | SS P-Gain | 0 to 9999 | 200 | ○ |
| FU2-24 | 9318 | I Gain During Speed Search | SS I-Gain | 0 to 9999 | 500 | ○ |
| FU2-25 | 9319 | Number of Auto Retry | Retry Number | 0 to 10 | 0 | ○ |
| FU2-26 <small>Note15)</small> | 931A | Delay Time before Auto Retry | Retry Delay | 0 to 60 [sec] | 1 [sec] | ○ |
| FU2-40 | 9328 | Rated Motor Selection for 5.5~450kW Inverter | Motor Select | 0 (0.75kW) 1 (1.5kW) 2 (2.2kW) 3 (3.7kW) 4 (5.5kW) 5 (7.5kW) 6 (11.0kW) 7 (15.0kW) 8 (18.5kW) 9 (22.0kW) 10 (30.0kW) 11 (37.0kW) 12 (45.0kW) 13 (55.0kW) 14 (75.0kW) 15 (90.0kW) 16 (110.0kW) 17 (132.0kW) 18 (160.0kW) 18 (220.0kW) 20 (280.0kW) 21 (315.0kW) 22 (375.0kW) 23 (450.0kW) | *Depending on the inverter capacity | × |
| FU2-41 | 9329 | Number of Motor Poles | Pole Number | 2 to 12 | 4 | × |
| FU2-42 | 932A | Rated Motor Slip | Rated-Slip | 0 to 10 [Hz] | | × |
| FU2-43 | 932B | Rated Motor Current (RMS) | Rated-Curr | 1 to 200 [A] | *Depending on FU2-40 | × |
| FU2-44 | 932C | No Load Motor Current (RMS) | Noload-Curr | 0.5 to 200 [A] | | × |
| FU2-45 | 932D | Motor Efficiency | Efficiency | 70 to 100 [%] | | × |

□ The gray-highlighted codes are hidden parameters and will appear when the related functions are to be set.
Note 12) Only displayed when FU2-07 is set to [1~10 sec]. 13) Only displayed when FU2-10 is set to "Yes".
14) Only displayed when FU1-23 is set to [DC-break]. 15) Only displayed when FU1-33 is set to "Yes".

Parameter Description

●● FU2 GROUP

| CODE | Comm. Addr | Description | LCD Keypad Display | Setting Range | Factory Default | Adj. During Run | |
|-------------------------------|------------|------------------------------------|--------------------|----------------------------------|----------------------|-----------------|--|
| FU2-46 | 932E | Load Inertia | Inertia Rate | 0 to 8 | 0 | × | |
| FU2-47 | 932F | Gain for Motor Speed Display | RPM Factor | 1 to 1000 [%] | 100 [%] | ○ | |
| FU2-48 | 9330 | Carrier Frequency | Carrier Freq | 5.5~22kW | 0.7~15 [kHz] | 5 [kHz] | ○ |
| | | | | 30kW | 0.7~10 [kHz] | | |
| | | | | 37~75kW | 0.7~4 [kHz] | 4 [kHz] | |
| | | | | 90~450kW | 0.7~3 [kHz] | 3 [kHz] | |
| FU2-49 | 9331 | PWM Type Selection | PWM Mode | 0 | (Normal 1) | 0 (Normal 1) | × |
| | | | | 1 | (Normal 2) | | |
| | | | | 2 | (Low leakage) | | |
| FU2-60 | 933C | Control Mode Selection | Control Mode | 0 | (V/F) | 0 (V/F) | × |
| | | | | 1 | (Slip compen) | | |
| | | | | 2 | (Sensorless) | | |
| FU2-61 <small>Note16)</small> | 933D | Auto Tuning Selection | Auto Tuning | 0 | (No) | 0 (No) | × |
| | | | | 1 | (Yes) | | |
| FU2-62 | 933E | Stator Resistance of Motor | Rs | 0 to (depending on FU2-40) [ohm] | *Depending on FU2-40 | × | |
| FU2-63 | 933F | Leakage Inductance of Motor | Lsigma | 0 to (depending on FU2-40) [mH] | *Depending on FU2-40 | × | |
| | | | | | | | * Automatically set corresponding to motor rating. If different, check motor rating setting. |
| FU2-64 | 9340 | Pre-excitation Time | Pre Ex Time | 0 to 60 [sec] | 1 [sec] | × | |
| FU2-65 | 9341 | P Gain for Sensorless Control | SL P-Gain | 0 to 9999 | 1000 | ○ | |
| FU2-66 | 9342 | I Gain for Sensorless Control | SL I-Gain | 0 to 9999 | 100 | ○ | |
| FU2-67 | 9343 | Manual/Auto Torque Boost Selection | Torque Boost | 0 | (Manual) | 0 (Manual) | × |
| | | | | 1 | (Auto) | | |
| FU2-68 | 9344 | Torque Boost in Forward Direction | Fwd Boost | 0 to 15 [%] | 2 [%] | × | |
| FU2-69 | 9345 | Torque Boost in Reverse Direction | Rev Boost | 0 to 15 [%] | 2 [%] | × | |
| FU2-80 | 9350 | Power On Display | Power On Disp | 0 to 12 | 0 | ○ | |
| FU2-81 | 9351 | User Display Selection | User Disp | 1 | (Watt) | 0 (Voltage) | ○ |
| | | | | 0 | (Voltage) | | |
| FU2-82 | 9352 | Software Version | S/W Version | Ver X.XX | Ver X.XX | * | |
| FU2-83 | 9353 | Last Trip Time | Last Trip Time | X:XX:XX:XX:XX:X | | × | |
| FU2-84 | 9354 | Power On Time | On-Time | X:XX:XX:XX:XX:X | | × | |
| FU2-85 | 9355 | Run-time | Run-Time | X:XX:XX:XX:XX:X | | × | |
| FU2-87 | 9357 | Power Set | Power Set | 0.1~400 [%] | 100 | ○ | |
| FU2-90 | 935A | Parameter Display | Para. Disp | 0 | (Default) | 0 (Default) | × |
| | | | | 1 | (All Para) | | |
| | | | | 2 | (Diff Para) | | |
| FU2-91 | 935B | Read Parameter | Para. Read | 0 | (No) | 0 (No) | × |
| | | | | 1 | (Yes) | | |
| FU2-92 | 935C | Write Parameter | Para. Write | 0 | (No) | 0 (No) | × |
| | | | | 1 | (Yes) | | |
| FU2-93 | 935D | Initialize Parameter | Para. Init | 0 | (No) | 0 (No) | × |
| | | | | 1 | (All Groups) | | |
| | | | | 2 | (DRV) | | |
| | | | | 3 | (FU1) | | |
| | | | | 4 | (FU2) | | |
| | | | | 5 | (I/O) | | |
| | | | | 6 | (EXT) | | |
| | | | | 7 | (COM) | | |
| 8 | (APP) | | | | | | |
| FU2-94 | 935E | Parameter Write Protection | Para. Lock | 0 to 9999 | 0 | ○ | |
| FU2-95 | 935F | Parameter Save | Para. Save | 0 | (No) | 0 (No) | × |
| | | | | 1 | (Yes) | | |

 The gray-highlighted codes are hidden parameters and will appear when the related functions are to be set.
Note 16) Only FU2-61~66 displayed when FU2-60 is set to [Sensorless].

 I/O GROUP

| CODE | Comm. Addr | Description | LCD Keypad Display | Setting Range | Factory Default | Adj. During Run |
|---------------------------|------------|---|--------------------|---|-----------------|-----------------|
| I/O-00 | 9400 | Jump to Desired Code # | Jump Code | 1 to 98 (LCD Keypad Only) | 1 | |
| I/O-01 ^{Note17)} | 9401 | Filtering Time Constant for V1 Signal Input | V1 Filter | 0 to 9999 [msec] | 10 [msec] | |
| I/O-02 | 9402 | V1 Input Minimum Voltage | V1 Volt x1 | 0 to 12 [V] | 0 [V] | |
| I/O-03 | 9403 | Frequency Corresponding to V1 Input Minimum Voltage | V1 Freq y1 | 0 to FU1-30 [Hz] 0 to 100.00 [**] ^{Note18)} | 0 [Hz] | |
| I/O-04 | 9404 | V1 Input Minimum Voltage | V1 Volt x2 | 0 to 12 [V] | 10 [V] | |
| I/O-05 | 9405 | V1 Input Maximum Voltage | V1 Freq y2 | 0 to FU1-30 [Hz] 0 to 100.00 [**] ^{Note18)} | 60 [Hz] | |
| I/O-06 | 9406 | Filtering Time Constant for I Signal Input | I Filter | 0 to 9999 [msec] | 10 [msec] | |
| I/O-07 | 9407 | I Input Minimum Current | I Curr x1 | 0 to 20 [mA] | 4 [mA] | |
| I/O-08 | 9408 | Frequency Corresponding to I Input Minimum Current | I Freq y1 | 0 to FU1-30 [Hz] 0 to 100.00 [**] ^{Note18)} | 0 [Hz] | |
| I/O-09 | 9409 | Filtering Time Constant for I Signal Input | I Curr x2 | 0 to 20 [mA] | 20 [mA] | |
| I/O-10 | 940A | Frequency Corresponding to I Input Maximum Current | I Freq y2 | 0 to FU1-30 [Hz] 0 to 100.00 [**] ^{Note18)} | 60 [Hz] | |
| I/O-11 | 940B | Pulse Input Method | P Pulse Set | 0 (A+B) 1 (A) | 1 (A) | |
| I/O-12 | 940C | Pulse Input Filter | P Filter | 0 to 9999 [msec] | 10 [msec] | |
| I/O-13 | 940D | Pulse input Minimum Frequency | P Pulse x1 | 0 to 10 [kHz] | 0 [kHz] | |
| I/O-14 | 940E | Frequency Corresponding to I/O-13 Pulse Input Maximum Frequency | P Freq y1 | 0 to FU1-30 [Hz] 0 to 100.00 [**] ^{Note18)} | 0 [Hz] | |
| I/O-15 | 940F | Frequency Corresponding to I/O-15 | P Pulse x2 | 0 to 100 [kHz] | 10 [kHz] | |
| I/O-16 | 9410 | Pulse input Minimum Frequency | P Freq y2 | 0 to FU1-30 [Hz] 0 to 100.00 [**] ^{Note18)} | 60 [Hz] | |
| I/O-17 | 9411 | Criteria for Analog Input Signal Loss | Wire Broken | 0 (None) 1 (Half of x1) 2 (Below x1) | 0 (None) | |
| I/O-18 | 9412 | Operating Selection at Loss of Freq. Reference | Lost Command | 0 (None) 1 (FreeRun) 2 (Stop) | 0 (None) | |
| I/O-19 | 9413 | Waiting Time after Loss of Freq. Reference | Time Out | 0.1 to 120 [sec] | 1.0 [sec] | |
| I/O-20 | 9414 | Programmable Digital Input Terminal ' M1 Define | M1 Define | 0 (Speed-L) 1 (Speed-M) 2 (Speed-H) 3 (XCEL-L) 4 (XCEL-M) 5 (XCEL-H) 6 (Dc-Brake) 7 (2nd Func) | 0 (Speed-L) | |

The gray-highlighted codes are hidden parameters and will appear when the related functions are to be set.

^{Note 17)} When DRV-04 is set to either V1, V1S, I or V1+I or Pulse, only selected item codes are displayed in I/O-1~I/O-19.

¹⁸⁾ Only user unit displayed when APP-02 or APP-80 is set to [Yes], after APP-06 is set to one of I, V, Pulse, after then when one of I/O-86~I/O-88 is set to either speed, percent, Bar, mBar, kPa, Pa.

Parameter Description

I/O GROUP

| CODE | Comm. Addr | Description | LCD Keypad Display | Setting Range | Factory Default | Adj. During Run | |
|---------------|---------------|---|--------------------|----------------|-----------------|-----------------|---|
| I/O-20 | 9414 | Programmable Digital Input Terminal 'M1' Define | M1 Define | 8 | (Exchange) | 0 (Speed-L) | ○ |
| | | | | 9 | (-Reserved-) | | |
| | | | | 10 | (Up) | | |
| | | | | 11 | (Down) | | |
| | | | | 12 | (3-Wire) | | |
| | | | | 13 | (Ext Trip) | | |
| | | | | 14 | (Pre-Heat) | | |
| | | | | 15 | (iTerm Clear) | | |
| | | | | 16 | (Open-loop) | | |
| | | | | 17 | (Main-drive) | | |
| | | | | 18 | (Analog hold) | | |
| | | | | 19 | (XCEL stop) | | |
| | | | | 20 | (P Gain2) | | |
| | | | | 21 | (-Reserved-) | | |
| | | | | 22 | (Interlock1) | | |
| | | | | 23 | (Interlock2) | | |
| | | | | 24 | (Interlock3) | | |
| | | | | 25 | (Interlock4) | | |
| | | | | 26 | (Speed_X) | | |
| | | | | 27 | (RST) | | |
| 28 | (BX) | | | | | | |
| 29 | (JOG) | | | | | | |
| 30 | (FX) | | | | | | |
| 31 | (RX) | | | | | | |
| 32 | (ANA_CHG) | | | | | | |
| 33 | (Pre-Excite) | | | | | | |
| 34 | (Ext PID Run) | | | | | | |
| I/O-21 | 9415 | Programmable Digital Input Terminal 'M2' Define | M2 Define | Same as I/O-20 | 1 (Speed-M) | ○ | |
| I/O-22 | 9416 | Programmable Digital Input Terminal 'M3' Define | M3 Define | Same as I/O-20 | 2 (Speed-H) | ○ | |
| I/O-23 | 9417 | Programmable Digital Input Terminal 'M4' Define | M4 Define | Same as I/O-20 | 27 (RST) | ○ | |
| I/O-24 | 9418 | Programmable Digital Input Terminal 'M5' Define | M5 Define | Same as I/O-20 | 28 (BX) | ○ | |
| I/O-25 | 9419 | Programmable Digital Input Terminal 'M6' Define | M6 Define | Same as I/O-20 | 29 (JOG) | ○ | |
| I/O-26 | 941A | Programmable Digital Input Terminal 'M7' Define | M7 Define | Same as I/O-20 | 30 (FX) | ○ | |
| I/O-27 | 941B | Programmable Digital Input Terminal 'M8' Define | M8 Define | Same as I/O-20 | 31 (RX) | ○ | |

| CODE | Comm. Addr | Description | LCD Keypad Display | Setting Range | Factory Default | Adj. During Run | |
|-------------------------------|------------|--|--------------------|-----------------------|-----------------|-----------------|---|
| I/O-28 | 941C | Terminal Input Status | In Status | 0000000000/1111111111 | 0000000000 | * | |
| I/O-29 | 941D | Filtering Time Constant for Programmable Digital Input Terminals | Ti Filtr Num | 2 to 1000 [msec] | 15 | ○ | |
| I/O-30 <small>Note19)</small> | 941E | Jog Frequency Setting | Jog Freq | 0 to FU1-30 | 10 [Hz] | ○ | |
| I/O-31 | 941F | Step Frequency 4 | Step Freq-4 | | 40 [Hz] | ○ | |
| I/O-32 | 9420 | Step Frequency 5 | Step Freq-5 | | 50 [Hz] | ○ | |
| I/O-33 | 9421 | Step Frequency 6 | Step Freq-6 | | 40 [Hz] | ○ | |
| I/O-34 | 9422 | Step Frequency 7 | Step Freq-7 | | 30 [Hz] | ○ | |
| I/O-35 | 9423 | Step Frequency 8 | Step Freq-8 | | 20 [Hz] | ○ | |
| I/O-36 | 9424 | Step Frequency 9 | Step Freq-9 | | 10 [Hz] | ○ | |
| I/O-37 | 9425 | Step Frequency 10 | Step Freq-10 | | 20 [Hz] | ○ | |
| I/O-38 | 9426 | Step Frequency 11 | Step Freq-11 | | 30 [Hz] | ○ | |
| I/O-39 | 9427 | Step Frequency 12 | Step Freq-12 | | 40 [Hz] | ○ | |
| I/O-40 | 9428 | Step Frequency 13 | Step Freq-13 | | 50 [Hz] | ○ | |
| I/O-41 | 9429 | Step Frequency 14 | Step Freq-14 | | 40 [Hz] | ○ | |
| I/O-42 | 942A | Step Frequency 15 | Step Freq-15 | | 30 [Hz] | ○ | |
| I/O-50 | 9432 | Acceleration Time 1 (for Step speed) | Acc Time-1 | | 0 to 6000 [sec] | 20 [sec] | ○ |
| I/O-51 | 9433 | Deceleration Time 1 (for Step speed) | Dec Time-1 | | 0 to 6000 [sec] | 20 [sec] | ○ |
| I/O-52 <small>Note20)</small> | 9434 | Acceleration Time 1 (for Step speed) | Acc Time-2 | 0 to 6000 [sec] | 30 [sec] | ○ | |
| I/O-53 | 9435 | Deceleration Time 2 | Dec Time-2 | 0 to 6000 [sec] | 30 [sec] | ○ | |
| I/O-54 | 9436 | Acceleration Time 3 | Acc Time-3 | 0 to 6000 [sec] | 40 [sec] | ○ | |
| I/O-55 | 9437 | Deceleration Time 3 | Dec Time-3 | 0 to 6000 [sec] | 40 [sec] | ○ | |
| I/O-56 | 9438 | Acceleration Time 4 | Acc Time-4 | 0 to 6000 [sec] | 50 [sec] | ○ | |
| I/O-57 | 9439 | Deceleration Time 4 | Dec Time-4 | 0 to 6000 [sec] | 50 [sec] | ○ | |
| I/O-58 | 943A | Acceleration Time 5 | Acc Time-5 | 0 to 6000 [sec] | 40 [sec] | ○ | |
| I/O-59 | 943B | Deceleration Time 5 | Dec Time-5 | 0 to 6000 [sec] | 40 [sec] | ○ | |
| I/O-60 | 943C | Acceleration Time 6 | Acc Time-6 | 0 to 6000 [sec] | 30 [sec] | ○ | |
| I/O-61 | 943D | Deceleration Time 6 | Dec Time-6 | 0 to 6000 [sec] | 30 [sec] | ○ | |
| I/O-62 | 943E | Acceleration Time 7 | Acc Time-7 | 0 to 6000 [sec] | 20 [sec] | ○ | |
| I/O-63 | 943F | Deceleration Time 7 | Dec Time-7 | 0 to 6000 [sec] | 20 [sec] | ○ | |
| I/O-70 | 9446 | S0 Output Selection | S0 Mode | 0 | (Frequency) | 0 (Frequency) | ○ |
| | | | | 1 | (Current) | | |
| | | | | 2 | (Voltage) | | |
| | | | | 3 | (DC link Vtg) | | |
| | | | | 4 | (Ext PID Out) | | |
| I/O-71 | 9447 | S0 Output Adjustment | S0 Adjust | 10 to 200 [%] | 100 [%] | ○ | |
| I/O-72 | 9448 | S1 Output Selection | S1 Mode | Same as I/O-70 | 2 (Voltage) | ○ | |
| I/O-73 | 9449 | S1 Output Adjustment | S1 Adjust | 10 to 200 [%] | 100 [%] | ○ | |
| I/O-74 <small>Note21)</small> | 944A | Frequency Detection Level | FDT Freq | 0 to FU1-30 [Hz] | 30 [Hz] | ○ | |
| I/O-75 | 944B | Frequency Detection Bandwidth | FDT Band | 0 to FU1-30 [Hz] | 10 [Hz] | ○ | |
| I/O-76 | 944C | Programmable Digital Output Terminal Define (Aux terminal) | Aux Mode1 | 0 | (None) | 0 (None) | ○ |
| | | | | 1 | (FDT-1) | | |
| | | | | 2 | (FDT-2) | | |
| | | | | 3 | (FDT-3) | | |
| | | | | 4 | (FDT-4) | | |
| | | | | 5 | (FDT-5) | | |
| | | | | 6 | (OL) | | |
| | | | | 7 | (IOL) | | |

 The gray-highlighted codes are hidden parameters and will appear when the related functions are to be set.

Note 19) I/O-30-I/O-34 displayed only when one of I/O-20-I/O-27 is set to either JOG, Speed_L, Speed_M, Speed_H, I/O-35-I/O-42 displayed only when one of I/O-20-I/O-27 is set to Speed_X.

20) I/O-52-I/O-63 displayed only when one of I/O-20-I/O-27 is set to either XCEL_L, XCEL_M, XCEL_H.

21) I/O-74-I/O-75 displayed only when one of I/O-76-I/O-79 is set to either FDT-1-FDT5.

I/O GROUP

| CODE | Comm. Addr | Description | LCD Keypad Display | Setting Range | Factory Default | Adj. During Run | |
|---------------------------|------------|--|--------------------|-----------------------|-----------------|-----------------|---|
| I/O-76 | 944C | Programmable Digital Output Terminal Define (Aux terminal) | Aux Mode1 | 8 | (Stall) | 0 (None) | ○ |
| | | | | 9 | (OV) | | |
| | | | | 10 | (LV) | | |
| | | | | 11 | (OH) | | |
| | | | | 12 | (Lost Command) | | |
| | | | | 13 | (Run) | | |
| | | | | 14 | (Stop) | | |
| | | | | 15 | (Steady) | | |
| | | | | 16 | (INV line) | | |
| | | | | 17 | (COMM line) | | |
| | | | | 18 | (SSearch) | | |
| 19 | (Ready) | | | | | | |
| 20 | (MMC) | | | | | | |
| I/O-77 | 944D | Programmable Digital Output Terminal Define | Aux Mode2 | Same as I/O-76 | 0 (None) | ○ | |
| I/O-78 | 944E | Programmable Digital Output Terminal Define | Aux Mode3 | Same as I/O-76 | 0 (None) | ○ | |
| I/O-79 | 944F | Programmable Digital Output Terminal Define | Aux Mode4 | Same as I/O-76 | 0 (None) | ○ | |
| I/O-80 | 9450 | Fault Output Relay Setting (3A, 3B, 3C) | Relay Mode | 000 to 111 [bit] | 010 [bit] | ○ | |
| I/O-81 | 9451 | Terminal Output Status | Out Status | 00000000/11111111 | 00000000 | * | |
| I/O-82 | 9452 | Waiting time after Fault Output Relay On | Relay On | 0 to 9999 | 0 | × | |
| I/O-83 | 9453 | Waiting time after Fault Output Relay Off | Relay Off | 0 to 9999 | 0 | × | |
| I/O-84 | 9454 | Fan Con Sel (37~90kW) | Fan Mode | 0 | (Power On Fan) | 0 | × |
| | | | | 1 | (Run Fan) | | |
| | | | | 2 | (Temper-Fan) | | |
| I/O-85 | 9455 | Fan Temp (37~90kW) | Fan Temper | 0 to 70 [°C] | 70 [°C] | ○ | |
| I/O-86 | 9456 | Voltage Input User Unit Selection | V1 Unit Sel | 0 | (Speed) | 0 (Speed) | × |
| | | | | 1 | (Percent) | | |
| | | | | 2 | (Bar) | | |
| | | | | 3 | (mBar) | | |
| | | | | 4 | (kPa) | | |
| 5 | (Pa) | | | | | | |
| I/O-87 | 9457 | Current Input User Unit Selection | I Unit Sel | Same as I/O-86 | 0 (Speed) | × | |
| I/O-88 | 9458 | Pulse Input User Unit Selection | Pulse Unit Sel | Same as I/O-86 | 0 (Speed) | × | |
| I/O-90 | 945A | Inverter Number | Inv No. | 1 to 250 | 1 | ○ | |
| I/O-91 ^{Note22)} | 945B | Baud Rate Selection | Baud Rate | 0 | (1200 bps) | 3 (9600 bps) | ○ |
| | | | | 1 | (2400 bps) | | |
| | | | | 2 | (4800 bps) | | |
| | | | | 3 | (9600 bps) | | |
| | | | | 4 | (19200 bps) | | |
| I/O-92 | 945C | Operating Method at Loss of Freq. Reference | COM Lost Cmd | 0 | (None) | 0 (None) | ○ |
| | | | | 1 | (FreeRun) | | |
| | | | | 2 | (Stop) | | |
| I/O-93 ^{Note23)} | 945D | Waiting Time after Loss of Freq. Reference | COM Time Out | 0.1 to 120 [sec] | 1.0 [sec] | ○ | |
| I/O-94 | 945E | Communication Response Delay Time | Delay Time | 2 to 1000 [msec] | 5 [msec] | ○ | |
| I/O-95 | 945F | A or B Contact | In No/Nc Set | 0000000000/1111111111 | 0000000000 | × | |
| I/O-96 | 9460 | Input Time | In Check Time | 1 to 1000 | 1 [msec] | × | |
| I/O-97 | 9461 | Overheat Trip Selection | OH Trip Sel | 000 to 111 [bit] | 010 [bit] | × | |
| I/O-98 | 9462 | Motor Overheat Trip Temperature | MO Trip Temp | 0 to 255 [8C] | 110 [8C] | × | |

□ The gray-highlighted codes are hidden parameters and will appear when the related functions are to be set.

Note 22) 38400 bps can be set only when the external communication option card is installed.

23) Only I/O-92 ~ I/O-93 displayed when DRV-03/04 is set to [int485].

APP GROUP

| CODE | Comm. Addr | Description | LCD Keypad Display | Setting Range | Factory Default | Adj. During Run |
|------------------------------|------------|---|--------------------|---|-----------------|-----------------|
| APP-00 | 9700 | Jump to Desired Code # | Jump Code | 1 to 99 (LCD Keypad Only) | 1 | ○ |
| APP-01 <small>Note24</small> | 9701 | Application Mode Selection | App Mode | 0 (None) 1 (MMC) | 0 (None) | × |
| APP-02 | 9702 | PID Operation Selection | Proc PI Mode | 0 (No) 1 (Yes) | 0 (No) | × |
| APP-03 <small>Note25</small> | 9703 | PID F Gain Selection | PID F-gain | 0 to 999.9[%] | 0.0 [%] | ○ |
| APP-04 <small>Note26</small> | 9704 | PID Auxiliary Reference Mode Selection | Aux Ref Mode | 0 (No) 1 (Yes) | 0 (No) | × |
| APP-05 <small>Note27</small> | 9705 | PID Auxiliary Reference Signal Selection | Aux Ref Sel | 0 (Keypad-1) 1 (Keypad-2) 2 (V1) 3 (V1S) 4 (I) 5 (V1+I) 6 (Pulse) 7 (Int. 485) 8 (Ext. PID) | 2 (V1) | |
| APP-06 | 9706 | PID Feedback Signal Selection | PID F/B | 0 (I) 1 (V1) 2 (Pulse) | 0 (I) | |
| APP-07 | 9707 | P Gain for PID Control | PID P Gain | 0 to 999.9 [%] | 1.0 [%] | |
| APP-08 | 9708 | I Gain for PID Control | PID I Time | 0 to 32.0 [sec] | 10.0 [sec] | |
| APP-09 | 9709 | D Gain for PID Control | PID D Time | 0 to 100 [msec] | 0.0 [msec] | |
| APP-10 | 970A | High Limit Frequency for PID Control | PID Limit-H | 0.00 to FU1-30 | 60 .00 [Hz] | |
| APP-11 | 970B | Low Limit Frequency for PID Control | PID Limit-L | FU1-32 to APP-10 | 0.5 [Hz] | |
| APP-12 | 970C | PID Output Scale | PID Out Scale | 0.0 to 999.9 [%] | 100.0 [%] | |
| APP-13 | 970D | PID P2 Gain | PID P2-Gain | 0.0 to 999.9 [%] | 100.0 [%] | |
| APP-14 | 970E | P Gain Scale | P Gain Scale | 0.0 to 100.0 [%] | 100.0 [%] | |
| APP-15 | 960F | PID Output Inverse | Out Inverse | 0 (No) 1 (Yes) | 0 (No) | |
| APP-17 | 9711 | PID U Curve Feedback Select | PID U Fbk | 0 (No) 1 (Yes) | 0 (No) | |
| APP-20 <small>Note28</small> | 9714 | 2nd Acceleration Time | 2nd Acc Time | 0 to 6000 [sec] | 5 [sec] | |
| APP-21 | 9715 | 2nd Deceleration Time | 2nd Dec Time | 0 to 6000 [sec] | 10 [sec] | |
| APP-22 | 9716 | 2nd Base Frequency | 2nd Base Freq | 30 to FU1-30 [Hz] | 60 [Hz] | |
| APP-23 | 9717 | 2nd V/F Pattern | 2nd V/F | 0 (Linear) 1 (Square) 2 (User V/F) | 0 (Linear) | |
| APP-24 | 9718 | 2nd Forward Torque Boost | 2nd F-Boost | 0 to 15 [%] | 2 [%] | |
| APP-25 | 9719 | 2nd Reverse Torque Boost | 2nd R-Boost | 0 to 15 [%] | 2 [%] | |
| APP-26 | 971A | 2nd Stall Prevention Level | 2nd Stall | 30 to 150 [%] | 100 [%] | |
| APP-27 | 971B | 2nd Electronic Thermal Level for 1 minute | 2nd ETH 1min | FU2-28 to 200 [%] | 130 [%] | |
| APP-28 | 971C | 2nd Electronic Thermal Level for Continuous | 2nd ETH Cont | 50 to FU2-27 (Max 150%) | 120 [%] | |
| APP-29 | 971D | 2nd Rated Motor Current | 2nd R-Curr | 1 to 200 [A] | 3.6 [A] | |
| APP-40 <small>Note29</small> | 9728 | Number of Auxiliary Motor Run Display | Aux Mot Run | * | * | |
| APP-41 | 9729 | Aux. Motor Start Selection | Starting Aux | 1 to 4 | 1 | |
| APP-42 | 972A | Operation Time Display on Auto Change | Auto Op Time | * | * | |
| APP-43 | 972B | The Number of Aux Motor | Nbr Aux' s | 0 to 7 | 4 | |
| APP-44 | 972C | Start Frequency of Aux. Motor 1 | Start Freq 1 | 0 to FU1-30 | 49.99 [Hz] | |

▭ The gray-highlighted codes are hidden parameters and will appear when the related functions are to be set.

Note 24 MMC (Multi Motor Control) function is applied to inverters only for 5.5~90kW (7.5~125HP).

25 Only APP-03~APP-17 displayed when APP-02 is set to [Yes] (5.5~90kW/7.5~125HP). Only APP-03~APP-17 and APP-63~APP-65 displayed when APP-2 is set to [Yes] (110~450kW/150~600HP).

26 If APP-04 is set to no, DRV-04 setting will be reference of process PID. And APP-05 setting will be ignored.

27 If APP-04 is set, APP-04 will appear. And APP-05 setting value will be reference of process PID, DRV-04 setting will be ignored.

28 Only APP-20~APP-29 displayed only when one of I/O-20~I/O-27 is set to either "2nd Func".

29 Only APP-40~APP-71 displayed when APP-01 is set to [MMC].

APP GROUP

| CODE | Comm. Addr | Description | LCD Keypad Display | Setting Range | Factory Default | Adj. During Run | |
|------------------------------|------------|--|--------------------|-----------------------|--------------------|-----------------|---|
| APP-45 | 972D | Start Frequency of Aux. Motor 2 | Start Freq 2 | 0 to FU1-30 | 49.99 [Hz] | | |
| APP-46 | 972E | Start Frequency of Aux. Motor 3 | Start Freq 3 | | 49.99 [Hz] | | |
| APP-47 | 972F | Start Frequency of Aux. Motor 4 | Start Freq 4 | | 49.99 [Hz] | | |
| APP-48 | 9730 | Start Frequency of Aux. Motor 5 | Start Freq 5 | | 49.99 [Hz] | | |
| APP-49 | 9731 | Start Frequency of Aux. Motor 6 | Start Freq 6 | | 49.99 [Hz] | | |
| APP-50 | 9732 | Start Frequency of Aux. Motor 7 | Start Freq 7 | | 49.99 [Hz] | | |
| APP-51 | 9733 | Stop Frequency of Aux. Motor 1 | Stop Freq 1 | | 20.00 [Hz] | ○ | |
| APP-52 | 9734 | Stop Frequency of Aux. Motor 2 | Stop Freq 2 | | 20.00 [Hz] | ○ | |
| APP-53 | 9735 | Stop Frequency of Aux. Motor 3 | Stop Freq 3 | | 20.00 [Hz] | ○ | |
| APP-54 | 9736 | Stop Frequency of Aux. Motor 4 | Stop Freq 4 | | 20.00 [Hz] | ○ | |
| APP-55 | 9737 | Stop Frequency of Aux. Motor 5 | Stop Freq 5 | | 15.00 [Hz] | ○ | |
| APP-56 | 9738 | Stop Frequency of Aux. Motor 6 | Stop Freq 6 | | 15.00 [Hz] | ○ | |
| APP-57 | 9739 | Stop Frequency of Aux. Motor 7 | Stop Freq 7 | | 15.00 [Hz] | ○ | |
| APP-58 | 973A | Delay Time before Operating Aux Motor | Aux Start DT | | 0.0 to 999.9 [sec] | 5.0 [sec] | ○ |
| APP-59 | 973B | Delay Time before Stopping Aux Motor | Aux Stop DT | | 0.0 to 999.9 [sec] | 5.0 [sec] | ○ |
| APP-60 | 973C | Accel Time when Number of Pump Decreases | PID Acc Time | | 0 to 600.0 [sec] | 2.0 [sec] | ○ |
| APP-61 | 973D | Decel Time when Number of Pump Increases | PID Dec Time | | 0 to 600.0 [sec] | 2.0 [sec] | ○ |
| APP-62 | 973E | PID Bypass Selection | Regul Bypass | 0 | (No) | 0 (No) | × |
| | | | | 1 | (Yes) | | |
| APP-63 | 973F | Sleep Delay Time | Sleep Delay | 0.0 to 9999 [sec] | 60.0 [sec] | ○ | |
| APP-64 | 9740 | Sleep Frequency | Sleep Freq | 0 to FU1-30 [Hz] | 0.00 [Hz] | ○ | |
| APP-65 | 9741 | Wake-Up Level | Wake Up Level | 0.0 to 100.0 [%] | 35.0 [%] | ○ | |
| APP-66 | 9742 | Auto Change Mode Selection | Auto Ch_Mode | 0, 1 (Aux), 2 (Main) | 0 | ○ | |
| APP-67 | 9743 | Auto Change Time | Auto Ex-Intv | 00:00 to 99:00 | 72:00 | ○ | |
| APP-68 | 9744 | Auto Change Level | Auto Ex-Level | FU1-32 to FU1-30 [Hz] | 20.0 [Hz] | ○ | |
| APP-69 | 9745 | Inter-Lock Selection | Inter-Lock | 0 | (No) | 0 (No) | ○ |
| | | | | 1 | (Yes) | | |
| APP-71 | 9747 | Pressure Difference for Aux Motor Stop | Actual Pr Diff | 0 to 100 [%] | 2 [%] | ○ | |
| APP-74 | 974A | PrePID Reference Frequency | PrePID Freq | 0 to FU1-30 | 0 | ○ | |
| APP-75 | 974B | PrePID Exit Level | PrePID Exit | 0 to 100.0 [%] | 0 | ○ | |
| APP-76 | 974C | PrePID Stop Delay | PrePID Dly | 0 to 9999 | 600 | ○ | |
| APP-80 | 9750 | Ext PID Operation Selection | Ext PI Mode | 0 | (No) | 0 (No) | × |
| | | | | 1 | (Yes) | | |
| APP-81 <small>Note30</small> | 9751 | Ext PID Reference Signal Selection | Ext Ref Sel | 0 | (I) | 3 (Key-Pad) | × |
| | | | | 1 | (V1) | | |
| | | | | 2 | (Pulse) | | |
| | | | | 3 | (Key-Pad) | | |
| APP-82 | 9752 | Ext PID Reference Level | Ext Ref Perc | 0 to 100.00 [%] | 50.00 [%] | × | |
| APP-83 | 9753 | Ext PID Feedback Signal Selection | Ext Fbk Sel | 0 | (I) | 0 (I) | × |
| | | | | 1 | (V1) | | |
| | | | | 2 | (Pulse) | | |
| APP-85 | 9755 | P Gain for ExtPID | ExtPID P Gain | 0 to 999.9 [%] | 1.0 [%] | × | |
| APP-86 | 9756 | I Time for ExtPID | ExtPID I Time | 0 to 32.0 [sec] | 10.0 [sec] | × | |
| APP-87 | 9757 | D Time for ExtPID | ExtPID D Time | 0 to 2000 [msec] | 0 [msec] | × | |
| APP-88 | 9758 | High Limit Frequency for ExtPID Control | ExtPID lmt-H | 0 to 100.00 [%] | 100.00 [%] | × | |
| APP-89 | 9759 | Low Limit Frequency for ExtPID Control | ExtPID lmt-L | 0 to 30.00 [%] | 0 [%] | × | |
| APP-90 | 975A | ExtPID Output Scale | ExtPID Scale | 0 to 999.9 [%] | 100.0 [%] | × | |
| APP-91 | 975B | ExtPID P2 Gain | Ext P2 Gain | 0 to 999.9 [%] | 100.0 [%] | × | |
| APP-92 | 975C | ExtPID P Gain Scale | Ext P Scale | 0 to 100.0 [%] | 100.0 [%] | × | |
| APP-93 | 975D | ExtPID F Gain | ExtPID F Gain | 0 to 999.9 [%] | 0.0 [%] | ○ | |
| APP-95 | 975F | ExtPID Output Inverse | ExtOut Inverse | 0 | (No) | 0 (No) | × |
| | | | | 1 | (Yes) | | |
| APP-97 | 9761 | ExtPID Loop Time | Ext Loop Time | 50 to 200 [msec] | 100 [msec] | × | |

The gray-highlighted codes are hidden parameters and will appear when the related functions are to be set.

Note 30) Only APP-81~APP-97 displayed when APP-80 is set to [Yes].

Trial Run

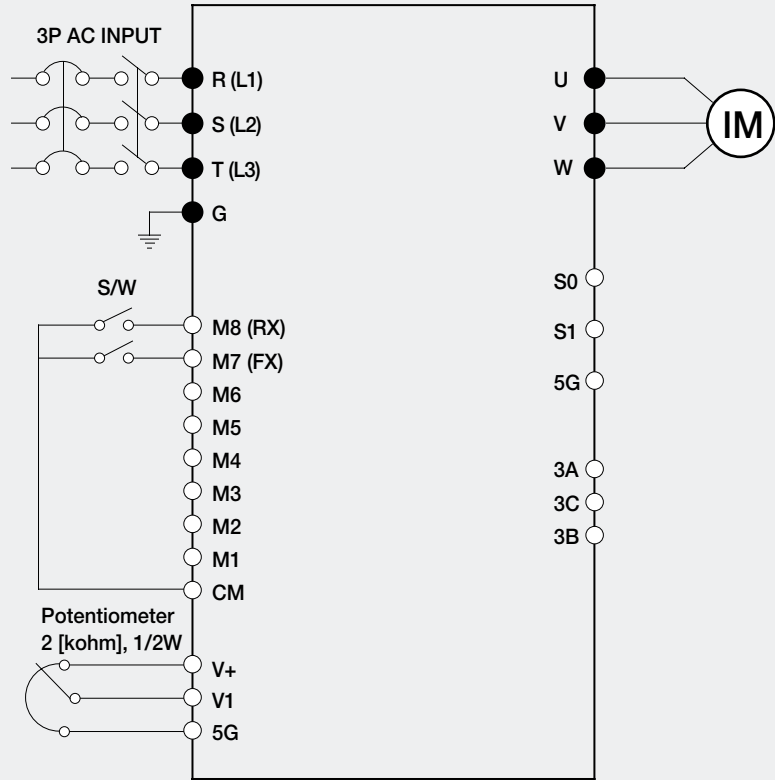
•• Operation Example (1)

V/F Control + Analog Voltage Input (V1)
+ Operation via Terminal (FX/RX)

Operation condition

- Control mode: V/F control
- Frequency command: 50 [Hz] analog input via V1 terminal
- Accel/Decel time: Accel – 15 [sec], Decel – 25 [sec]
- Drive mode: Run/Stop via FX/RX terminal, Control terminal: NPN mode

Wiring



| Step | Parameter setting | Code | Description |
|------|------------------------------|----------------|---|
| 1 | Control Mode Selection | FU2-60 | Set it to 0 (V/F). |
| 2 | Drive Mode | DRV-3 | Set it to Fx/Rx-1. |
| 3 | Frequency Mode | DRV-4 | Set V1 Analog input value in frequency mode. |
| 4 | 50 [Hz] Freq Command Setting | DRV-0 | Set freq command 50 [Hz] via V1 (Potentiometer). |
| 5 | Accel/Decel Time | DRV-1 DRV-2 | Set Accel time to 15 [sec] in DRV-2. Set Decel time to 25 [sec] in DRV-3. |
| 6 | Terminal FX | I/O-26 | Motor starts to rotate in forward direction at 50Hz with Accel time 15 [sec] when FX terminal is turned ON. Motor decelerates to stop with Decel time 25 [sec] when FX terminal is turned OFF. |
| 7 | Terminal RX | I/O-27 | When RX terminal is turned ON motor starts to rotate in Reverse direction at 50 [Hz] with Accel time 15 [sec]. When it is OFF, motor decelerates to stop with Decel time 25 [sec]. |

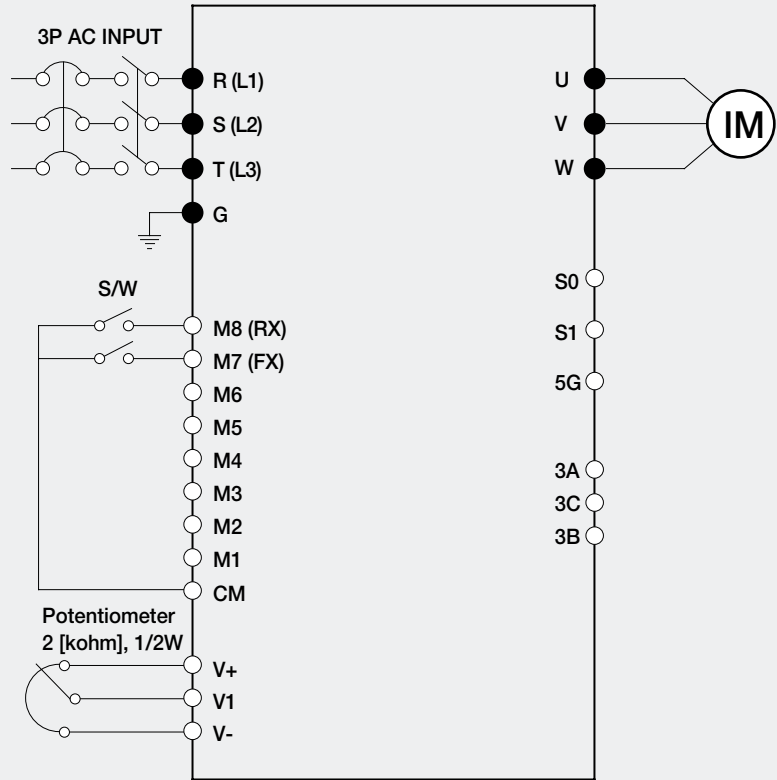
❖ Operation Example (2)

V/F control + Analog input (V1S)
+ Operation via terminal FX/RX

Operation condition

- Control mode: V/F control
- Frequency command: Setting 50 [Hz] via Analog input (V1S)
- Accel/Decel time: Accel time 15 [sec], Decel time 25 [sec]
- Drive mode: Run/Stop via FX/RX, Control terminal: NPN mode

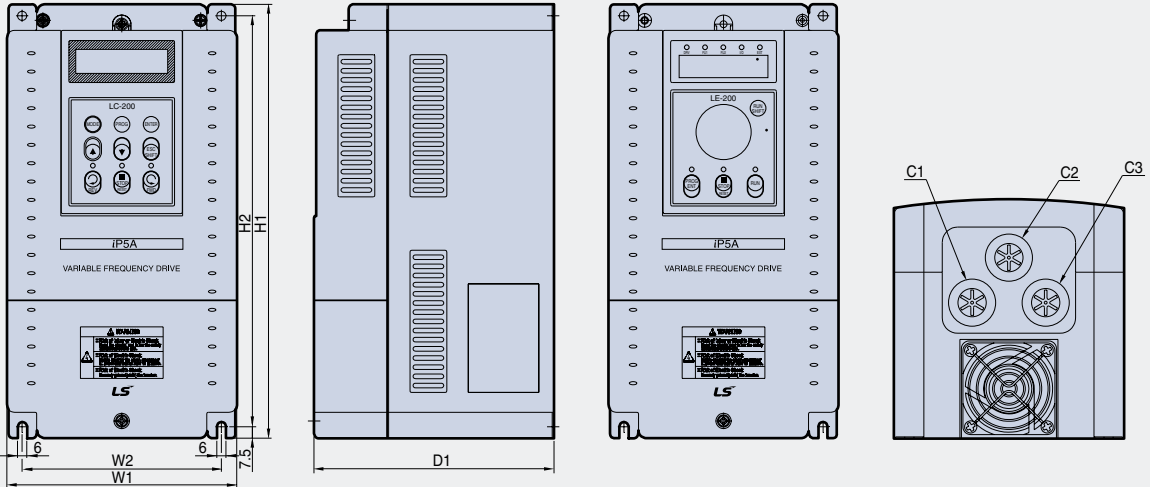
Wiring



| Step | Parameter setting | Code | Description |
|------|---|----------------|---|
| 1 | Control Mode Selection | FU2-60 | Set it to 0 (V/F). |
| 2 | Drive Mode | DRV-3 | Set it to 1 (Fx/Rx-1). |
| 3 | Frequency Mode | DRV-4 | Set it to 3 (V1S). |
| 4 | Operating Frequency Command 50 [Hz] Setting | DRV-0 | Set 50 [Hz] via potentiometer (V1S). |
| 5 | Accel/Decel Time Setting | DRV-1 DRV-2 | Set accel time to 15 [sec] in DRV-1 with decal time to 25 [sec] in DRV-2. |
| 6 | FX Terminal (M7) | IO-26 | When FX terminal is turned ON, motor rotating in forward direction starts running at 50 [Hz] for 15 [sec]. When FX terminal is turned OFF, motor decelerates to stop for 25 [sec]. |
| 7 | RX Terminal (M8) | IO-27 | When RX terminal is turned ON, motor rotating in reverse direction starts running at 50 [Hz] for 15 [sec]. When RX terminal is turned OFF, motor decelerates to stop for 25 [sec]. |

Dimensions

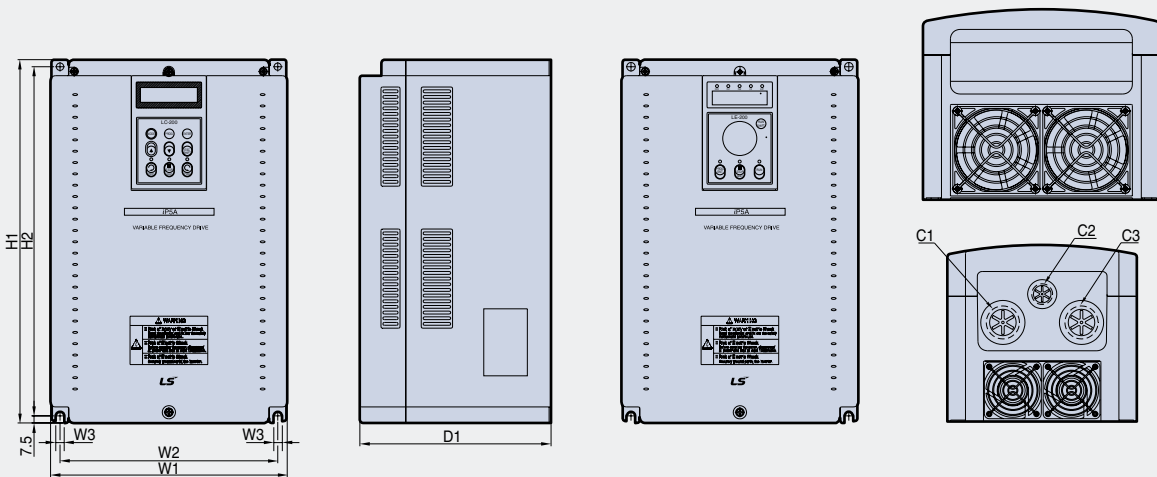
SV055iP5A (200/400V Class)



mm (inches)

| Model | W1 | W2 | H1 | H2 | D1 | C1 | C2 | C3 | Enclosure Type |
|---------------|---------------|---------------|----------------|----------------|-----------------|--------------|--------------|--------------|----------------|
| SV055iP5A-2/4 | 150 (5.91) | 130 (5.12) | 284 (11.18) | 269 (10.69) | 156.5 (6.16) | 24 (0.98) | 24 (0.98) | 24 (0.98) | IP20 UL Type 1 |

SV075~300iP5A (200/400V Class)

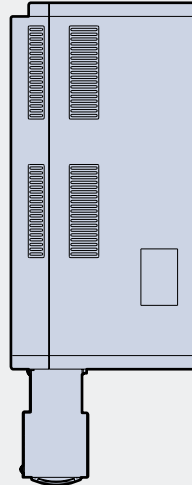
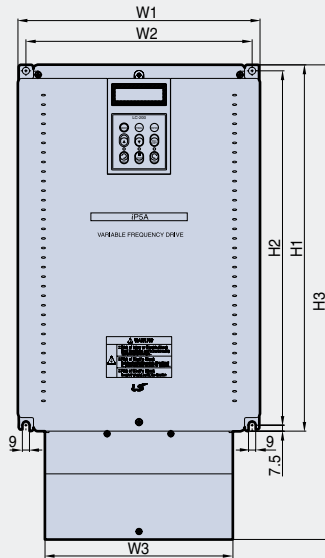


mm (inches)

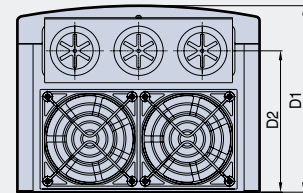
| Model | W1 | W2 | W3 | H1 | H2 | D1 | C1 | C2 | C3 | Enclosure Type |
|---------------|-------------|-------------|----------|-------------|-------------|------------|-----------|-----------|-----------|----------------|
| SV075iP5A-2/4 | 200 (7.87) | 180 (7.09) | 6 (0.23) | 284 (11.18) | 269 (10.69) | 182 (7.16) | 35 (1.37) | 24 (0.98) | 35 (1.37) | IP20 UL Type 1 |
| SV110iP5A-2/4 | 200 (7.87) | 180 (7.09) | 6 (0.23) | 284 (11.18) | 269 (10.69) | 182 (7.16) | 35 (1.37) | 24 (0.98) | 35 (1.37) | IP20 UL Type 1 |
| SV150iP5A-2/4 | 250 (9.84) | 230 (9.06) | 9 (0.35) | 385 (15.16) | 370 (14.57) | 201 (7.91) | - | - | - | IP00 UL Open |
| SV185iP5A-2/4 | 250 (9.84) | 230 (9.06) | 9 (0.35) | 385 (15.16) | 370 (14.57) | 201 (7.91) | - | - | - | IP00 UL Open |
| SV220iP5A-2/4 | 304 (11.97) | 284 (11.18) | 9 (0.35) | 460 (18.11) | 445 (17.52) | 234 (9.21) | - | - | - | IP00 UL Open |
| SV300iP5A-2/4 | 304 (11.97) | 284 (11.18) | 9 (0.35) | 460 (18.11) | 445 (17.52) | 234 (9.21) | - | - | - | IP00 UL Open |

Dimensions

SV150~300iP5A (UL Type 1 or UL Open Type with Conduit Option used, 200V/400V Class)



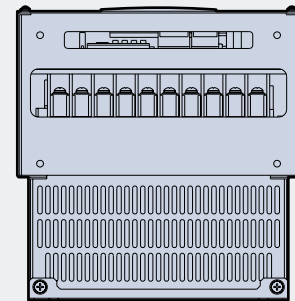
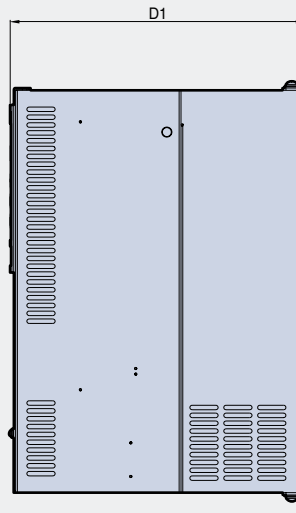
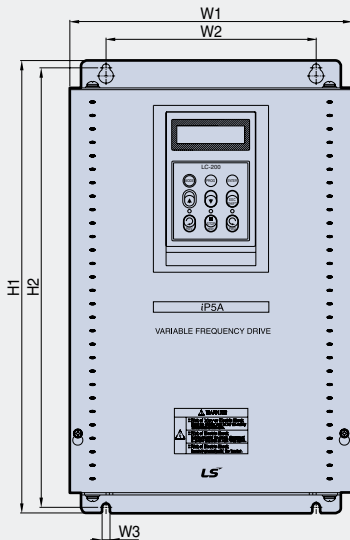
Note) Mounting NEMA 1 conduit option to the 15~90kW (20~125HP) Open Type meets NEMA 1 but does not comply with UL Enclosed Type 1. To that end, please purchase UL Type 1 product.



mm (inches)

| Model | W1 | W2 | H1 | H2 | H3 | D1 | D2 | C3 | Enclosure Type |
|---------------|-------------|-------------|-------------|-------------|-------------|---------------|------------|--------------|----------------|
| SV150iP5A-2/4 | 250 (9.84) | 230 (9.06) | 200.8 (7.9) | 385 (15.16) | 370 (14.57) | 454.2 (17.88) | 201 (7.91) | 146 (5.74) | IP20 UL Type 1 |
| SV185iP5A-2/4 | 250 (9.84) | 230 (9.06) | 200.8 (7.9) | 385 (15.16) | 370 (14.57) | 454.2 (17.88) | 201 (7.91) | 146 (5.74) | IP20 UL Type 1 |
| SV220iP5A-2/4 | 304 (11.97) | 284 (11.18) | 236 (9.29) | 460 (18.11) | 445 (17.52) | 599.2 (23.59) | 234 (9.21) | 177.5 (6.98) | IP20 UL Type 1 |
| SV300iP5A-2/4 | 304 (11.97) | 284 (11.18) | 236 (9.29) | 460 (18.11) | 445 (17.52) | 599.2 (23.59) | 234 (9.21) | 177.5 (6.98) | IP20 UL Type 1 |

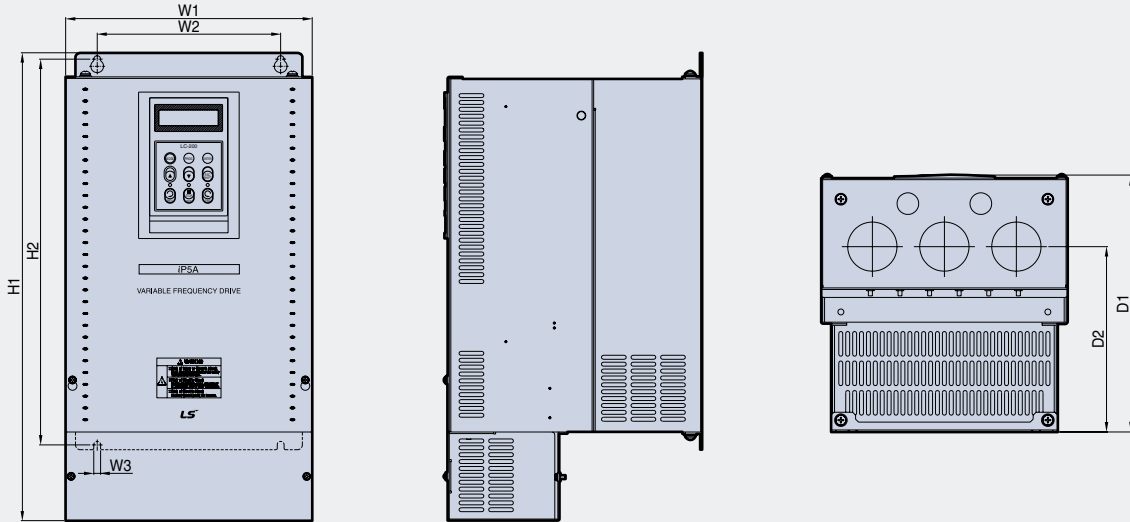
SV150~SV300 iP5A (400V Class)-Built-in DCL Type



mm (inches)

| Model | W1 | W2 | W3 | H1 | H2 | D1 | Enclosure Type |
|-------------------|-------------|------------|----------|---------------|---------------|---------------|----------------|
| SV150, 185iP5A-4L | 250 (9.84) | 186 (7.32) | 7 (0.28) | 403.5 (15.88) | 392 (15.43) | 261.2 (10.28) | IP00 UL Type 1 |
| SV220, 300iP5A-4L | 260 (10.23) | 220 (8.66) | 7 (0.28) | 480 (18.89) | 468.5 (18.44) | 268.6 (10.57) | IP20 UL Type 1 |

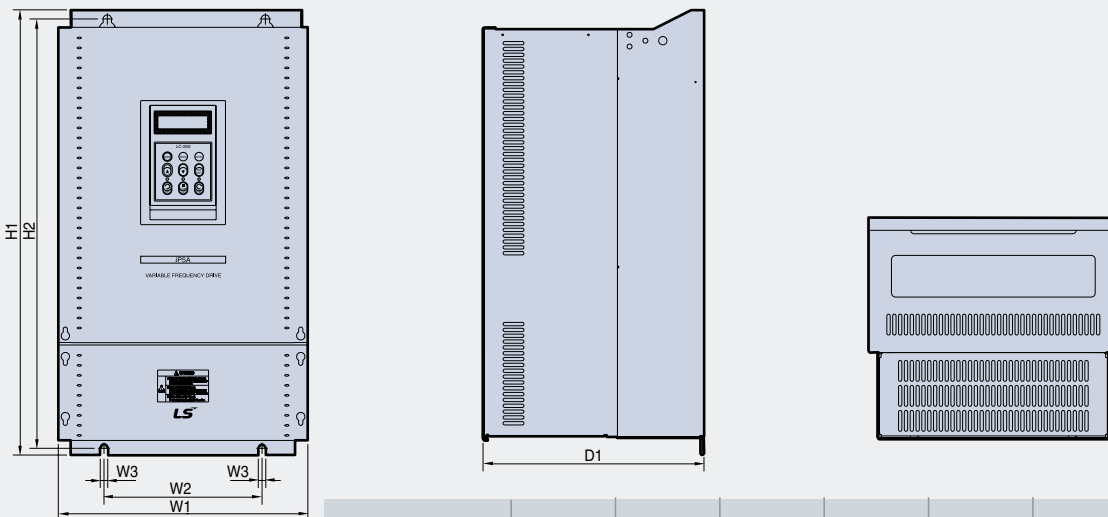
SV150~SV300 iP5A (Built-in DCL Type, UL Type 1 or UL Open Type with Conduit Option used, 400V Class)



mm (inches)

| Model | W1 | W2 | W3 | H1 | H2 | D1 | D2 | Enclosure Type |
|-------------------|-------------|------------|----------|---------------|---------------|---------------|--------------|----------------|
| SV150, 185iP5A-4L | 250 (9.84) | 186 (7.32) | 7 (0.28) | 475.5 (18.72) | 392 (15.43) | 261.2 (10.28) | 188.4 (7.42) | IP20 UL Type 1 |
| SV220, 300iP5A-4L | 260 (10.23) | 220 (8.66) | 7 (0.28) | 552 (21.73) | 468.5 (18.44) | 268.6 (10.57) | 188.8 (7.43) | IP20 UL Type 1 |

SV370~SV550iP5A (400V Class)

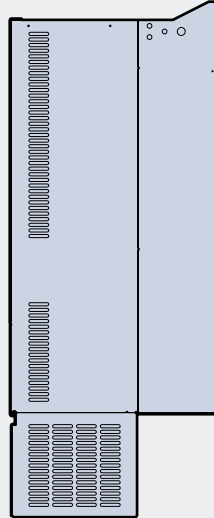
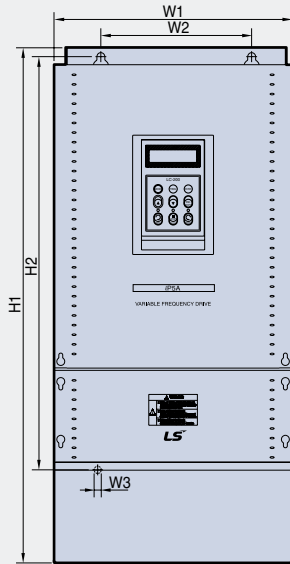


mm (inches)

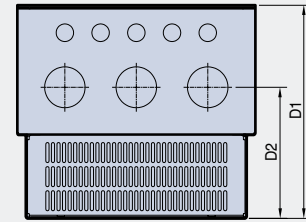
| Model | W1 | W2 | W3 | H1 | H2 | D1 | Enclosure Type |
|---------------------------------------|-------------|------------|----------|-------------|-------------|---------------|----------------|
| SV370, 450iP5A-4 | 300 (11.81) | 190 (7.48) | 9 (0.35) | 534 (21.02) | 515 (20.28) | 265.6 (10.46) | IP00 UL Open |
| SV550iP5A-4 | 300 (11.81) | 190 (7.48) | 9 (0.35) | 534 (21.02) | 515 (20.28) | 292.6 (11.52) | IP00 UL Open |
| SV370, 450iP5A-4L (Built-in DCL Type) | 300 (11.81) | 190 (7.48) | 9 (0.35) | 684 (26.92) | 665 (26.18) | 265.6 (10.46) | IP00 UL Open |
| SV550iP5A-4L (Built-in DCL Type) | 300 (11.81) | 190 (7.48) | 9 (0.35) | 684 (26.92) | 665 (26.18) | 292.6 (11.52) | IP00 UL Open |

Dimensions

SV370~550iP5A (UL Type 1 or UL Open Type with Conduit Option Used, 400V Class)



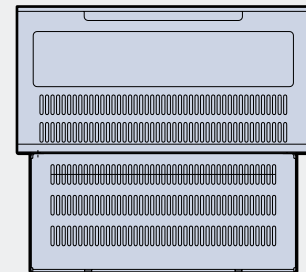
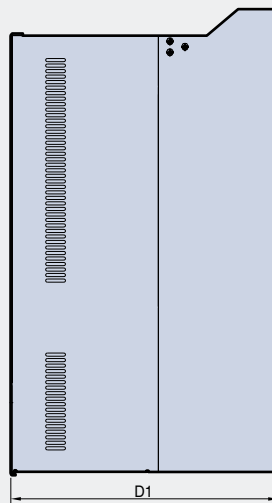
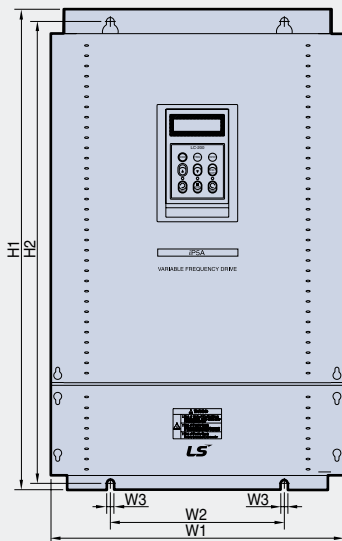
Note) Mounting NEMA 1 conduit option to the 15~90kW (20~125HP) Open Type meets NEMA 1 but does not comply with UL Enclosed Type 1. To that end, please purchase UL Type 1 product.



mm (inches)

| Model | W1 | W2 | W3 | H1 | H2 | D1 | D2 | Enclosure Type |
|-------------------|-------------|------------|----------|-------------|-------------|---------------|--------------|----------------|
| SV370, 450iP5A-4 | 300 (11.81) | 190 (7.48) | 9 (0.35) | 642 (25.28) | 515 (20.28) | 265.6 (10.46) | 163.4 (6.43) | IP20 UL Type 1 |
| SV550iP5A-4 | 300 (11.81) | 190 (7.48) | 9 (0.35) | 642 (25.28) | 515 (20.28) | 292.6 (11.52) | 190.4 (7.5) | IP20 UL Type 1 |
| SV370, 450iP5A-4L | 300 (11.81) | 190 (7.48) | 9 (0.35) | 792 (31.18) | 665 (26.18) | 265.6 (10.46) | 163.4 (6.43) | IP20 UL Type 1 |
| SV550iP5A-4L | 300 (11.81) | 190 (7.48) | 9 (0.35) | 792 (31.18) | 665 (26.18) | 292.6 (11.52) | 190.4 (7.5) | IP20 UL Type 1 |

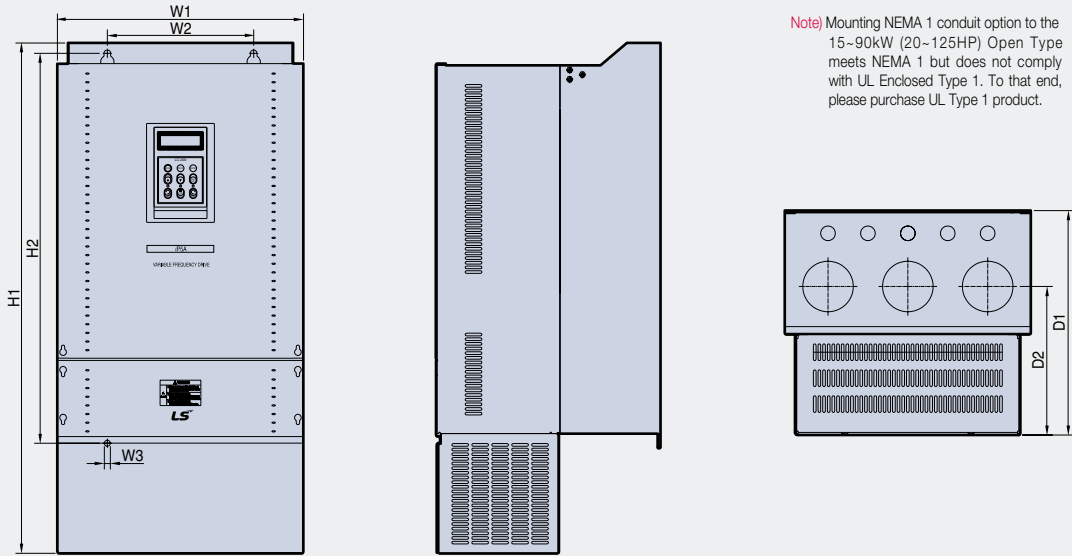
SV750, 900iP5A (400V Class)



mm (inches)

| Model | W1 | W2 | W3 | H1 | H2 | D1 | Enclosure Type |
|---------------------------------------|-------------|------------|----------|-------------|---------------|---------------|----------------|
| SV750, 900iP5A-4 | 370 (14.57) | 220 (8.66) | 9 (0.35) | 610 (24.02) | 586.5 (23.09) | 337.6 (13.29) | IP00 UL Open |
| SV750, 900iP5A-4L (Built-in DCL Type) | 370 (14.57) | 220 (8.66) | 9 (0.35) | 760 (29.92) | 736.6 (28.99) | 337.6 (13.29) | IP00 UL Open |

●● **SV750, 900iP5A (UL Type 1 or UL Open Type with Conduit Option used, 400V Class)**



mm (inches)

| Model | W1 | W2 | W3 | H1 | H2 | D1 | D2 | Enclosure Type |
|--|-------------|------------|----------|---------------|---------------|---------------|-------------|----------------|
| SV750, 900iP5A-4 | 370 (14.57) | 220 (8.66) | 9 (0.35) | 767.5 (30.22) | 586.5 (23.09) | 337.6 (13.29) | 223.4 (8.8) | IP20 UL Type 1 |
| SV750, 900iP5A-4L (Built-in DCL Type) | 370 (14.57) | 220 (8.66) | 9 (0.35) | 917.5 (36.12) | 736.5 (28.99) | 337.6 (13.29) | 223.4 (8.8) | IP20 UL Type 1 |

●● **SV1100, 1600iP5A (400V Class)**

mm (inches)

| Model | W1 | W2 | W3 | H1 | H2 | D1 | Enclosure Type |
|----------------------------|-------------|-------------|-----------|---------------|---------------|---------------|----------------|
| SV1100, 1320iP5A-4L | 510 (20.08) | 381 (15.00) | 11 (0.43) | 768.5 (30.26) | 744 (29.29) | 422.6 (16.64) | IP00 UL Open |
| SV1600iP5A-4L | 510 (20.08) | 381 (15.00) | 11 (0.43) | 844 (33.23) | 819.5 (32.26) | 422.6 (16.64) | IP00 UL Open |

●● **SV2200, 2800iP5A (400V Class)**

mm (inches)

| Model | W1 | W2 | W3 | H1 | H2 | D1 | Enclosure Type |
|----------------------------|-------------|-------------|-----------|--------------|--------------|---------------|----------------|
| SV2200, 2800iP5A-4L | 690 (27.17) | 581 (22.87) | 14 (0.55) | 1063 (41.85) | 1028 (40.49) | 449.6 (17.70) | IP00 UL Open |

●● **SV3150, 4500iP5A (400V Class)**

mm (inches)

| Model | W1 | W2 | W3 | H1 | H2 | D1 | Enclosure Type |
|----------------------------|-------------|-------------|-----------|----------------|----------------|-------------|----------------|
| SV3150, iP5A-4L | 772 (30.39) | 500 (19.69) | 13 (0.51) | 1140.5 (44.90) | 1110 (43.70) | 442 (17.40) | IP00 UL Open |
| SV3750, 4500iP5A-4L | 922 (36.30) | 580 (22.83) | 14 (0.55) | 1302.5 (51.28) | 1271.5 (50.06) | 495 (19.49) | IP00 UL Open |

DB (Dynamic Braking) Unit

DBU Models

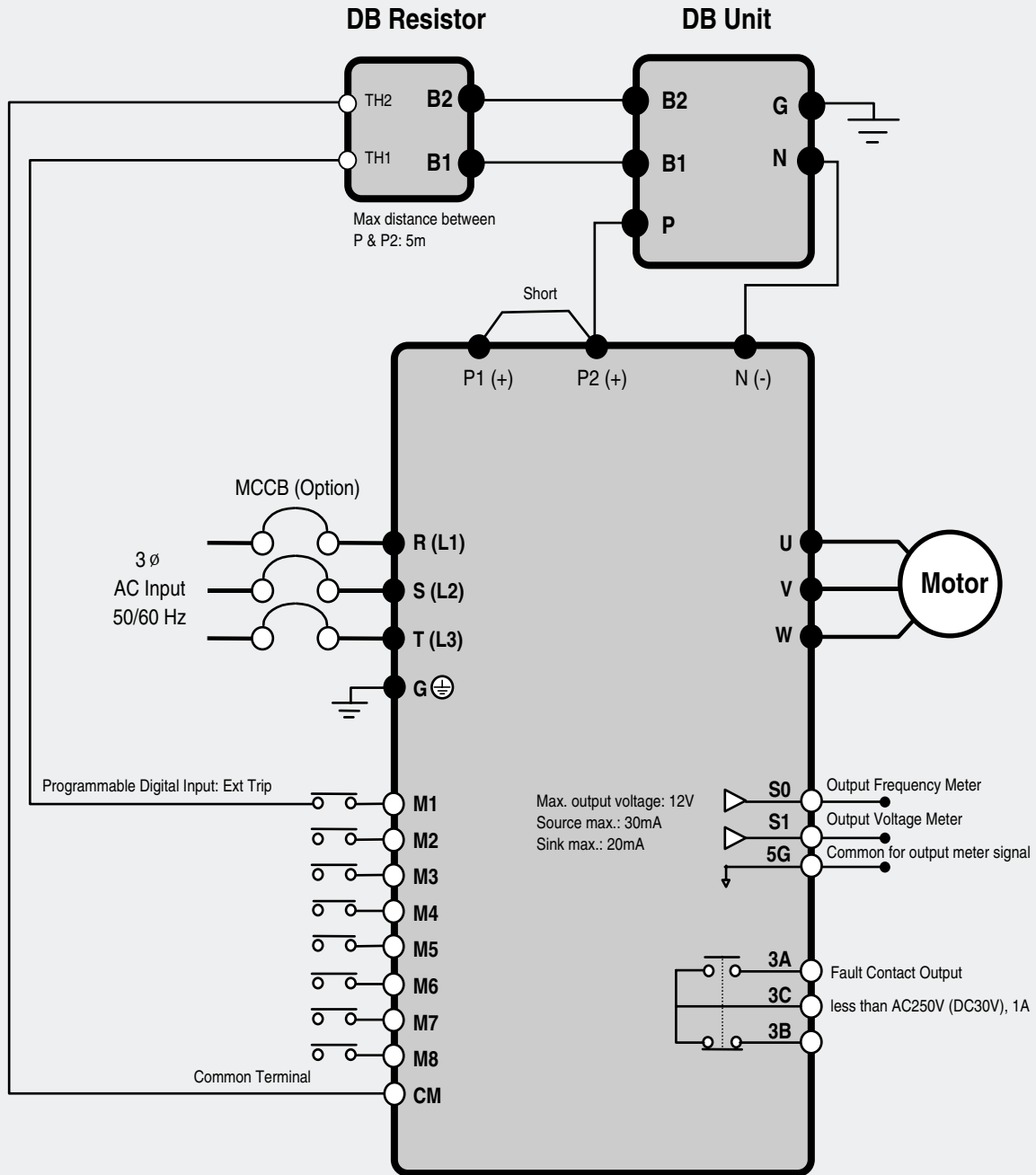
| UL | Inverter | Applicable motor rating | DB Unit | Dimension |
|-------------|------------|-------------------------|------------------|-----------|
| Non UL type | 200V class | 11~15 kW (15~20 HP) | SV150DBU-2 | Group 1. |
| | | 18.5~22 kW (25~30 HP) | SV220DBU-2 | |
| | | 30~37 kW (40~50 HP) | SV037DBH-2 | Group 2. |
| | | 45~55 kW (60~75 HP) | SV037DBH-2, 2set | |
| | 400V class | 11~15 kW (15~20 HP) | SV150DBU-4 | Group 1. |
| | | 18.5~22 kW (25~30 HP) | SV220DBU-4 | |
| | | 30~37 kW (40~50 HP) | SV037DBH-4 | Group 2. |
| | | 45~55 kW (60~75 HP) | SV075DBH-4 | |
| | | 75 kW (100 HP) | | |
| | | | | |
| UL type | 200V class | 11~15 kW (15~20 HP) | SV150DBU-2U | Group 3. |
| | | 18.5~22 kW (25~30 HP) | SV220DBU-2U | |
| | | 30~37 kW (40~50 HP) | SV370DBU-2U | |
| | | 45~55 kW (60~75 HP) | SV550DBU-2U | |
| | 400V class | 11~15 kW (15~20 HP) | SV150DBU-4U | |
| | | 18.5~22 kW (25~30 HP) | SV220DBU-4U | |
| | | 30~37 kW (40~50 HP) | SV370DBU-4U | |
| | | 45~55 kW (60~75 HP) | SV550DBU-4U | |
| | | 75 kW (100 HP) | SV750DBU-4U | |
| | | 90~110 kW (125~150 HP) | SV550DBU-4, 2set | |
| | | 132~160 kW (200~250 HP) | SV750DBU-4, 2set | |
| | | 220 kW (300 HP) | SV750DBU-4, 3set | |
| | | 280~315 kW (350~400 HP) | - | |
| | | 375~450 kW (500~600 HP) | - | |

Terminal Configuration

- Group 1 - CM OH G B2 B1 N P
- Group 2 - G N B2 P/B1
- Group 3 - P N G B1 B2

| Terminals | Description | Terminals | Description |
|-----------|---------------------------------|-----------|---|
| G | Ground terminal | N | Connect to inverter terminal N |
| B2 | Connect to DB Resistor's B2 | P | Connect to inverter terminal P1 |
| B1 | Connect to DB Resistor's B1 | CM | OH common |
| N | Connect to inverter terminal N | OH* | Over Heat Trip output terminal (Open Collector output: 20mA, 27V DC) |
| P | Connect to inverter terminal P1 | | |

●● Wiring for DB unit and DB resistor (For 5.5~90kW/7.5~125HP inverters)

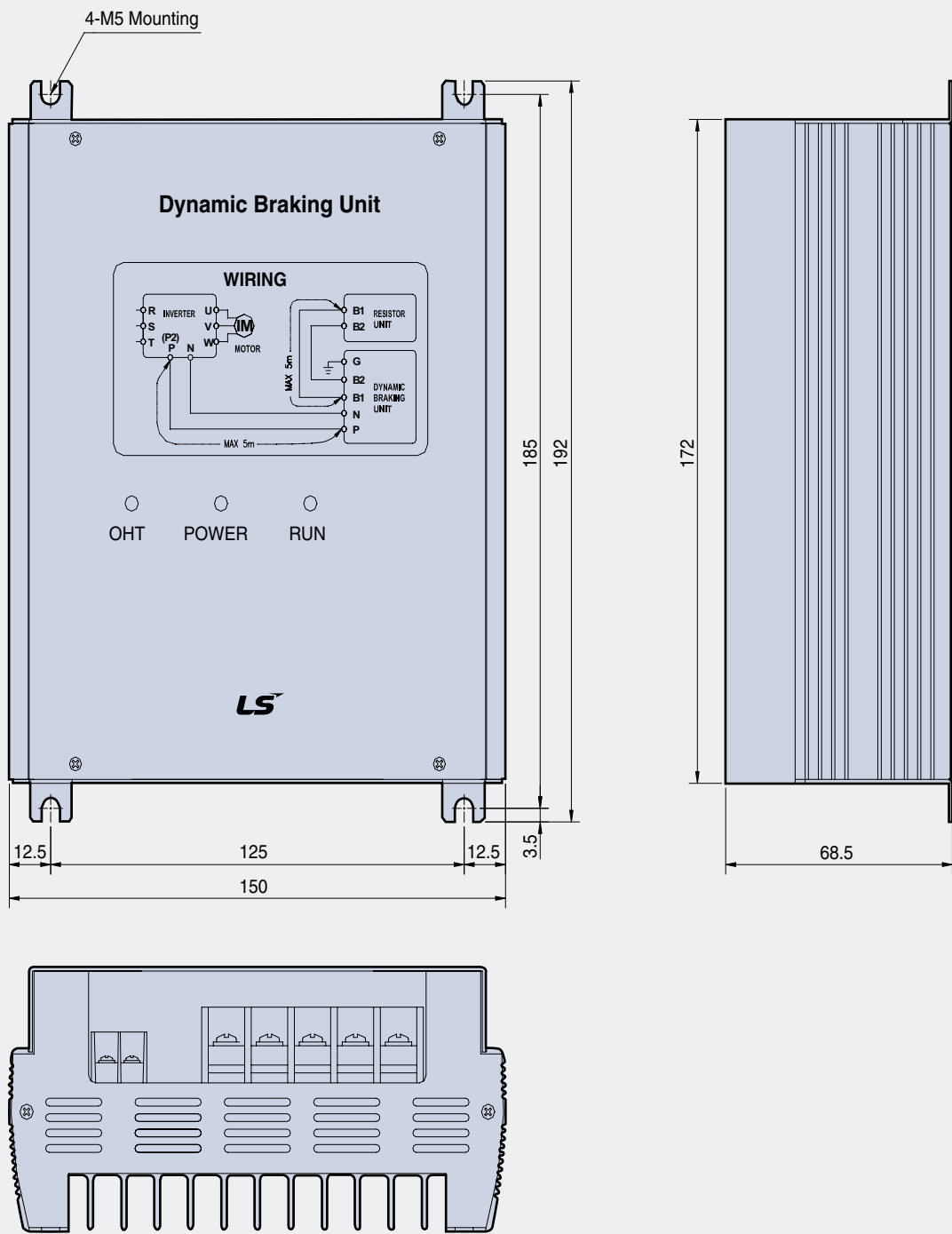


| DB resistor terminal | Description |
|----------------------|---|
| B1, B2 | Wire terminal properly based on wiring block diagram. Connect a DB resistor to the DB Unit's B1, B2 terminals. |
| TH1, TH2 | Thermal sensor terminal of DB resistor. Normal temperature (Ambient): Contact ON (TH1-TH2 closed) DB resistor overheated: Contact OFF (TH1-TH2 Open). Wire it to the inverter terminal defined as External Trip. |

DB (Dynamic Braking) Unit

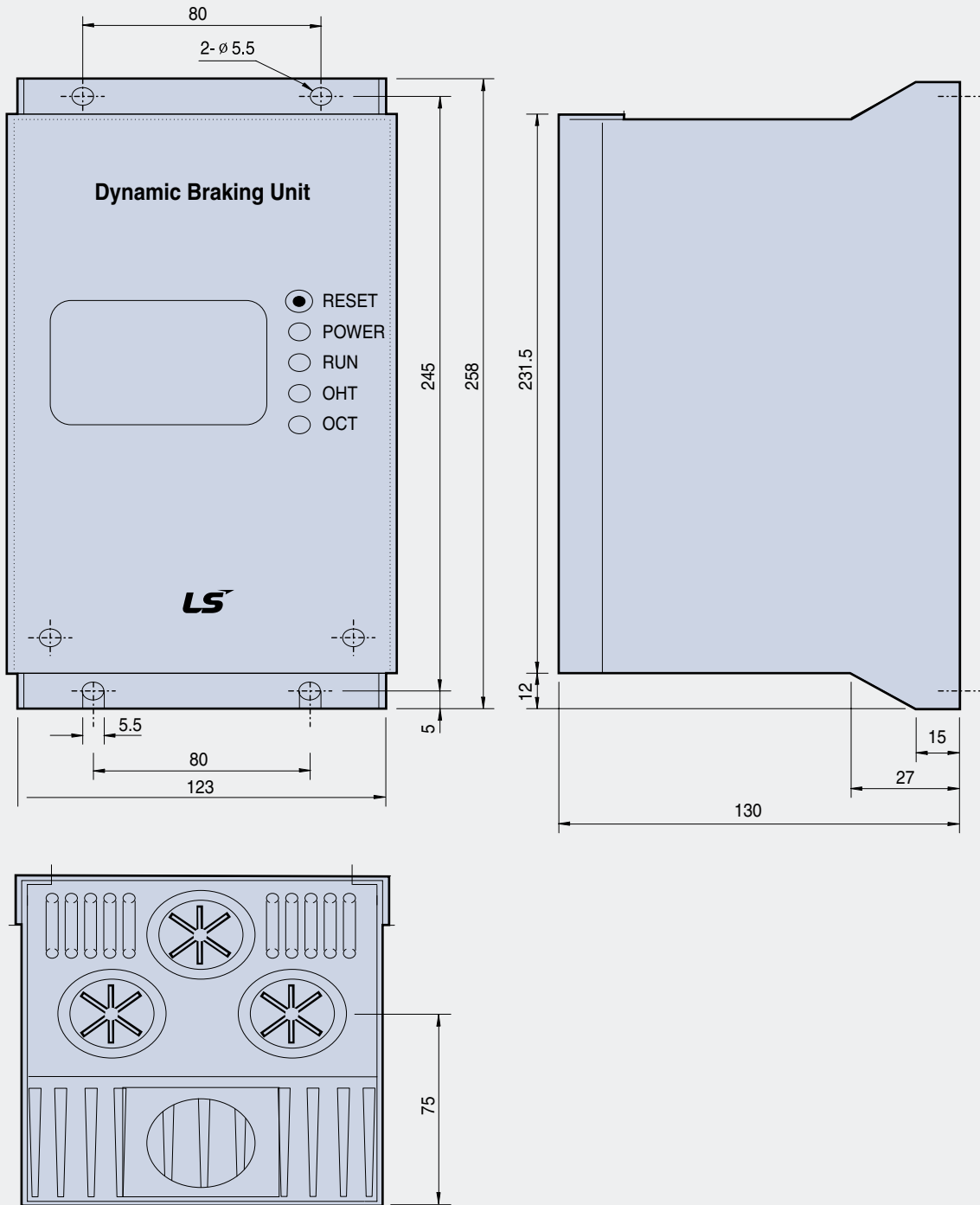
Group 1

(Unit: mm)



Group 2

(Unit: mm)

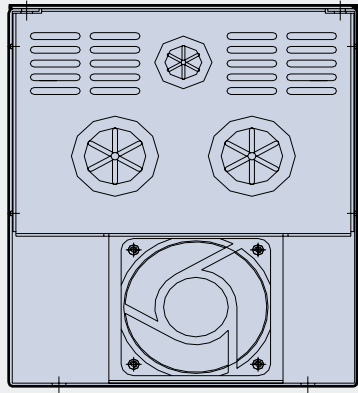
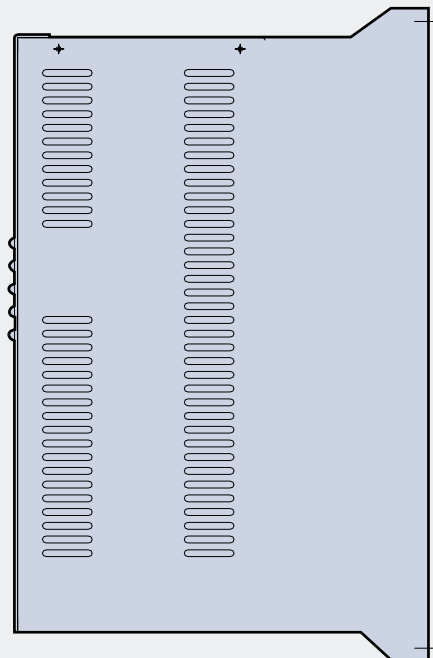
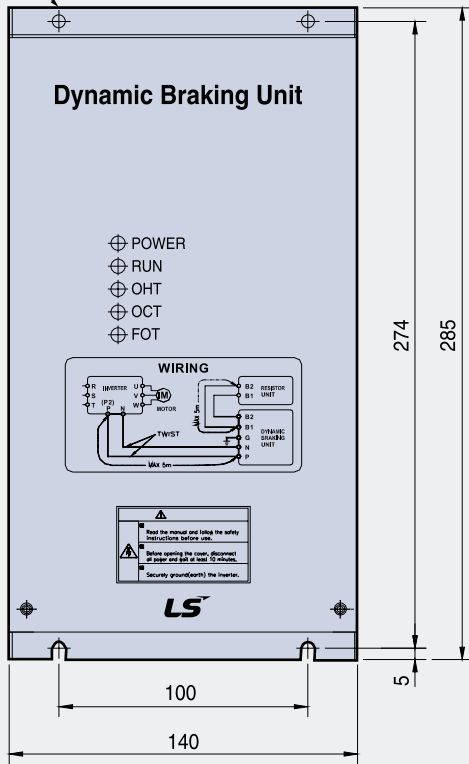


DB (Dynamic Braking) Unit

Group 3

(Unit: mm)

4-M5 Mounting



External DB Resistor

iP5A do not have built-in DB resistor on power stack as factory installation. External DB Unit and Resistor (Optional) should be installed. See the following table for more details (ED: 5%, Continuous Braking Time: 15 sec). If Enable duty (%ED) is increased to 10%, use external DB resistor having twice Wattage rating.

| Applied motor capacity (kW/HP) | Operating rate (ED/Continuous Braking Time) | 100 % Braking Torque | | | 150% Braking Torque | | | |
|--------------------------------|---|----------------------|------|-------|---------------------|-----|------|--------|
| | | [ohm] | [W] | Type | [ohm] | [W] | Type | |
| 200V | 5.5/7.5 | 5%/15 sec | 30 | 700 | Type3 | 20 | 800 | Type 3 |
| | 7.5/10 | 5%/15 sec | 20 | 1000 | Type 3 | 15 | 1200 | Type 3 |
| | 11/15 | 5%/15 sec | 15 | 1400 | Type 3 | 10 | 2400 | Type 3 |
| | 15/20 | 5%/15 sec | 11 | 2000 | Type 3 | 8 | 2400 | Type 3 |
| | 18.5/25 | 5%/15 sec | 9 | 2400 | Type 3 | 5 | 3600 | Type 3 |
| | 22/30 | 5%/15 sec | 8 | 2800 | Type 3 | 5 | 3600 | Type 3 |
| | 30/40 | 10%/6 sec | 4.2 | 6400 | - | - | - | - |
| 400V | 5.5/7.5 | 5%/15 sec | 120 | 700 | Type 3 | 85 | 1000 | Type 3 |
| | 7.5/10 | 5%/15 sec | 90 | 1000 | Type 3 | 60 | 1200 | Type 3 |
| | 11/15 | 5%/15 sec | 60 | 1400 | Type 3 | 40 | 2000 | Type 3 |
| | 15/20 | 5%/15 sec | 45 | 2000 | Type 3 | 30 | 2400 | Type 3 |
| | 18.5/25 | 5%/15 sec | 35 | 2400 | Type 3 | 20 | 3600 | Type 3 |
| | 22/30 | 5%/15 sec | 30 | 2800 | Type 3 | 20 | 3600 | Type 3 |
| | 30/40 | 10%/6 sec | 16.9 | 6400 | - | - | - | - |
| | 37/50 | 10%/6 sec | 16.9 | 6400 | - | - | - | - |
| | 45/60 | 10%/6 sec | 11.4 | 9600 | - | - | - | - |
| | 55/75 | 10%/6 sec | 11.4 | 9600 | - | - | - | - |
| | 75/100 | 10%/6 sec | 8.4 | 12800 | - | - | - | - |
| | 90/125 | 10%/6 sec | 8.4 | 12800 | - | - | - | - |

Peripheral Device

⚡ MCCB (Molded Case Circuit Breaker) and MC (Magnetic Contactor)

| Voltage | Motor [kW] | Inverter Model | MCCB (LS Industrial Systems) | MC (LS Industrial Systems) |
|---------------|------------|----------------|---------------------------------|-------------------------------|
| 200V Class | 5.5 | SV055iP5A-2 | ABS53b/50A | GMC-40 |
| | 7.5 | SV075iP5A-2 | ABS63b/60A | GMC-40 |
| | 11 | SV110iP5A-2 | ABS103b/100A | GMC-50 |
| | 15 | SV150iP5A-2 | ABS103b/100A | GMC-85 |
| | 18.5 | SV185iP5A-2 | ABS203b/125A | GMC-100 |
| | 22 | SV220iP5A-2 | ABS203b/150A | GMC-100 |
| | 30 | SV300iP5A-2 | ABS203b/175A | GMC-150 |

●● MCCB (Molded Case Circuit Breaker) and MC (Magnetic Contactor)

| Voltage | Motor [kW] | Inverter Model | MCCB (LS Industrial Systems) | MC (LS Industrial Systems) |
|---------------|--------------|----------------|---------------------------------|-------------------------------|
| 400V Class | 5.5 | SV055iP5A-4 | ABS33b/30A | GMC-22 |
| | 7.5 | SV075iP5A-4 | ABS33b/30A | GMC-22 |
| | 11 | SV110iP5A-4 | ABS53b/50A | GMC-40 |
| | 15 | SV150iP5A-4 | ABS63b/60A | GMC-50 |
| | 18.5 | SV185iP5A-4 | ABS63b/60A | GMC-50 |
| | 22 | SV220iP5A-4 | ABS103b/100A | GMC-65 |
| | 30 | SV300iP5A-4 | ABS103b/100A | GMC-75 |
| | 37 | SV370iP5A-4 | ABS203b/125A | GMC-100 |
| | 45 | SV450iP5A-4 | ABS203b/150A | GMC-125 |
| | 55 | SV550iP5A-4 | ABS203b/175A | GMC-150 |
| | 75 | SV750iP5A-4 | ABS203b/225A | GMC-180 |
| | 90 | SV900iP5A-4 | ABS403b/300A | GMC-220 |
| | 110 | SV1100iP5A-4 | ABS403b/400A | GMC-300 |
| | 132 | SV1300iP5A-4 | ABS603b/500A | GMC-300 |
| | 160 | SV1600iP5A-4 | ABS603b/600A | GMC-400 |
| | 220 | SV2200iP5A-4 | ABS803b/700A | GMC-600 |
| | 280 | SV2800iP5A-4 | ABS803b/800A | GMC-600 |
| 315 | SV3150iP5A-4 | ABS1003/1000A | GMC-800 | |
| 375 | SV3750iP5A-4 | ABS1203/1200A | 900A | |
| 450 | SV4500iP5A-4 | ABS1203/1200A | 1000A | |

●● AC Input Fuse

| Voltage | Motor [kW] | Inverter Model | AC Input Fuse [A] | AC Reactor | | DC Reactor | |
|---------------|--------------|----------------|----------------------|------------|-------|------------|-----|
| | | | | [mH] | [A] | [mH] | [A] |
| 200V Class | 5.5 | SV055iP5A-2 | 40 | 0.39 | 30 | 1.37 | 29 |
| | 7.5 | SV075iP5A-2 | 60 | 0.28 | 40 | 1.05 | 38 |
| | 11 | SV110iP5A-2 | 80 | 0.20 | 59 | 0.74 | 56 |
| | 15 | SV150iP5A-2 | 100 | 0.15 | 75 | 0.57 | 71 |
| | 18.5 | SV185iP5A-2 | 125 | 0.12 | 96 | 0.49 | 91 |
| | 22 | SV220iP5A-2 | 150 | 0.10 | 112 | 0.42 | 107 |
| | 30 | SV300iP5A-2 | 200 | 0.07 | 160 | 0.34 | 152 |
| 400V Class | 5.5 | SV055iP5A-4 | 20 | 1.22 | 15 | 5.34 | 14 |
| | 7.5 | SV075iP5A-4 | 30 | 1.14 | 20 | 4.04 | 19 |
| | 11 | SV110iP5A-4 | 40 | 0.81 | 30 | 2.76 | 29 |
| | 15 | SV150iP5A-4 | 60 | 0.61 | 38 | 2.18 | 36 |
| | 18.5 | SV185iP5A-4 | 70 | 0.45 | 50 | 1.79 | 48 |
| | 22 | SV220iP5A-4 | 80 | 0.39 | 58 | 1.54 | 55 |
| | 30 | SV300iP5A-4 | 100 | 0.287 | 80 | 1.191 | 76 |
| | 37 | SV370iP5A-4 | 125 | 0.232 | 98 | 0.975 | 93 |
| | 45 | SV450iP5A-4 | 150 | 0.195 | 118 | 0.886 | 112 |
| | 55 | SV550iP5A-4 | 175 | 0.157 | 142 | 0.753 | 135 |
| | 75 | SV750iP5A-4 | 250 | 0.122 | 196 | 0.436 | 187 |
| | 90 | SV900iP5A-4 | 300 | 0.096 | 237 | 0.352 | 225 |
| | 110 | SV1100iP5A-4 | 350 | 0.081 | 289 | Built-in | |
| | 132 | SV1300iP5A-4 | 400 | 0.069 | 341 | Built-in | |
| | 160 | SV1600iP5A-4 | 450 | 0.057 | 420 | Built-in | |
| | 220 | SV2200iP5A-4 | 700 | 0.042 | 558 | Built-in | |
| | 280 | SV2800iP5A-4 | 800 | 0.029 | 799 | Built-in | |
| 315 | SV3150iP5A-4 | 900 | 0.029 | 799 | 0.090 | 836 | |
| 375 | SV3750iP5A-4 | 1000 | 0.024 | 952 | 0.076 | 996 | |
| 450 | SV4500iP5A-4 | 1200 | 0.024 | 952 | 0.064 | 1195 | |

Green Innovators of Innovation



Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance. Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.

© 2006.8 LS Industrial Systems Co.,Ltd. All rights reserved.

LS Industrial Systems Co., Ltd.

www.lsis.biz

■ HEAD OFFICE

LS Tower 1026-6, Hoge-dong, Dongan-gu,
Anyang-si, Gyeonggi-do 431-848, Korea

- **Asia Pacific & America** +82-2-2034-4091 / bonseongk@lsis.biz
- **Europe & CIS** +82-2-2034-4376 / ywsohn@lsis.biz
- **Meddle East & Africa** +82-2-2034-4645 / sungkyup@lsis.biz

■ Global Network

- **LS Industrial Systems Europe B.V.** >> **Amsterdam, Netherlands**
Address: 1st Floor, Tupolevlaan 48, 1119NZ Schiphol-Rijk, The Netherlands
Tel: 31-20-654-1420 Fax: 31-20-654-1429 e-mail: junshickp@lsis.biz
- **LS Industrial Systems (Middle East) FZE** >> **Dubai, U.A.E.**
Address: LOB 19 JAFZA VIEW TOWER Room 205, Jebel Ali Freezone P.O. Box 114216, Dubai, United Arab Emirates
Tel: 971-4-886 5360 Fax: 971-4-886-5361 e-mail: jungyongl@lsis.biz
- **Dalian LS Industrial Systems Co., Ltd.** >> **Dalian, China**
Address: No.15, Liaohexi 3-Road, Economic and Technical Development zone, Dalian 116600, China
Tel: 86-411-8273-7777 Fax: 86-411-8730-7560 e-mail: lixx@lsis.com.cn
- **LS Industrial Systems (Wuxi) Co., Ltd.** >> **Wuxi, China**
Address: 102-A, National High & New Tech Industrial Development Area, Wuxi, Jiangsu, 214028, P.R.China
Tel: 86-510-8534-6666 Fax: 86-510-522-4078 e-mail: xuhg@lsis.com.cn
- **LS-VINA Industrial Systems Co., Ltd.** >> **Hanoi, Vietnam**
Address: Nguyen Khe - Dong Anh - Ha Noi - Viet Nam
Tel: 84-4-882-0222 Fax: 84-4-882-0220 e-mail: srjo@lsisvina.com
- **LS-VINA Industrial Systems Co., Ltd.** >> **Hochiminh, Vietnam**
Address: 41 Nguyen Thi Minh Khai Str. Yoco Bldg 4th Floor, Hochiminh City, Vietnam
Tel: 84-8-3822-7941 Fax: 84-8-3822-7942 e-mail: sbpark@lsisvina.com
- **LS Industrial Systems Tokyo Office** >> **Tokyo, Japan**
Address: 16FL, Higashi-Kan, Akasaka Twin Tower 17-22, 2-chome, Akasaka, Minato-ku Tokyo 107-8470, Japan
Tel: 81-3-3582-9128 Fax: 81-3-3582-2667 e-mail: jschuna@lsis.biz
- **LS Industrial Systems Shanghai Office** >> **Shanghai, China**
Address: Room E-G, 12th Floor Huamin Empire Plaza, No.726, West Yan'an Road Shanghai 200050, P.R. China
Tel: 86-21-5237-9977 (609) Fax: 89-21-5237-7191 e-mail: jinhk@lsis.com.cn
- **LS Industrial Systems Beijing Office** >> **Beijing, China**
Address: B-Tower 17FL, Beijing Global Trade Center B/D, No.36, BeiSanHuanDong-Lu, DongCheng-District, Beijing 100013, P.R. China
Tel: 86-10-5825-6025,7 Fax: 86-10-5825-6026 e-mail: cuixiaorong@lsis.com.cn
- **LS Industrial Systems Guangzhou Office** >> **Guangzhou, China**
Address: Room 1403,14F, New Poly Tower, 2 Zhongshan Liu Road, Guangzhou, P.R. China
Tel: 86-20-8326-6764 Fax: 86-20-8326-6287 e-mail: linsz@lsis.biz
- **LS Industrial Systems Chengdu Office** >> **Chengdu, China**
Address: Room 1701 17Floor, huanminhanjun international Building, No1 Fuxing Road Chengdu, 610041, P.R. China
Tel: 86-28-8670-3101 Fax: 86-28-8670-3203 e-mail: yangcf@lsis.com.cn
- **LS Industrial Systems Qingdao Office** >> **Qingdao, China**
Address: 7B40, Haixin Guangchang Shenye Building B, No.9, Shandong Road Qingdao 26600, P.R. China
Tel: 86-532-8501-6568 Fax: 86-532-583-3793 e-mail: lirj@lsis.com.cn



Specifications in this catalog are subject to change without notice due to continuous product development and improvement.