



# LSLV Standard AC Drive **S100**

0.4~2.2kW(0.5~3HP) 1-Phase 200~240Volts  
0.4~15kW(0.5~20HP) 3-Phase 200~240Volts  
0.4~75kW(0.5~100HP) 3-Phase 380~480Volts  
IP66 NEMA4X 0.4~15kW(0.5~20HP) 3-Phase 200~240Volts  
IP66 NEMA4X 0.4~22kW(0.5~30HP) 3-Phase 380~480Volts



## LSIS

# Strong power with a compact size!

Powerful sensorless control, and a diverse range of user friendly functions delivers added value to our customers.

Meet the new standard drive LSLV-S100 by LSIS for the global market.



# High-Performance Standard Drive

## LSLV S100

Powerful performance



- Sensorless control functions
- Starting torque (200%/0.5Hz)

Space Efficient Design



- Side-by-side installation
- Decreased dimensions

Suitable for users



- Various field networks

Standard compliance



- Built-in EMC filter
- International Standards

Safety functions



- Built-in Safe Torque Off (STO)
- Redundant input circuit



Scan the QR code on your drive front and check the key use information

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# Specialized Features

## LSLV-S100 improves user convenience with smart copier.

### **S** Functions without power input

The drive does not need to be powered when using the smart copier.

### **S** LED lamp feedbacks

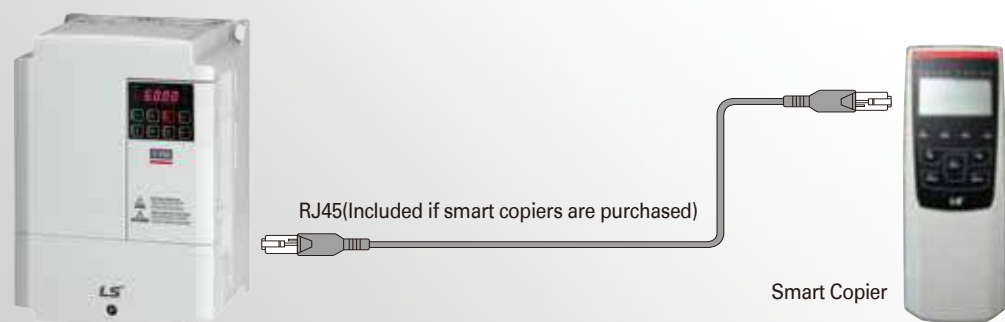
The run LED flickers during normal operation. The error LED flickers when events such as communication errors occur.

### **S** Read/Write function of parameters

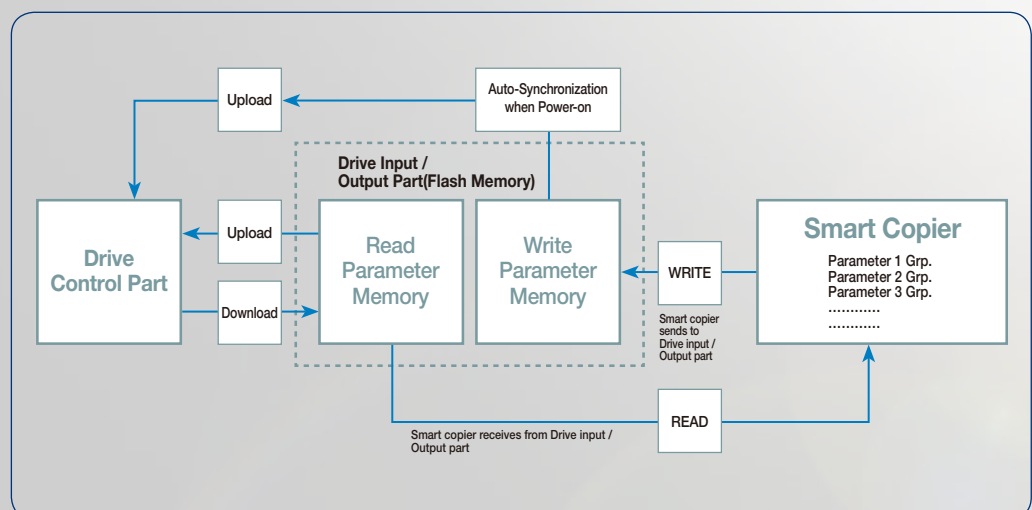
Parameters can be copied/loaded from the drive to the smart copier and vice versa, simply with the keypad.

### **S** Simple installation

Parameters saved in the smart copier can be downloaded to both the drive I/O and the control part.



## Smart Copier Flow Chart



※ Smart Copier will be available soon.





## S Main capacitor lifecycle estimation

Estimated through monitoring the change in the capacitance value.

## S Fan lifecycle estimation

Warning signal is displayed when fan is operated over a certain amount of hours.

## S P2P function embedded

I/O input and output can be shared among master and slave drives. (RS485 wiring required)

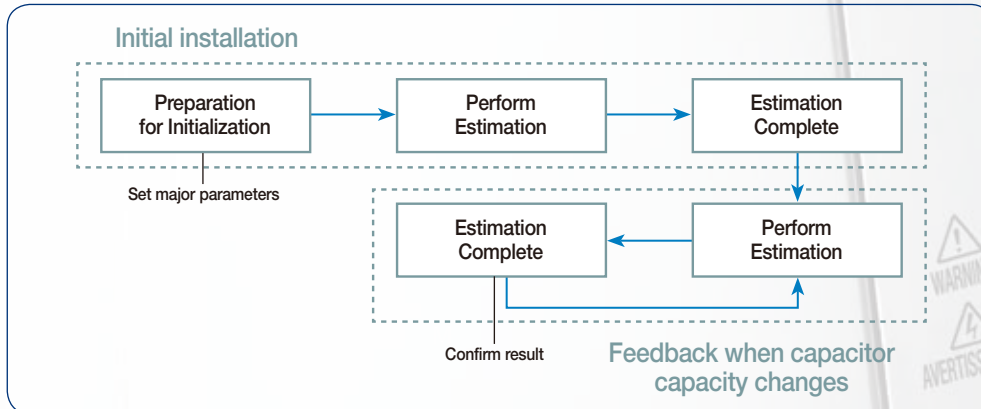
## S Multi keypad function

Multiple drives can be controlled and monitored with single keypad. (RS485 wiring required)

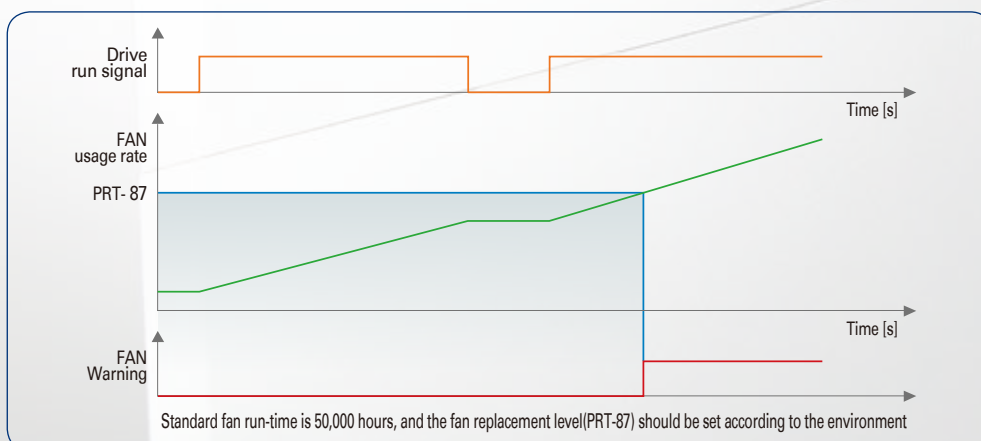
## S User sequence function

Simple PLC sequences can be operated with various function block combinations.

### ✦ Main capacitor lifecycle estimation



### ✦ Fan lifecycle estimation

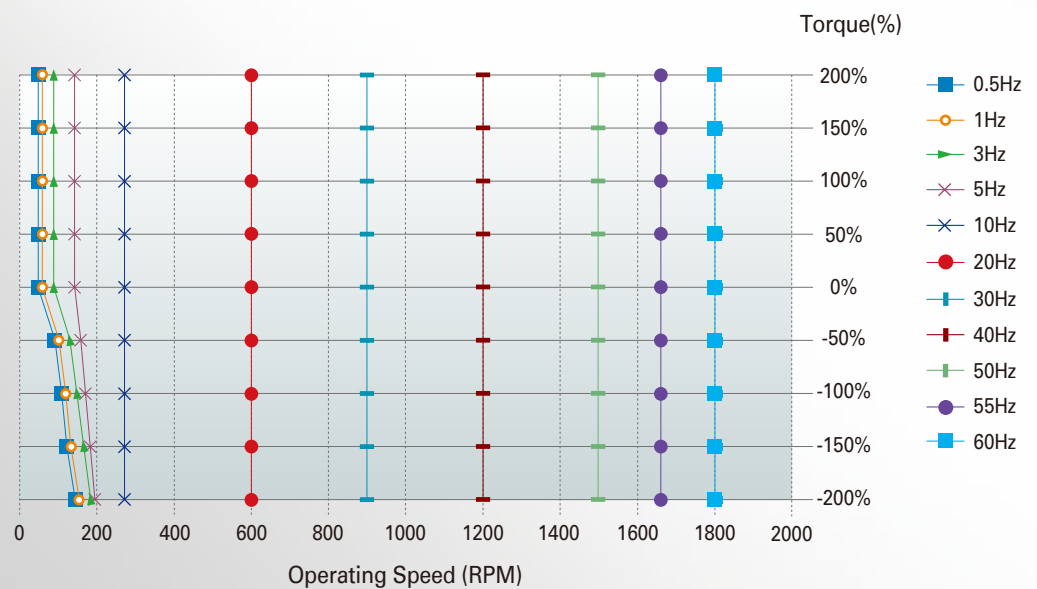


# Powerful performance

LSLV-S100 is a drive with enhanced sensorless control.

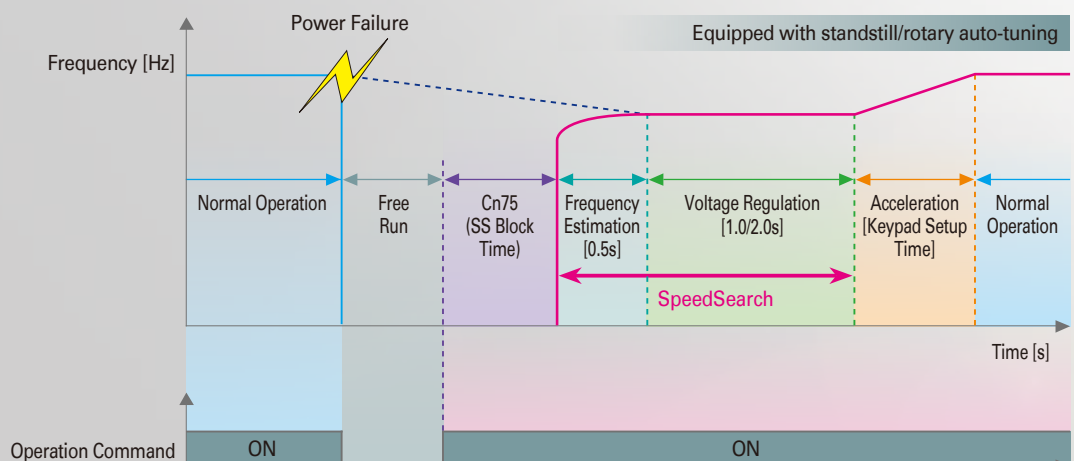
## S Powerful sensorless control

Starting torque of 200%/0.5Hz is produced and provides robust power in the low speed region. The motor auto-tuning function is optimized to maximize motor performance.



## S Flying start function

DRIVE CAPABLE OF QUICK RELIABLE SMOOTH RESTARTS INTO BI-DIRECTIONAL ROTATING LOADS.

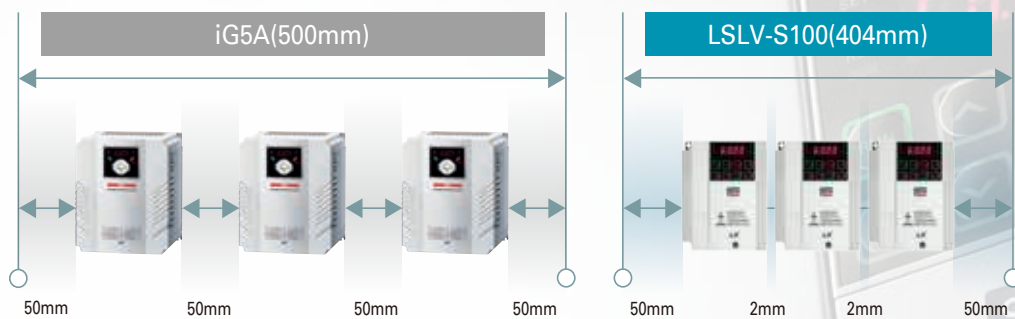


# Space Efficient Design

**LSLV-S100 increases efficiency of the control panel.**

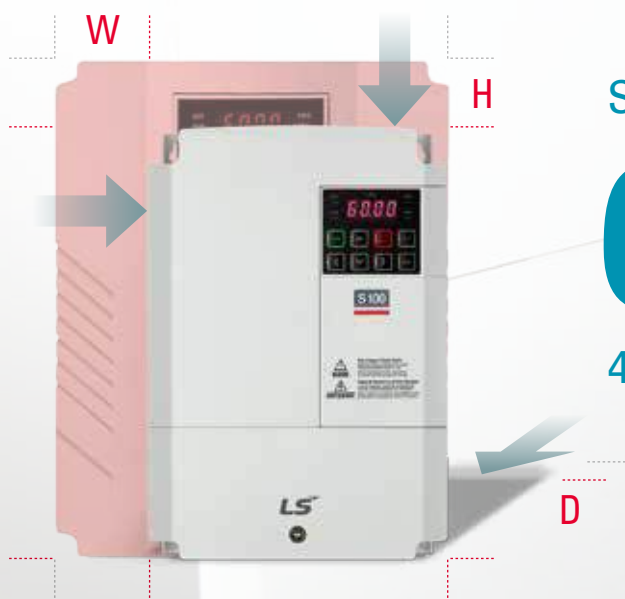
## S Side-by-Side installation

Minimized distance between drives enables panel size reduction for multiple drives installation.



## S Smaller size

Main components have been optimally designed through thermal analysis and 3D design to reduce the dimension up to 60% compared to iG5A.



Size Reduction

**60%**

400V 11kW Basis

# Suitable for Users

**LSLV-S100 offers a variety of customer conveniences to compete in the global market.**

## **S** Various field bus options Easy to install and use.

Possible to connect to a variety of fieldbus networks  
Easy maintenance and mounting

### **[Various field bus options]**

- ① Profibus-DP   ② Ethernet IP   ③ Modbus TCP   ④ CANopen  
⑤ EtherCAT   ⑥ PROFINET



## **S** Simple cooling fan replacement

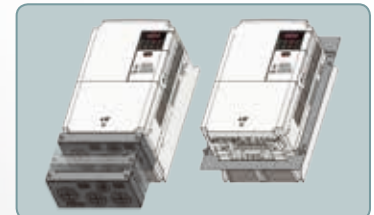
Replaceable fan without complete disassembly



## **S** Conduit kit

Acquired UL open type & enclosed type1 certification

- ※ UL open type is offered as default
- ※ UL enclosed type1 needs conduit kit(option) installation



## **S** Flange type

The heat sink can be mounted outside of the panel in case the space is limited.



## **S** Extension I/O option card

- Relay output: 2ea (NO/NC selectable)
- Digital input: 3ea (NPN/PNP selectable)
- Analog I/O: 2ea/1ea each

## **S** Multi-keypad function

Single LCD keypad can be used to set up the parameters of a RS485 connected drives.

- ※ LCD keypad (same as iS7 model) enables handy parameter set up.
- ※ Multi language support will be available.



Parameter change with a keypad.



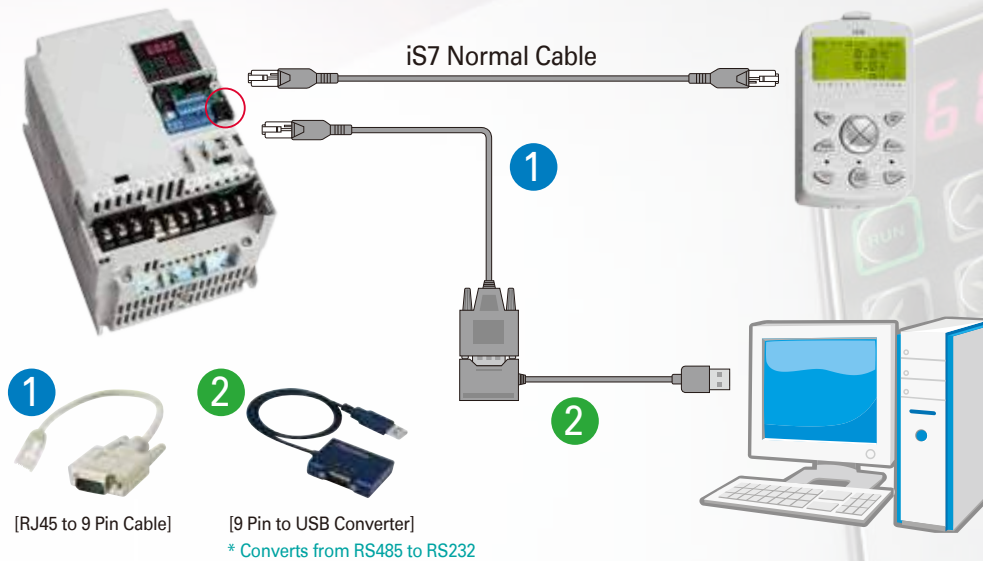
Built-in RS485





# Suitable for Users

## S DriveView7 connection with RJ45 port



※ Cable 1 needs to be purchased as an option.

※ Cable 2 is universal product which is not offered from LSIS





# Standard Compliance

**LSLV-S100 satisfies a diverse range of demands in the global market.**

## **S** Built-in DC reactor

Effective in improving power factor and decreasing THD.

※ 3-phase 400V 30~75kW

## **S** Built-in EMC filter

Meets the electrical noise reduction regulation.

Related standards: 2<sup>nd</sup> Environment / Category C3 (Class A) – CE standard is certified

※ 1-phase 200V 0.4~2.2kW (C2) / 3-phase 400V 0.4~45kW (C3)

## **S** Global compliance

Global standard compliance



## **S** Dual rating operation

Designed to be used for heavy and normal duty applications.

Overload capacity – Heavy duty operation: 150% of rated current, 60 seconds

– Normal duty operation: 120% of rated current, 60 seconds

※ Excludes IP66/NEMA 4X

## **S** Selectable rotary/standstill auto-tuning

Standstill or rotary auto-tuning options are available as standard to find motor constants with or without rotating the motor for optimized motor performance.



# Safety Function

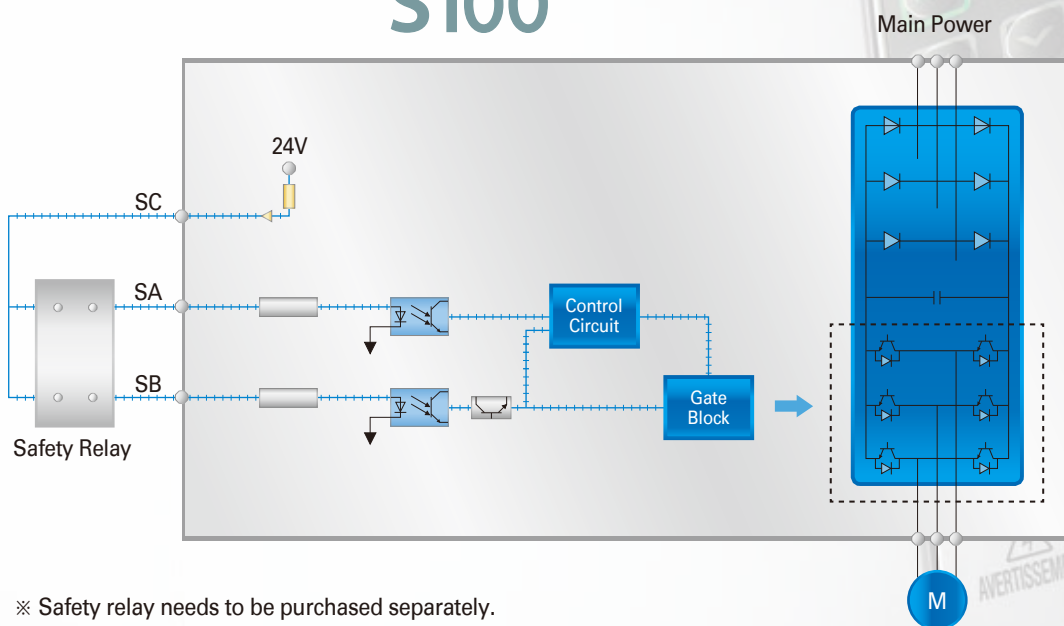
**LSLV-S100 has built-in safety functions suitable for modern safety standards.**

## **S** Built-in Safe Torque Off(STO)

The Safety input function meets EN ISO 13849-1 PLd and EN 61508 SIL2 (EN60204-1, stop category 0). This feature is standard and enables compliance with current safety standards.

## Redundant input circuit

# S100



※ Safety relay needs to be purchased separately.



**NEW**





# The drive for harsh ambient conditions.

## LSLV-S100 IP66/NEMA 4X Series

Protected against foreign substances such as fine dust and high pressure water spray.

- Satisfies NEMA standard type 4X for indoor use.
- Satisfies IEC 60529 standard IP66
- 200/400V 0.4~22kW



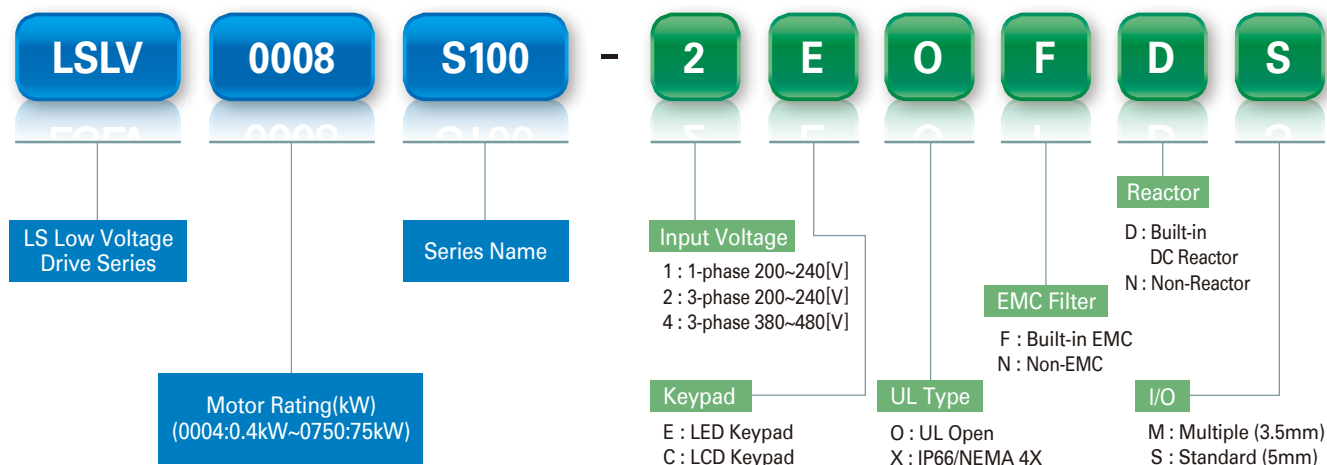
# IP66/NEMA 4X

Standard I/O

| Motor Rating | 1-Phase 200V          | 3-Phase 200V        |                     | 3-Phase 400V          |                     |
|--------------|-----------------------|---------------------|---------------------|-----------------------|---------------------|
|              | IP20                  | IP20                | IP66                | IP20                  | IP66                |
| 0.4 kW       | LSLV0004S100-1EO(F)NS | LSLV0004S100-2EONNS | LSLV0004S100-2EXNNS | LSLV0004S100-4EO(F)NS | LSLV0004S100-4EXFNS |
| 0.75 kW      | LSLV0008S100-1EO(F)NS | LSLV0008S100-2EONNS | LSLV0008S100-2EXNNS | LSLV0008S100-4EO(F)NS | LSLV0008S100-4EXFNS |
| 1.5 kW       | LSLV0015S100-1EO(F)NS | LSLV0015S100-2EONNS | LSLV0015S100-2EXNNS | LSLV0015S100-4EO(F)NS | LSLV0015S100-4EXFNS |
| 2.2 kW       | LSLV0022S100-1EO(F)NS | LSLV0022S100-2EONNS | LSLV0022S100-2EXNNS | LSLV0022S100-4EO(F)NS | LSLV0022S100-4EXFNS |
| 3.7 kW       |                       | LSLV0037S100-2EONNS | LSLV0037S100-2EXNNS | LSLV0037S100-4EO(F)NS | LSLV0037S100-4EXFNS |
| 4.0 kW       |                       | LSLV0040S100-2EONNS | LSLV0040S100-2EXNNS | LSLV0040S100-4EO(F)NS | LSLV0040S100-4EXFNS |
| 5.5 kW       |                       | LSLV0055S100-2EONNS | LSLV0055S100-2EXNNS | LSLV0055S100-4EO(F)NS | LSLV0055S100-4EXFNS |
| 7.5 kW       |                       | LSLV0075S100-2EONNS | LSLV0075S100-2EXNNS | LSLV0075S100-4EO(F)NS | LSLV0075S100-4EXFNS |
| 11 kW        |                       | LSLV0110S100-2EONNS | LSLV0110S100-2EXNNS | LSLV0110S100-4EO(F)NS | LSLV0110S100-4EXFNS |
| 15 kW        |                       | LSLV0150S100-2EONNS | LSLV0150S100-2EXNNS | LSLV0150S100-4EO(F)NS | LSLV0150S100-4EXFNS |
| 18.5 kW      |                       |                     |                     | LSLV0185S100-4EO(F)NS | LSLV0185S100-4EXFNS |
| 22 kW        |                       |                     |                     | LSLV0220S100-4EO(F)NS | LSLV0220S100-4EXFNS |
| 30 kW        |                       |                     |                     | LSLV0300S100-4CO(F)DS |                     |
| 37 kW        |                       |                     |                     | LSLV0370S100-4CO(F)DS |                     |
| 45 kW        |                       |                     |                     | LSLV0450S100-4CO(F)DS |                     |
| 55 kW        |                       |                     |                     | LSLV0550S100-4CONDS   |                     |
| 75 kW        |                       |                     |                     | LSLV0750S100-4CONDS   |                     |

※ (F): Built-in EMC or Non-EMC type selectable

※ 55~75kW satisfies EMC class 3

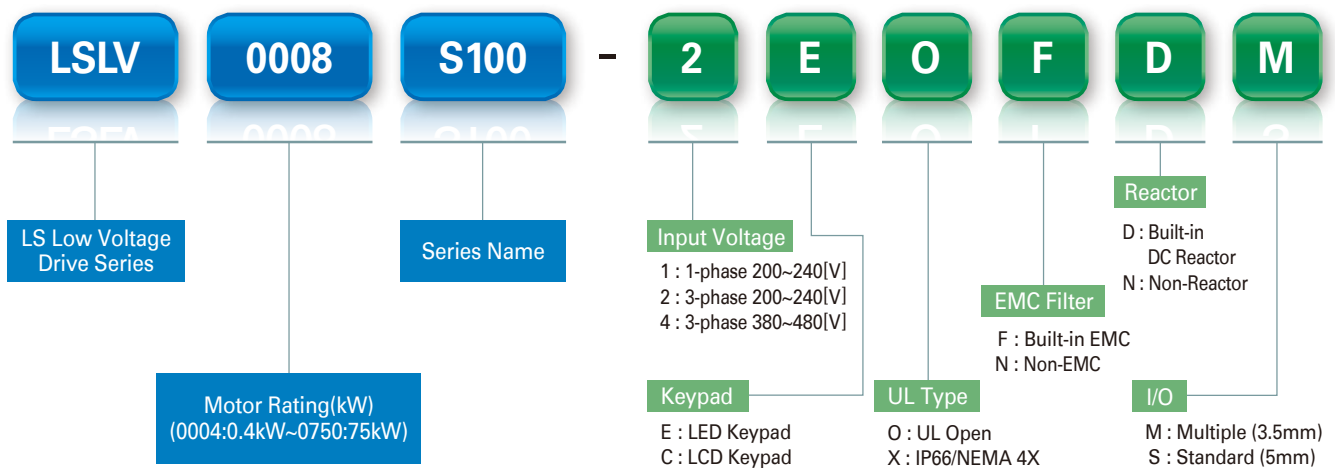


## Multiple I/O

| Motor Rating | 1-Phase 200V          | 3-Phase 200V        |                     | 3-Phase 400V          |                     |
|--------------|-----------------------|---------------------|---------------------|-----------------------|---------------------|
|              | IP20                  | IP20                | IP66 <sup>1)</sup>  | IP20                  | IP66 <sup>1)</sup>  |
| 0.4 kW       | LSLV0004S100-1EO(F)NM | LSLV0004S100-2EONNM | LSLV0004S100-2EXNNM | LSLV0004S100-4EO(F)NM | LSLV0004S100-4EXFNM |
| 0.75 kW      | LSLV0008S100-1EO(F)NM | LSLV0008S100-2EONNM | LSLV0008S100-2EXNNM | LSLV0008S100-4EO(F)NM | LSLV0008S100-4EXFNM |
| 1.5 kW       | LSLV0015S100-1EO(F)NM | LSLV0015S100-2EONNM | LSLV0015S100-2EXNNM | LSLV0015S100-4EO(F)NM | LSLV0015S100-4EXFNM |
| 2.2 kW       | LSLV0022S100-1EO(F)NM | LSLV0022S100-2EONNM | LSLV0022S100-2EXNNM | LSLV0022S100-4EO(F)NM | LSLV0022S100-4EXFNM |
| 3.7 kW       |                       | LSLV0037S100-2EONNM | LSLV0037S100-2EXNNM | LSLV0037S100-4EO(F)NM | LSLV0037S100-4EXFNM |
| 4.0 kW       |                       | LSLV0040S100-2EONNM | LSLV0040S100-2EXNNM | LSLV0040S100-4EO(F)NM | LSLV0040S100-4EXFNM |
| 5.5 kW       |                       | LSLV0055S100-2EONNM | LSLV0055S100-2EXNNM | LSLV0055S100-4EO(F)NM | LSLV0055S100-4EXFNM |
| 7.5 kW       |                       | LSLV0075S100-2EONNM | LSLV0075S100-2EXNNM | LSLV0075S100-4EO(F)NM | LSLV0075S100-4EXFNM |
| 11 kW        |                       | LSLV0110S100-2EONNM | LSLV0110S100-2EXNNM | LSLV0110S100-4EO(F)NM | LSLV0110S100-4EXFNM |
| 15 kW        |                       | LSLV0150S100-2EONNM | LSLV0150S100-2EXNNM | LSLV0150S100-4EO(F)NM | LSLV0150S100-4EXFNM |
| 18.5 kW      |                       |                     |                     | LSLV0185S100-4EO(F)NM | LSLV0185S100-4EXFNM |
| 22 kW        |                       |                     |                     | LSLV0220S100-4EO(F)NM | LSLV0220S100-4EXFNM |

※ 1) Extension I/O option needs to be purchased separately

※ (F): Built-in EMC or Non-EMC type selectable



### ❖ 1-Phase 200V (0.4~2.2kW)

| LSLV □□□□ S100-1 □□□□□        |                      |                 | 0004                               | 0008          | 0015          | 0022          |
|-------------------------------|----------------------|-----------------|------------------------------------|---------------|---------------|---------------|
| Motor<br>Rating               | Heavy<br>Duty(HD)    | HP              | 0.5                                | 1.0           | 2.0           | 3.0           |
|                               |                      | kW              | 0.4                                | 0.75          | 1.5           | 2.2           |
|                               | Normal<br>Duty(ND)   | HP              | 1.0                                | 2.0           | 3.0           | 5.0           |
|                               |                      | kW              | 0.75                               | 1.5           | 2.2           | 3.7           |
| Output<br>Rating              | Capacity<br>[kVA]    | Heavy Duty(HD)  | 1.0                                | 1.9           | 3.0           | 4.2           |
|                               |                      | Normal Duty(ND) | 1.2                                | 2.3           | 3.8           | 4.6           |
|                               | Rated<br>Current     | Heavy Duty(HD)  | 2.5                                | 5.0           | 8.0           | 11.0          |
|                               |                      | Normal Duty(ND) | 3.1                                | 6.0           | 9.6           | 12.0          |
|                               | Frequency [Hz]       |                 | 0~400Hz (IM Sensorless: 0~120[Hz]) |               |               |               |
|                               | Voltage [V]          |                 | 3-phase 200~240V                   |               |               |               |
| Input<br>Rating               | Voltage [V]          |                 | 1-phase 200~240VAC (-15% ~ +10%)   |               |               |               |
|                               | Frequency [Hz]       |                 | 50~60Hz(±5%)                       |               |               |               |
|                               | Rated<br>Current [A] | Heavy Duty(HD)  | 4.4                                | 9.3           | 15.6          | 21.7          |
|                               |                      | Normal Duty(ND) | 5.8                                | 11.7          | 19.7          | 24.0          |
| Weight [kg]<br>(Built-in EMC) |                      |                 | 0.9<br>(1.14)                      | 1.3<br>(1.76) | 1.5<br>(1.76) | 2.0<br>(2.22) |

### ❖ 3-Phase 200V (0.4~15kW)

| LSLV □□□□ S100-2 □□□□□               |                      |                 | 0004                               | 0008 | 0015 | 0022 | 0037 | 0040 | 0055     | 0075     | 0110     | 0150     |
|--------------------------------------|----------------------|-----------------|------------------------------------|------|------|------|------|------|----------|----------|----------|----------|
| Motor<br>Rating                      | Heavy<br>Duty(HD)    | HP              | 0.5                                | 1.0  | 2.0  | 3.0  | 5.0  | 5.4  | 7.5      | 10.0     | 15.0     | 20.0     |
|                                      |                      | kW              | 0.4                                | 0.75 | 1.5  | 2.2  | 3.7  | 4.0  | 5.5      | 7.5      | 11.0     | 15.0     |
|                                      | Normal<br>Duty(ND)   | HP              | 1.0                                | 2.0  | 3.0  | 5.0  | 5.4  | 7.5  | 10.0     | 15.0     | 20.0     | 25.0     |
|                                      |                      | kW              | 0.75                               | 1.5  | 2.2  | 3.7  | 4.0  | 5.5  | 7.5      | 11.0     | 15.0     | 18.5     |
| Output<br>Rating                     | Capacity<br>[kVA]    | Heavy Duty(HD)  | 1.0                                | 1.9  | 3.0  | 4.2  | 6.1  | 6.5  | 9.1      | 12.2     | 17.5     | 22.9     |
|                                      |                      | Normal Duty(ND) | 1.2                                | 2.3  | 3.8  | 4.6  | 6.9  | 6.9  | 11.4     | 15.2     | 21.3     | 26.3     |
|                                      | Rated<br>Current     | Heavy Duty(HD)  | 2.5                                | 5.0  | 8.0  | 11.0 | 16.0 | 17.0 | 24.0     | 32.0     | 46.0     | 60.0     |
|                                      |                      | Normal Duty(ND) | 3.1                                | 6.0  | 9.6  | 12.0 | 18.0 | 18.0 | 30.0     | 40.0     | 56.0     | 69.0     |
|                                      | Frequency [Hz]       |                 | 0~400Hz (IM Sensorless: 0~120[Hz]) |      |      |      |      |      |          |          |          |          |
|                                      | Voltage [V]          |                 | 3-phase 200~240V                   |      |      |      |      |      |          |          |          |          |
|                                      |                      |                 |                                    |      |      |      |      |      |          |          |          |          |
| Input<br>Rating                      | Voltage [V]          |                 | 3-phase 200~240VAC (-15% ~ +10%)   |      |      |      |      |      |          |          |          |          |
|                                      | Frequency [Hz]       |                 | 50~60Hz(±5%)                       |      |      |      |      |      |          |          |          |          |
|                                      | Rated<br>Current [A] | Heavy Duty(HD)  | 2.2                                | 4.9  | 8.4  | 11.8 | 17.5 | 18.5 | 25.8     | 34.9     | 50.8     | 66.7     |
|                                      |                      | Normal Duty(ND) | 3.0                                | 6.3  | 10.8 | 13.1 | 19.4 | 19.4 | 32.7     | 44.2     | 62.3     | 77.2     |
| Weight [kg]<br>(Non EMC Filter type) |                      |                 | 0.9                                | 0.9  | 1.3  | 1.5  | 2.0  | 2.0  | 3.3(3.1) | 3.3(3.1) | 4.6(4.4) | 7.1(6.9) |

\* Maximum applicable capacity is indicated in case of using a 4-pole standard motor (200 and 400V classes are based on 220 and 440V, respectively).

\* For the rated capacity, 200 and 400V class input capacities are based on 220 and 440V, respectively.

\* The rated output current is limited depending on the setup of carrier frequency (CN-04).

\* The output voltage becomes 20~40% lower during no-load operations to protect the drive from the impact of the motor closing and opening (0.4~4.0kW models only).

\* Dual rating is supported except IP66/NEMA 4X



### 3-Phase 400V (0.4~22kW)

| LSLV □□□□ S100-4 □□□□□                              |                   |                 | 0004                               | 0008          | 0015          | 0022          | 0037          | 0040          | 0055         | 0075         | 0110         | 0150         | 0185         | 0220         |  |
|---|-------------------|-----------------|------------------------------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--|
| Motor Rating  | Heavy Duty(HD)    | HP              | 0.5                                | 1.0           | 2.0           | 3.0           | 5.0           | 5.4           | 7.5          | 10.0         | 15.0         | 20.0         | 25.0         | 30.0         |  |
|   |                   | kW              | 0.4                                | 0.75          | 1.5           | 2.2           | 3.7           | 4.0           | 5.5          | 7.5          | 11.0         | 15.0         | 18.5         | 22.0         |  |
|   | Normal Duty(ND)   | HP              | 1.0                                | 2.0           | 3.0           | 5.0           | 5.4           | 7.5           | 10.0         | 15.0         | 20.0         | 25.0         | 30.0         | 40.0         |  |
|   |                   | kW              | 0.75                               | 1.5           | 2.2           | 3.7           | 4.0           | 5.5           | 7.5          | 11.0         | 15.0         | 18.5         | 22.0         | 30.0         |  |
| Output Rating                                       | Capacity [kVA]    | Heavy Duty(HD)  | 1.0                                | 1.9           | 3.0           | 4.2           | 6.1           | 6.9           | 9.1          | 12.2         | 18.3         | 22.9         | 29.7         | 34.3         |  |
|   |                   | Normal Duty(ND) | 1.5                                | 2.4           | 3.9           | 5.3           | 7.6           | 7.6           | 12.2         | 17.5         | 22.9         | 29.0         | 33.5         | 44.2         |  |
|   | Rated Current     | Heavy Duty(HD)  | 1.3                                | 2.5           | 4.0           | 5.5           | 8.0           | 9.0           | 12.0         | 16.0         | 24.0         | 30.0         | 39.0         | 45.0         |  |
|   |                   | Normal Duty(ND) | 2.0                                | 3.1           | 5.1           | 6.9           | 10.0          | 10.0          | 16.0         | 23.0         | 30.0         | 38.0         | 44.0         | 58.0         |  |
|   | Frequency [Hz]    |                 | 0~400Hz (IM Sensorless: 0~120[Hz]) |               |               |               |               |               |              |              |              |              |              |              |  |
|   | Voltage [V]       |                 | 3-phase 380~480V                   |               |               |               |               |               |              |              |              |              |              |              |  |
| Input Rating  | Voltage [V]       |                 | 3-phase 380~480VAC (-15% ~ +10%)   |               |               |               |               |               |              |              |              |              |              |              |  |
|   | Frequency [Hz]    |                 | 50~60Hz(±5%)                       |               |               |               |               |               |              |              |              |              |              |              |  |
|   | Rated Current [A] | Heavy Duty(HD)  | 1.1                                | 2.4           | 4.2           | 5.9           | 8.7           | 9.8           | 12.9         | 17.5         | 26.5         | 33.4         | 43.6         | 50.7         |  |
|   |                   | Normal Duty(ND) | 2.0                                | 3.3           | 5.5           | 7.5           | 10.8          | 10.8          | 17.5         | 25.4         | 33.4         | 42.5         | 49.5         | 65.7         |  |
| Weight [kg]<br>(Built-in EMC / Non EMC Filter type) |                   |                 | 0.9<br>(1.18)                      | 0.9<br>(1.18) | 1.3<br>(1.77) | 1.5<br>(1.80) | 2.0<br>(2.23) | 2.0<br>(2.23) | 3.3<br>(3.1) | 3.4<br>(3.2) | 4.6<br>(4.4) | 4.8<br>(4.6) | 7.5<br>(7.3) | 7.5<br>(7.3) |  |

### 3-Phase 400V (30~75kW)

| LSLV □□□□ S100-4 □□□□□ |                   |                 | 0300                               | 0370 | 0450  | 0550  | 0750  |
|------------------------|-------------------|-----------------|------------------------------------|------|-------|-------|-------|
| Motor Rating           | Heavy Duty(HD)    | HP              | 40.0                               | 50.0 | 60.0  | 75.0  | 100.0 |
|                        |                   | kW              | 30.0                               | 37.0 | 45.0  | 55.0  | 75.0  |
|                        | Normal Duty(ND)   | HP              | 50.0                               | 60.0 | 75.0  | 100.0 | 120.0 |
|                        |                   | kW              | 37.0                               | 45.0 | 55.0  | 75.0  | 90.0  |
| Output Rating          | Capacity [kVA]    | Heavy Duty(HD)  | 46.5                               | 57.2 | 69.4  | 83.8  | 115.8 |
|                        |                   | Normal Duty(ND) | 57.2                               | 69.4 | 81.5  | 108.2 | 128.8 |
|                        | Rated Current     | Heavy Duty(HD)  | 61.0                               | 75.0 | 91.0  | 110.0 | 152.0 |
|                        |                   | Normal Duty(ND) | 75.0                               | 91.0 | 107.0 | 142.0 | 169.0 |
|                        | Frequency [Hz]    |                 | 0~400Hz (IM Sensorless: 0~120[Hz]) |      |       |       |       |
|                        | Voltage [V]       |                 | 3-phase 380~480V                   |      |       |       |       |
| Input Rating           | Voltage [V]       |                 | 3-phase 380~480VAC (-15% ~ +10%)   |      |       |       |       |
|                        | Frequency [Hz]    |                 | 50~60Hz(±5%)                       |      |       |       |       |
|                        | Rated Current [A] | Heavy Duty(HD)  | 56.0                               | 69.0 | 85.0  | 103.0 | 143.0 |
|                        |                   | Normal Duty(ND) | 69.0                               | 85.0 | 100.0 | 134.0 | 160.0 |
| Weight [kg]            |                   |                 | 25.8                               | 34.4 | 34.4  | 41.8  | 43.8  |

\* Maximum applicable capacity is indicated in case of using a 4-pole standard motor (200 and 400V classes are based on 220 and 440V, respectively).

\* For the rated capacity, 200 and 400V class input capacities are based on 220 and 440V, respectively.

\* The rated output current is limited depending on the setup of carrier frequency (CN-04).

\* The output voltage becomes 20~40% lower during no-load operations to protect the drive from the impact of the motor closing and opening (0.4~4.0kW models only).

\* Dual rating is supported except IP66/NEMA 4X

## Control

|                              |  |
|------------------------------|--|
| Control Method               | V/f, Slip compensation, Sensorless vector <sup>1)</sup>                    |
| Frequency Setting Resolution | Digital command: 0.01Hz / Analog command: 0.06Hz (maximum frequency: 60Hz) |
| Frequency Accuracy           | 1% of the maximum output frequency   |
| V/F Pattern                  | Linear, Squared, User V/F  |
| Overload Capacity            | HD: 150% 1 minute, ND: 120% 1 minute                                       |
| Torque Boost                 | Manual/Automatic torque boost  |

<sup>1)</sup> REQUEST - LSIS SALES PERSON FOR PM SENSORLESS FUNCTION.

## Operation

|                    |   |  |
|--------------------|---|--|
| Operation Mode     | Keypad / Terminal / Communication option selectable   |  |
| Frequency Setting  | Analog: -10~10[V], 0~10[V], 4~20[mA] / Digital: Keypad, Pulse train input   |  |
| Operation Function | PID control, 3-wire operation, Frequency limit, Second function, Anti-forward and reverse direction rotation, Commercial transition, Speed search, Power braking, Leakage reduction, Up-down operation, DC braking, Frequency jump, Slip compensation, Automatic restart, Automatic tuning, Energy buffering, Flux braking, Fire Mode |  |
| Input              | NPN (Sink) / PNP (Source) Selectable  |  |
|                    | Multi-function Terminal<br>Standard I/O (5 points)<br>Multiple I/O (7 points)   | Function: Forward run, Reverse run, Reset, External trip, Emergency stop, Jog operation, Multi-step frequency-high, middle, low, Multi-step acceleration/ deceleration-high, middle, low, DC braking at stop, 2nd motor select, Frequency up/down, 3-wire operation, Change into normal operation during PID operation, Change into main body operation during option operation, Analog command frequency fixing, Acceleration/deceleration stop etc. Selectable |
|                    | Analog Input  | V1: -10~10V, selectable V2: 0~10V/I2 4~20mA  |
|                    | Pulse Train   | 0~32kHz, Low level: 0~2.5V, High level: 3.5~12V  |
| Output             | Open Collector Terminal   | Fault output and drive operation status output   |
|                    | Multi-function Relay  | less than DC 24V 50mA<br>(N.O., N.C.) less than AC 250V 1A, less than DC 30V 1A  |
|                    | Analog Output   | Selectable 0~12Vdc/0~24mA Frequency, Output current, Output voltage, DC stage voltage etc. selectable  |
|                    | Pulse Train   | Maximum 32kHz, 10~12 [V]   |

## Protective Function

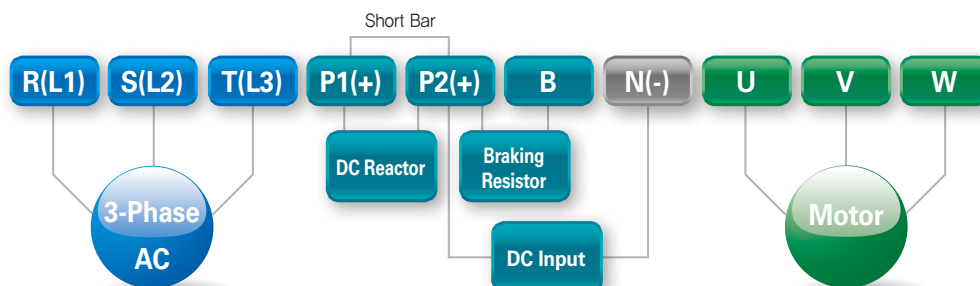
|                      |   |
|----------------------|---|
| Trip                 | Over current trip, External signal trip, ARM short circuit current trip, Over heat trip, Input imaging trip, Ground trip, Motor over heat trip, I/O board link trip, No motor trip, Parameter writing trip, Emergency stop trip, Command loss trip, External memory error, CPU watchdog trip, Motor normal load trip, Over voltage trip, Temperature sensor trip, Drive over heat, Option trip, Output imaging trip, Drive overload trip, Fan trip, Pre-PID operation failure, External break trip, Low voltage trip during operation, Low voltage trip, Safety A(B) trip, Analog input error, Motor overload trip, |
| Alarm                | Command loss trip alarm, overload alarm, normal load alarm, drive overload alarm, fan operation alarm, resistance braking rate alarm, number of corrections on rotor tuning error   |
| Momentary Power Loss | HD below 15ms (ND below 8ms): Continuous operation (To be within rated input voltage, rated output)<br>HD above 15ms (ND above 8ms): Automatic restart operation enable   |

## Environment

|                     |   |
|---------------------|---|
| Cooling Type        | Forced fan cooling structure<br>Forced cooling type: 0.4~15 kW 200V/0.4~75 kW 400V (excluding some models)  |
| Protection Degree   | IP20/UL Open (Default), UL Enclosed Type 1 (Option), IP66/NEMA 4X (Option)  |
| Ambient Temperature | Ambient temperature under the condition of no ice or frost. HD: -10~50°C(14~122°F) / ND: -10~40°C(14~104°F)<br>[However, recommended to use load below 80% when using at 50°C under light load] |
| Storage Temperature | -20~65°C(-4~149°F)  |
| Humidity            | Relative humidity below 95% RH (no dew formation)   |
| Altitude, Vibration | Below 1,000m (From 1000 to 4000m, the rated input voltage and rated output current of the drive must be derated by 1% for every 100m.), below 9.8m/sec <sup>2</sup> (1G)                        |
| Location            | No corrosive gas, flammable gas, oil mist and dust etc. indoors (Pollution Degree 3 Environment)  |
| Pressure            | 70~106 kPa  |

## Control Terminal Specifications

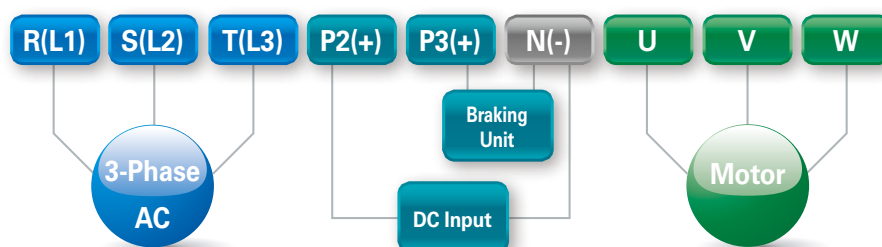
### 0.4~22kW



※ SHORT BAR SHOULD BE REMOVED WHEN WIRING DC REACTOR.

※ 1-PHASE 200V 0.4kW, 3-PHASE 200/400V 0.4~0.75kW : SHORT BAR OR DC REACTOR SHOULD BE CONNECTED.

### 30~75kW

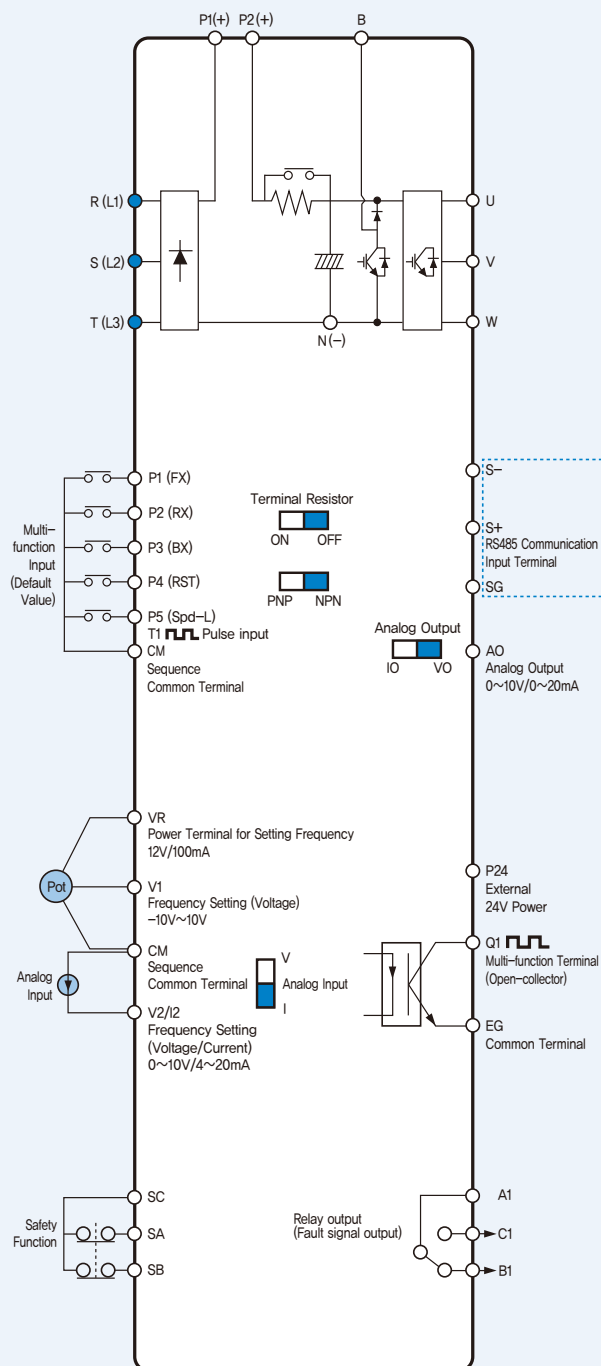


| Drive Model  |          | Screw | 1) Torque<br>Kg $\cdot$ cm | 2) Wire |       |       |       |
|--------------|----------|-------|----------------------------|---------|-------|-------|-------|
|              |          |       |                            | mm2     |       | AWG   |       |
|              |          |       |                            | R.S.T   | U.V.W | R.S.T | U.V.W |
| 200V 1-phase | 0.4 kW   | M3.5  | 2.1 ~ 6.1                  | 2       | 2     | 14    | 14    |
|              | 0.75 kW  | M3.5  | 2.1 ~ 6.1                  | 2       | 2     | 14    | 14    |
|              | 1.5 kW   | M3.5  | 2.1 ~ 6.1                  | 2       | 2     | 14    | 14    |
|              | 2.2kW    | M4    | 2.1 ~ 6.1                  | 3.5     | 3.5   | 12    | 12    |
| 200V 3-phase | 0.4 kW   | M3.5  | 2.1 ~ 6.1                  | 2       | 2     | 14    | 14    |
|              | 0.75 kW  | M3.5  | 2.1 ~ 6.1                  | 2       | 2     | 14    | 14    |
|              | 1.5 kW   | M3.5  | 2.1 ~ 6.1                  | 2       | 2     | 14    | 14    |
|              | 2.2 kW   | M3.5  | 2.1 ~ 6.1                  | 2       | 2     | 14    | 14    |
|              | 3.7 kW   | M4    | 2.1 ~ 6.1                  | 3.5     | 3.5   | 12    | 12    |
|              | 4 kW     | M4    | 2.1 ~ 6.1                  | 3.5     | 3.5   | 12    | 12    |
|              | 5.5 kW   | M4    | 2.1 ~ 6.1                  | 6       | 6     | 10    | 10    |
|              | 7.5 kW   | M4    | 2.1 ~ 6.1                  | 6       | 6     | 10    | 10    |
|              | 11 kW    | M5    | 4.0 ~ 10.2                 | 10      | 10    | 8     | 8     |
|              | 15 kW    | M5    | 4.0 ~ 10.2                 | 16      | 16    | 6     | 6     |
| 400V 3-phase | 0.4 kW   | M3.5  | 2.1 ~ 6.1                  | 2       | 2     | 14    | 14    |
|              | 0.75 kW  | M3.5  | 2.1 ~ 6.1                  | 2       | 2     | 14    | 14    |
|              | 1.5 kW   | M3.5  | 2.1 ~ 6.1                  | 2       | 2     | 14    | 14    |
|              | 2.2 kW   | M3.5  | 2.1 ~ 6.1                  | 2       | 2     | 14    | 14    |
|              | 3.7 kW   | M4    | 2.1 ~ 6.1                  | 2       | 2     | 14    | 14    |
|              | 4 kW     | M4    | 2.1 ~ 6.1                  | 2       | 2     | 14    | 14    |
|              | 5.5 kW   | M4    | 2.1 ~ 6.1                  | 2.5     | 2.5   | 14    | 14    |
|              | 7.5 kW   | M4    | 2.1 ~ 6.1                  | 4       | 4     | 12    | 12    |
|              | 11 kW    | M5    | 4.0 ~ 10.2                 | 4       | 4     | 12    | 12    |
|              | 15 kW    | M5    | 4.0 ~ 10.2                 | 6       | 6     | 10    | 10    |
|              | 18.5 kW  | M5    | 4.0 ~ 10.2                 | 10      | 10    | 8     | 8     |
|              | 22 kW    | M5    | 4.0 ~ 10.2                 | 10      | 10    | 8     | 8     |
|              | 30~37 kW | M8    | 61.2 ~ 91.8                | 25      | 25    | 4     | 4     |
|              | 45~75 kW | M8    | 61.2 ~ 91.8                | 70      | 70    | 1/0   | 1/0   |

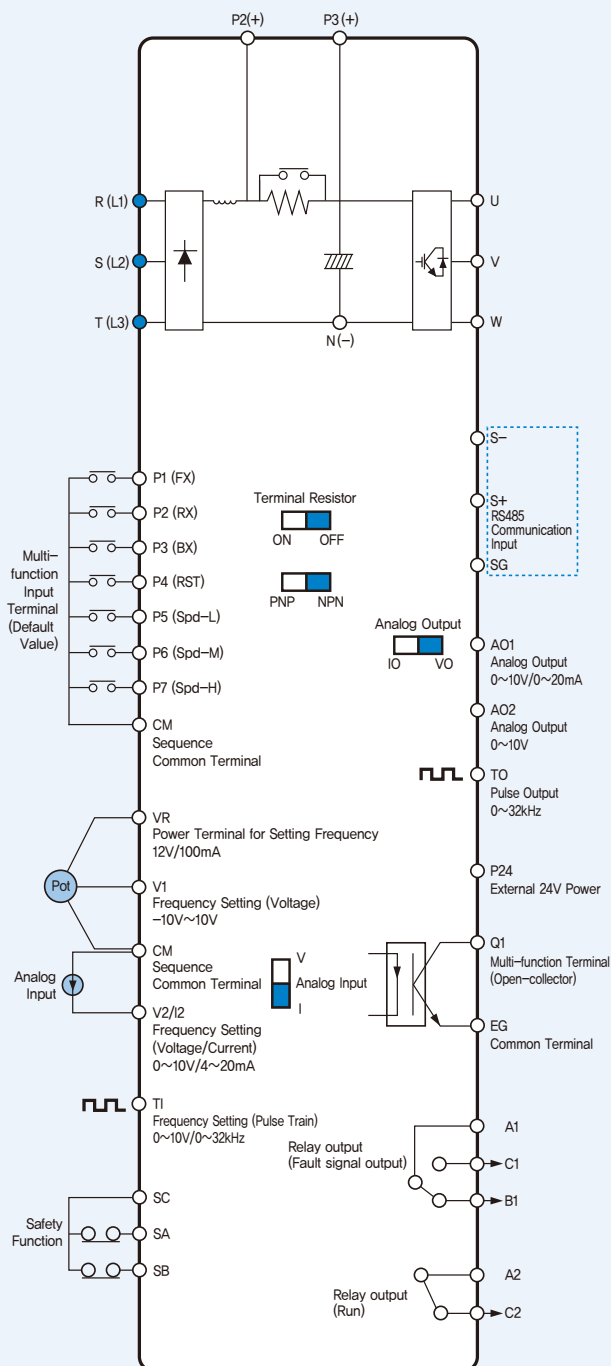
1) Only use the specified torque on the screw heads otherwise damage could occur. Loose screws can cause overheating and damage.

2) Use copper wires with 600V, 75°C specification.

[0.4~22kW]



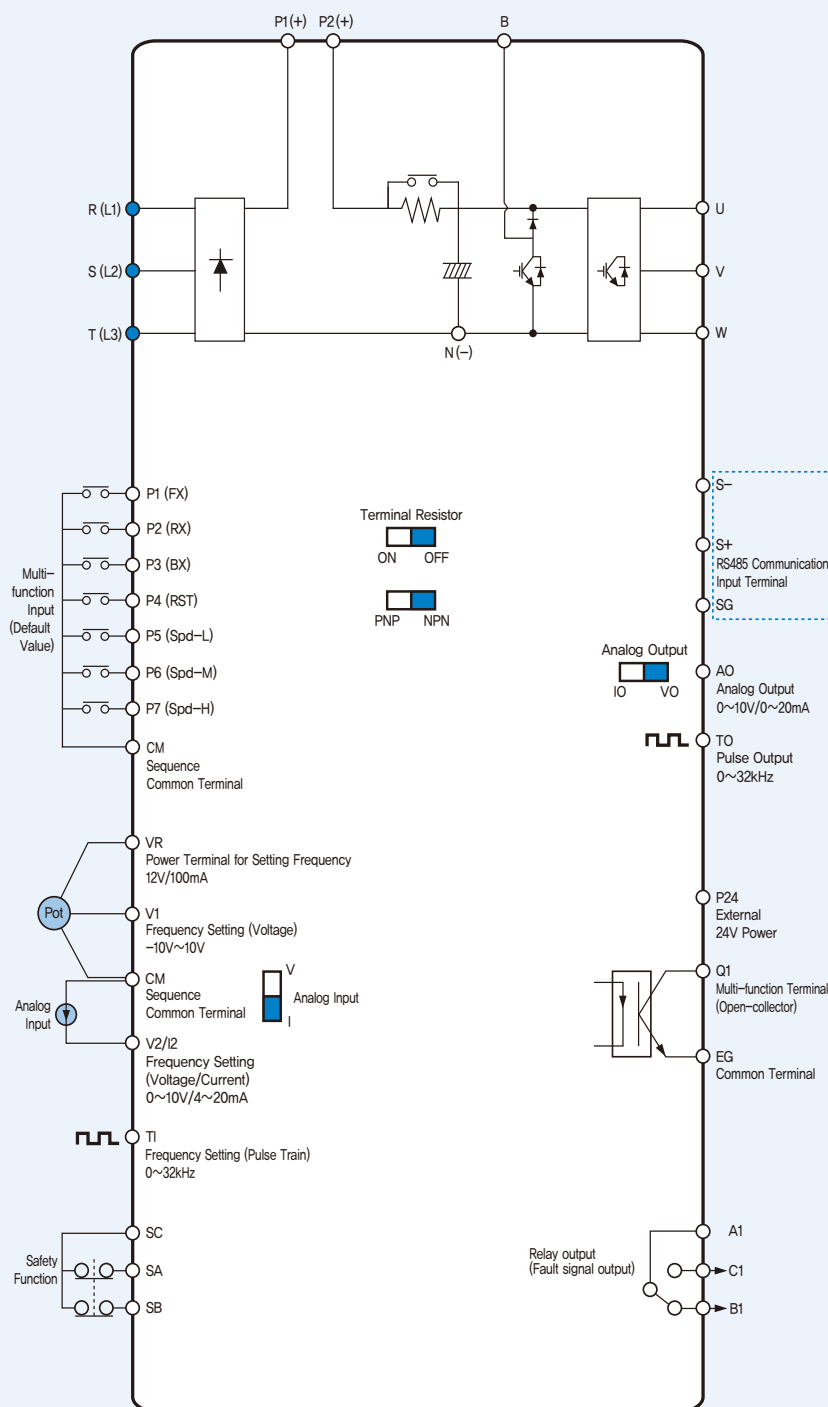
[30~75kW]



※ Default is marked in blue.



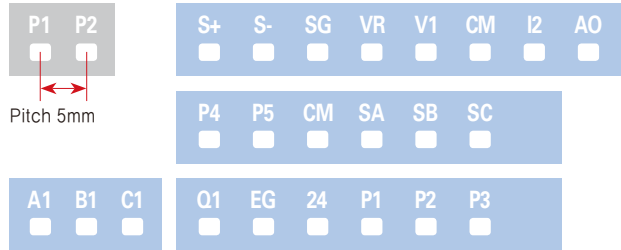
[0.4~22kW]



※ Default is marked in blue.

## Standard I/O

### 0.4~22kW



※ LSLV-S100 can be supplied with either standard I/O or multiple I/O

## Multiple I/O

### 0.4~22kW



## Standard I/O

### 30~75kW



※ I/O board is supplied built in. IS7 LCD loader can be mounted on the front of the drive.

※ NC: Terminal not in use.

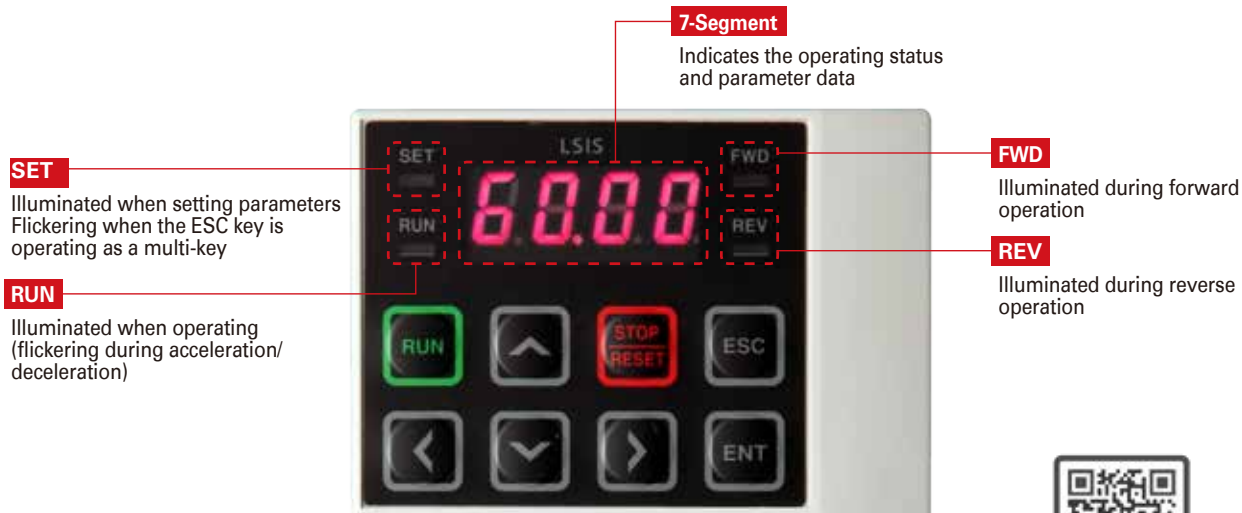
| Terminal Type | Recommended Wire Size [mm2] (AWG) |                      | Screw | Torque<br>N.m | Electrical Specifications  |
|---------------|-----------------------------------|----------------------|-------|---------------|--|
|               | No Crimp-style Terminal           | Crimp-style Terminal |       |               |  |
| P1~P7, CM     | 0.75 (18)                         | 0.5 (20)             | M2    | 0.22 ~ 0.25   |  |
| VR            |                                   |                      |       |               | Max output V/I: 12V, 100mA, volume resistor 1~5kΩ  |
| V1            |                                   |                      |       |               | UNIPOLAR: 0 ~ 10V (max12V)<br>BIPOlar: -10 ~ 10V(max ±12V)   |
| I2            |                                   |                      |       |               | 4~20mA(max 0~24mA, input resistor 249Ω.  |
| AO1           |                                   |                      |       |               | 0 ~ 10V(max output V/I: 12V, 10mA)<br>0 ~ 20mA(Load resistor less than 500 Ω,<br>max output current: 24mA) |
| AO2           |                                   |                      |       |               | 0 ~ 10V(max output V/I: 12V, 10mA)   |
| Q1            |                                   |                      |       |               | Less than DC 26V, 100mA  |
| EG            |                                   |                      |       |               |  |
| 24            |                                   |                      |       |               | Max output current: 150mA  |
| TI            |                                   |                      |       |               | 0 ~ 32kHz (Low Level: 0 ~ 0.8V,<br>High Level: 3.5 ~ 12V)  |
| TO            |                                   |                      |       |               | 0 ~ 32kHz, 0 ~ 12V   |
| SA, SB, SC    |                                   |                      |       |               | Less than DC 24V, 25mA   |
| S+, S-, SG    |                                   |                      |       |               |  |
| A1,B1,C1      | 1.0(17)                           | 1.5(15)              | M2.6  | 0.4           | Less than AC250V 1A, less than DC30V 1A  |
| A2, C2        |                                   |                      |       |               | Less than AC250V, 5A, less than DC30V, 5A  |

<sup>1)</sup> The wire length of the safety input should not exceed 30m.



<sup>2)</sup> Standard I/O is only provided for P5.

<sup>3)</sup> In case of Standard I/O, Pulse input TI and Multi-function terminal P5 share the same terminal. Set the In.69 P5 Define to 54(TI).

<sup>4)</sup> In case of Standard I/O, Pulse output TO and Multi-function output Q1 share the same terminal. Set the OU.33Q1 Define to 38(TO).



Learning how to operate a S100  
(Smart device with Android)

| Display   | Term           | Function Description   |                                |
|---|----------------|--|--------------------------------|
|  | RUN Key        | Run command  |                                |
|  | STOP/RESET Key | STOP: Stop command during operation, RESET: Reset command when a fault occurs.               |                                |
|  | UP Key         | Used to scroll through codes or to increase a parameter value                                |                                |
|  | DOWN Key       | Used to scroll through codes or to decrease a parameter value                                |                                |
|  | Left Key       | Used to jump to other parameter groups or move the cursor to the left                        |                                |
|  | Right Key      | Used to jump to other parameter groups or move the cursor to the right                       |                                |
|  | Enter Key      | Used to set a parameter value or to save the changed parameter value                         |                                |
|  | Escape Key     | Used to cancel the Jog or Remote/Local change key or when editing                            |                                |
| FWD   | Forward Run    | Illuminated during forward run   | Flickering when a fault occurs |
| REV   | Reverse Run    | Illuminated during reverse run   |                                |
| RUN   | RUN Key        | Illuminated during operation (flickering during acceleration/deceleration)                   |                                |
| SET   | Setting        | Illuminated during parameter setting/Flickering when the ESC key is operating as a multi-key |                                |
| 7-Segment   | Current Value  | Indicates operating conditions and parameter data  |                                |

## ❏ Moving to other Groups

| Group Name   | Display | Function Description  |
|--|---------|---|
| <sup>1)</sup> Operation Group                                | —       | The most basic parameters required for operation such as a target frequency, acceleration/ deceleration time.                         |
| Drive Group<br>(Drive)                                       | dr      | Basic operation parameters and parameters related to keypad operation, such as jog operation, motor capacity selection, torque boost. |
| Basic Function Group<br>(Basic)                              | br      | This group contains basic functions such as motor parameters and multi-step frequencies.  |
| Advanced Function Group<br>(Advanced)                        | Ad      | This group contains acceleration/deceleration patterns and frequency limit functions etc.   |
| Control Function Group<br>(Control)                          | Cn      | This group contains functions related to sensorless and vector control.   |
| Input Terminal Block<br>Function Group<br>(Input Terminal)   | In      | This group contains functions related to the drive input terminal block such as multi-function digital input and analog input.        |
| Output Terminal Block<br>Function Group<br>(Output Terminal) | OU      | This group contains functions related to the drive output terminal block such as relay and analog output.                             |
| Communication Function<br>Group<br>(Communication)           | Cn      | This group contains RS485 communication setting parameters.   |
| Application Function Group<br>(Application)                  | AP      | This group contains functions for the PID control sequence operation etc.   |
| Protective Function Group<br>(Protection)                    | Pr      | This group contains protective functions for motors and drive.  |
| <sup>2)</sup> Motor Function<br>(Motor 2)                    | M2      | This group contains parameter settings for a second motor to be connected.  |

<sup>1)</sup> Indicates only the target frequency when LCD keypad is installed.

<sup>2)</sup> Visible only when setting the function item of In.65~71 multi-function input terminal as no.26(2nd Motor).



## ❖ How to move between groups in the first code of each group

| Group Name   | Display | Group Movement |
|--|---------|----------------|
| <sup>1)</sup> Operation Group                                | —       |                |
| Drive Group<br>(Drive)                                       | dr      |                |
| Basic Function Group<br>(Basic)                              | ba      |                |
| Advanced Function Group<br>(Advanced)                        | Ad      |                |
| Control Function Group<br>(Control)                          | Cn      |                |
| Input Terminal Block<br>Function Group<br>(Input Terminal)   | In      |                |
| Output Terminal Block<br>Function Group<br>(Output Terminal) | ou      |                |
| Communication Function<br>Group<br>(Communication)           | cn      |                |
| Application Function Group<br>(Application)                  | Ap      |                |
| Protective Function Group<br>(Protection)                    | Pr      |                |
| <sup>2)</sup> Motor Function<br>(Motor 2)                    | 112     |                |

<sup>1)</sup> Indicates only the target frequency when LCD keypad is installed. The first code of the operation group is a place to set a target frequency. It had been set as 0.00 when shipping from the factory, however, if a user changes the operating frequency, it indicates the changed operating frequency.

<sup>2)</sup> Visible only when setting the function item of In.65~71 multi-function input terminal as no.26(2nd Motor).

## Protective Functions for Output Current and Input Voltage

| Display | LCD Indication | Type  | Description  |
|---------|----------------|-------|--|
|         | Over Load      | Latch | Displayed when motor overload protection is selected and the load exceeds the set value. It works only if Pr.20 is set as a value other than 0.  |
|         | Under Load     | Latch | Displayed when the under-load protection function is selected and the motor load is below the set normal duty level. It works only if Pr.27 is set as a value other than 0.  |
|         | Over Current1  | Latch | Displayed when the drive output current rises above 200% of rated current.   |
|         | Over Voltage   | Latch | Displayed when the voltage of the DC circuit increases above the specified value.  |
|         | Low Voltage    | Level | Displayed when the voltage of the DC circuit decreases below the specified value.  |
|         | Low Voltage2   | Latch | Displayed when the voltage of the DC circuit decreases below the specified value when operating the drive.   |
|         | Ground Trip*   | Latch | Displayed when current is flowing above the specified value because of a ground fault at the drive output stage. The ground fault detection current is different for each drive capacity.  |
|         | E-Thermal      | Latch | Prevents overheating when operating a motor in overload for an extended time period and operates according to inverse time characteristics. It works only if Pr.40 is set as a value other than 0.                                       |
|         | Out Phase Open | Latch | Displayed when any output phase to the 3-phase motor is open circuit. It works only if bit 1 of Pr.05 is set as 1.   |
|         | In Phase Open  | Latch | Displayed when any output phase to the 3-phase motor is open circuit. It works only if bit 2 of Pr.05 is set as 1.   |
|         | Drive OLT      | Latch | Inverse time thermal property protection function for protecting the drive from overheating. The criteria is 150%, 1 minute, 200%, 4 seconds based on the drive rated current. The 200%, 4 seconds is different for each drive capacity. |
|         | No Motor Trip  | Latch | Displayed when a motor is not connected when operating the drive. It works only if Pr.31 is set as 1.  |











\* S100 drives rated for 4.0kW or less do not support the ground fault trip (GFT) feature.

Therefore, an over current trip (OCT) or over voltage trip (OVT) may occur when there is a low-resistance ground fault.




## Protective Functions by the Keypad and Option














| Display | LCD Indication | Type  | Description   |
|---------|----------------|-------|---|
|         | Lost Command   | Level | This fault is displayed if the frequency or operation command signal is lost when using any methods other than keypad commands. It works if Pr.12 is set as a value other than 0. |
|         | IO Board Trip  | Latch | Displayed when a basic I/O or external communication card is not connected with the drive or the contact condition is poor.   |
|         |                |       | - 'S100' is displayed when I/O is disconnected from the main CPU.   |
|         |                |       | - If the S100 code is displayed for more than 5 seconds ErrC occurs.  |
|         | ParaWrite Trip | Latch | Displayed when there is no communication while writing parameters due to a loader cable fault or bad connection etc.  |
|         | Option Trip-1  | Latch | Displayed when there is a communication error between the drive main body and a communication option board.   |

## Protective Functions by Internal Circuit Faults and External Signals

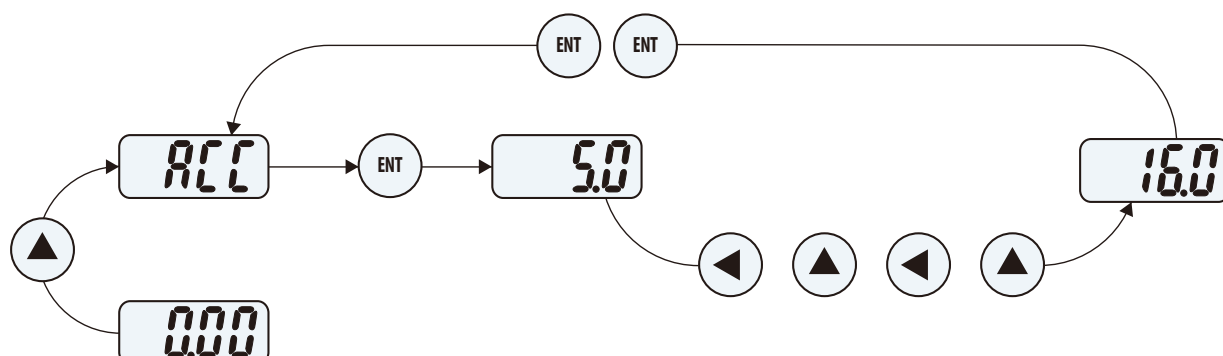
| Display   | LCD Indication  | Type  | Description   |
|---|-----------------|-------|---|
|    | Over Heat       | Latch | A fault occurs if the temperature of the drive heat sink rises above the specified value.   |
|    | Over Current2   | Latch | A fault occurs if the DC unit in the drive detects a short-circuit current value.   |
|    | External Trip   | Latch | Indicates that a fault has occurred to wiring connected to a multi-function terminal that has been configured as 'External trip' (Data code 4 set in function IN 65 ~71)  |
|    | BX              | Level | Indicates that a signal has been received to a multi-function terminal that has been configured as 'BX Base Block' (Data code 5 set in function IN 65 ~71)  |
|    | H/W-Diag        | Fatal | There is an internal fault on the memory (EEPROM), analog-digital converter output (ADC Off Set), and CPU malfunction (Watch Dog-1, Watch Dog-2) etc. in the drive.<br>- EEP Err: There is an internal fault when reading/writing parameters due to KPD EEP Rom damage.<br>- ADC Off Set: There is a fault with the internal current sensing circuit. |
|    | NTC Open        | Latch | This fault occurs if an error is detected in the temperature detecting sensor of the power semiconductor (IGBT).  |
|   | Fan Trip        | Latch | This fault occurs if a cooling fan error is detected.<br>It works if Pr.79 is selected as 0.  |
|  | Pre-PID Fail    | Latch | While operating Pre-PID by setting a function between AP34~36, if the control value(PID feedback)is continuously entered below the set value, this fault is displayed.  |
|  | Ext-Brake       | Latch | This error can happen when operating external brake signals and any of the multi-function input terminals have been configured accordingly. If the drive output current at starting is held at less than Ad-41 level this fault is output.<br>Set one of OU-31, 32 as no. 35 BR Control.  |
|  | Safety A(B) Err | Latch | This error occurs if a fault with the safety inputs occur. If either input A or B is missing, the drive will display this fault code.   |

## Fault Recovery

| Display   | Type          | Cause  | Solution   |
|---|---------------|--|--|
|  | Over Load     | Load is larger than the motor rating.<br>The value set in the overload fault level (Pr.21) is too small.   | Increase the capacity of motor and drive.<br>Increase the set value of the overload fault level  |
|  | Under Load    | There is a problem in the connection between the motor and the load.<br>The normal duty level (Pr.29, 30) is set larger than minimum load of the system.   | Decrease the capacity of motor and drive.<br>Lower the set value of the light load level.  |
|  | Over Current1 | The acceleration/deceleration is too short for the inertia of load(GD2). The drive load is larger than the rating.<br>The drive output is applied when the motor is idling.<br>Motor mechanical brake is on. | Set the acceleration/deceleration time longer.<br>Replace with an drive with large capacity.<br>Operate after the motor stops or use the speed search function.<br>Check the mechanical brake. |

| Display   | Type           | Cause   | Solution   |
|---|----------------|---|--|
|    | Over Voltage   | The deceleration time is too short compared to the inertia of load (GD2).<br>A regenerative load is connected to the drive output.<br>AC input voltage is high.   | Set the deceleration time longer.<br>Use a braking resistor.<br>Check whether the AC input voltage is above the specified value.   |
|    | Low Voltage    | AC input voltage is low.<br>Larger load than the power capacity is connected to the power system. (Welding machine or motor line-start etc.)<br>A device on the power input side of the drive is defective. | Check whether the AC input voltage is below the specified value.<br>Increase the power capacity.<br>Replace the electromagnetic contactor.                                   |
|    | Low Voltage2   | AC input voltage is lowered during operation.<br>There is an input open phase under the low AC input voltage condition.<br>A device on the power input side of the drive is defective.                      | Check whether the AC input voltage is below the specified value.<br>Check the input wiring.<br>Replace the electromagnetic contactor.  |
|    | Ground Trip    | The drive output wire has a ground fault.<br>The motor insulation has failed.   | Investigate the drive output terminal wiring.<br>Replace the motor.  |
|  | E-Thermal      | The motor is overheated.<br>The drive load is larger than the rating.<br>Electronic thermal level is set low.<br>The drive has been operating at low speed for a long time.                                 | Reduce the load or the operating frequency.<br>Increase the drive capacity.<br>Set the appropriate electronic thermal level.<br>Force cool the motor.                        |
|  | Out Phase Open | Bad connection or open circuit at an output device.<br>Output wiring & defect occurred.   | Check for faulty/open device on the drive output device.<br>Check the output wiring.   |
|  | In Phase Open  | Bad connection on a device on the drive input side.<br>Input wiring defect occurred.<br>Consider replacing the drive DC unit condenser.   | Check the device at the drive input side.<br>Check the input wiring.<br>Replace the drive DC unit condenser.<br>Contact the nearest service center.                          |
|  | Drive OLT      | Load is larger than the drive rating.<br>The torque boost amount is too large.  | Increase the capacity of motor and drive.<br>Reduce the torque boost amount.   |
|  | Over Heat      | There is a problem with the cooling system.<br>The drive has been used for a longer time than the replacement period of cooling fan. Ambient temperature is high.   | Check whether there is a foreign substance in the vent such as the air inlet and outlet.<br>Replace the drive cooling fan. Keep the temperature around the drive below 50°C. |
|  | Over Current2  | The drive output wiring is short-circuited.<br>There is a problem in the drive power semiconductor (IGBT).  | Investigate the drive output terminal wiring.<br>The drive cannot be operated. Contact the nearest service center.   |
|  | NTC Open       | Ambient temperature is too low.<br>There is a problem in the temperature sensor inside the drive.   | Operate the drive at a place where ambient temperature is above -10°C.<br>Contact the nearest service center.  |
|  | FAN Lock       | Foreign substances have entered into the drive vent where the fan is located.<br>Consider replacing the drive cooling fan.  | Check the air inlet and outlet.<br>Replace the drive cooling fan.  |
|  | IP66 FAN Trip  | The fan connector is not connected.<br>Consider replacing the drive cooling fan.  | Connect the fan connector.<br>Replace the drive cooling fan.   |

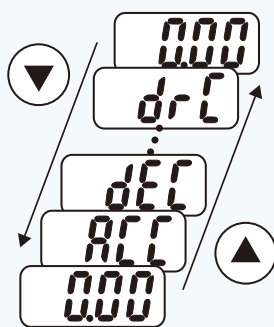
## ❖ An example of changing the acceleration time from 5.0 second to 16.0 second



|   |  |  |
|---|--|--|
| 1 |  | <ul style="list-style-type: none"> <li>■ Indicate the first code information of the operation group.</li> <li>■ Press the UP key (▲)</li> </ul>                              |
| 2 |  | <ul style="list-style-type: none"> <li>■ Indicate the acceleration time ACC that is the second code of the operation group.</li> <li>■ Press the ENTER key (ENT).</li> </ul> |
| 3 |  | <ul style="list-style-type: none"> <li>■ 0 in 5.0 flickers at 1-second interval.</li> <li>■ Press the Left Shift key (◀)</li> </ul>  |
| 4 |  | <ul style="list-style-type: none"> <li>■ 5 in 5.0 flickers, which indicates that the value of 5 can be changed.</li> <li>■ Press the UP key (▲)</li> </ul>                   |
| 5 |  | <ul style="list-style-type: none"> <li>■ The value is changed into 6.0.</li> <li>■ Press the Left Shift key (◀)</li> </ul>   |
| 6 |  | <ul style="list-style-type: none"> <li>■ As 0 in 06.0 flickers, it indicates 06.0.</li> <li>■ Press the UP key (▲)</li> </ul>  |
| 7 |  | <ul style="list-style-type: none"> <li>■ 16.0 is indicated. Press the ENTER key (ENT).</li> <li>■ 16.0 flickers. Press the ENTER key (ENT).</li> </ul>                       |
| 8 |  | <ul style="list-style-type: none"> <li>■ ACC is indicated. The acceleration time is changed into 16.0 second.</li> </ul>   |

<sup>1)</sup> Flickering when modifying a parameter is for asking whether you are going to enter the value. When pressing the enter key (ENT) at this step, the input is completed. If you do not want to enter the modified value, you can press the left, right, up or down keys (◀) (▶) (▲) (▼) except the enter key (ENT) in the ON condition to cancel the input.

## ❖ How to Move between Codes in the operation group



|  |  |   |
|--|--|---|
| 1  |  | <ul style="list-style-type: none"> <li>■ Indicates 0.00 that is the first code of the operation group.</li> <li>■ Press the UP key (▲)</li> </ul>   |
| 2  |  | <ul style="list-style-type: none"> <li>■ Indicates ACC that is the second code of the operation group.</li> <li>■ Press the UP key (▲)</li> </ul>   |
| 3  |  | <ul style="list-style-type: none"> <li>■ Indicates dEC that is the third code of the operation group.</li> <li>■ Press the UP key (▲)</li> </ul>  |
| 4  |  | <ul style="list-style-type: none"> <li>■ Indicates drC that is the last code of the operation group.</li> <li>■ Press the UP key (▲) once again on the last code of the operation group.</li> </ul> |
| 5  |  | <ul style="list-style-type: none"> <li>■ Return to the first code of the operation group.</li> </ul>  |
| <ul style="list-style-type: none"> <li>■ Using the DOWN key (▼), you can move in the opposite order of the above.</li> </ul> |  |   |



## Braking Resistor Specification

| Motor Rating<br>[kW] | 200V 1-phase   |          | 200V 3-phase   |          | 400V 3-phase   |          |
|----------------------|----------------|----------|----------------|----------|----------------|----------|
|                      | Resistor [ohm] | Watt [W] | Resistor [ohm] | Watt [W] | Resistor [ohm] | Watt [W] |
| 0.4kW                | 300            | 100      | 300            | 100      | 1,200          | 100      |
| 0.75kW               | 150            | 150      | 150            | 150      | 600            | 150      |
| 1.5kW                | 60             | 300      | 60             | 300      | 300            | 300      |
| 2.2kW                | 50             | 400      | 50             | 400      | 200            | 400      |
| 3.7kW                | —              | —        | 33             | 600      | 130            | 600      |
| 4.0kW                | —              | —        | 33             | 600      | 130            | 600      |
| 5.5kW                | —              | —        | 20             | 800      | 85             | 1,000    |
| 7.5kW                | —              | —        | 15             | 1,200    | 60             | 1,200    |
| 11kW                 | —              | —        | 10             | 2,400    | 40             | 2,000    |
| 15kW                 | —              | —        | 8              | 2,400    | 30             | 2,400    |
| 18.5kW               | —              | —        | —              | —        | 20             | 3,600    |
| 22kW                 | —              | —        | —              | —        | 20             | 3,600    |

※ The standard for braking torque is 150% and the working rate (%ED) is 5%. If the working rate is 10%, the rated capacity for braking resistance must be calculated at twice the standard.

| Motor Rating<br>[kW] | 200V 1-phase   |          | 200V 3-phase   |          | 400V 3-phase   |          |
|----------------------|----------------|----------|----------------|----------|----------------|----------|
|                      | Resistor [ohm] | Watt [W] | Resistor [ohm] | Watt [W] | Resistor [ohm] | Watt [W] |
| 30kW                 | —              | —        | —              | —        | 16.9           | 6,400    |
| 37kW                 | —              | —        | —              | —        | 16.9           | 6,400    |
| 45kW                 | —              | —        | —              | —        | 11.4           | 9,600    |
| 55kW                 | —              | —        | —              | —        | 11.4           | 9,600    |
| 75kW                 | —              | —        | —              | —        | 8.4            | 12,800   |

※ Reference: 100% braking torque, 10%ED

- The resistance/rated capacity/braking torque/%ED of DB Resistor are valid only for the DB unit of type A and the values of DB Resistor for type B and C refer to the manual of DB Unit..
- Rating Watt of DBU has to be doubled when %ED is doubled.

## Compatible Circuit Breaker, Leakage Breaker and Magnetic Contactor Models

| Voltage         | Capacity<br>[kW] | Circuit Breaker (MCCB) |                  |        |                  | Leakage Breaker (ELCB) |                  | Magnetic Contactor (MC) |                  |
|-----------------|------------------|------------------------|------------------|--------|------------------|------------------------|------------------|-------------------------|------------------|
|                 |                  | Model                  | Rated Current[A] | Model  | Rated Current[A] | Model                  | Rated Current[A] | Model                   | Rated Current[A] |
| 1-Phase<br>200V | 0.4              | ABS33c                 | 5                | UTE100 | 15               | EBS33c                 | 5                | MC-6a                   | 9                |
|                 | 0.75             |                        | 10               |        | 15               |                        | 10               | MC-9a, MC-9b            | 11               |
|                 | 1.5              |                        | 15               |        | 15               |                        | 15               | MC-18a, MC-18b          | 18               |
|                 | 2.2              |                        | 20               |        | 20               |                        | 20               | MC-22b                  | 22               |
| 3-Phase<br>200V | 0.4              | ABS33c                 | 5                | UTE100 | 15               | EBS33c                 | 5                | MC-6a                   | 9                |
|                 | 0.75             |                        | 10               |        | 15               |                        | 10               | MC-9a, MC-9b            | 11               |
|                 | 1.5              |                        | 15               |        | 15               |                        | 15               | MC-18a, MC-18b          | 18               |
|                 | 2.2              |                        | 20               |        | 20               |                        | 20               | MC-22b                  | 22               |
|                 | 3.7              |                        | 30               |        | 30               |                        | 30               | MC-32a                  | 32               |
|                 | 4.0              |                        | 30               |        | 30               |                        | 30               | MC-32a                  | 32               |
|                 | 5.5              | ABS53c                 | 50               | UTS150 | 50               | EBS53c                 | 50               | MC-50a                  | 55               |
|                 | 7.5              | ABS63c                 | 60               |        | 60               | EBS63c                 | 60               | MC-65a                  | 65               |
|                 | 11               | ABS103c                | 100              |        | 90               | EBS103c                | 100              | MC-85a                  | 85               |
|                 | 15               |                        | 125              |        | 125              |                        | 125              | MC-130a                 | 130              |
| 3-Phase<br>400V | 0.4              | ABS33c                 | 3                | UTE100 | 15               | EBS33c                 | 5                | MC-6a                   | 7                |
|                 | 0.75             |                        | 5                |        | 15               |                        | 5                | MC-6a                   | 7                |
|                 | 1.5              |                        | 10               |        | 15               |                        | 10               | MC-9a, MC-9b            | 9                |
|                 | 2.2              |                        | 10               |        | 15               |                        | 10               | MC-12a, MC-12b          | 12               |
|                 | 3.7              |                        | 15               |        | 15               |                        | 15               | MC-18a, MC-18b          | 18               |
|                 | 4.0              |                        | 20               |        | 20               |                        | 20               | MC-18a, MC-18b          | 18               |
|                 | 5.5              |                        | 30               |        | 30               |                        | 30               | MC-22b                  | 22               |
|                 | 7.5              |                        | 30               |        | 30               |                        | 30               | MC-32a                  | 32               |
|                 | 11               | ABS53c                 | 50               | UTS150 | 50               | EBS53c                 | 50               | MC-50a                  | 50               |
|                 | 15               | ABS63c                 | 60               |        | 60               | EBS63c                 | 60               | MC-65a                  | 65               |
|                 | 18.5             | ABS103c                | 75               |        | 80               | EBS103c                | 75               | MC-75a                  | 75               |
|                 | 22               |                        | 100              |        | 90               |                        | 100              | MC-85a                  | 85               |
|                 | 30               | ABS103c                | 125              |        | 125              | EBS103c                | 125              | MC-100a                 | 105              |
|                 | 37               | ABS203c                | 150              | UTS150 | 150              | EBS203c                | 150              | MC-130a                 | 130              |
|                 | 45               |                        | 175              |        | 175              |                        | 175              | MC-150a                 | 150              |
|                 | 55               |                        | 225              | UTS250 | 225              |                        | 225              | MC-185a                 | 185              |
|                 | 75               |                        | 300              |        | 225              |                        | 225              | MC-185a                 | 185              |
|                 | 75               | ABS403c                | 300              | UTS400 | 300              | EBS403c                | 300              | MC-225a                 | 225              |

## Fuse and Reactor Specifications

| Product [kW]         |      | AC Input Fuse |             | AC Reactor      |             | DC Reactor      |             |
|----------------------|------|---------------|-------------|-----------------|-------------|-----------------|-------------|
|                      |      | Current [A]   | Voltage [V] | Inductance [mH] | Current [A] | Inductance [mH] | Current [A] |
| Single phase<br>200V | 0.4  | 10            | 600         | 1.20            | 10          | 4               | 8.67        |
|                      | 0.75 |               |             |                 |             |                 |             |
|                      | 1.5  | 15            |             | 0.88            | 14          | 3               | 13.05       |
|                      | 2.2  | 20            |             | 0.56            | 20          | 1.3             | 18.45       |
| 3-phase<br>200V      | 0.4  | 10            |             | 1.20            | 10          | 4               | 8.67        |
|                      | 0.75 |               |             |                 |             |                 |             |
|                      | 1.5  | 15            |             | 0.88            | 14          | 3               | 13.05       |
|                      | 2.2  | 20            |             | 0.56            | 20          | 1.33            | 18.45       |
|                      | 3.7  | 32            |             | 0.39            | 30          |                 | 26.35       |
|                      | 4.0  | 50            |             |                 |             |                 |             |
|                      | 5.5  | 50            |             | 0.30            | 34          | 1.60            | 32          |
|                      | 7.5  | 63            |             | 0.22            | 45          | 1.25            | 43          |
|                      | 11   | 80            |             | 0.16            | 64          | 0.95            | 61          |
|                      | 15   | 100           |             | 0.13            | 79          | 0.70            | 75          |
| 3-phase<br>400V      | 0.4  | 10            | 600         | 4.81            | 4.8         | 16              | 4.27        |
|                      | 0.75 |               |             |                 |             |                 |             |
|                      | 1.5  | 15            |             | 3.23            | 7.5         | 12              | 6.41        |
|                      | 2.2  | 20            |             | 2.34            | 10          | 8               | 8.9         |
|                      | 3.7  | 32            |             | 1.22            | 15          | 5.4             | 13.2        |
|                      | 4.0  | 32            |             | 1.12            | 19          | 3.20            | 17          |
|                      | 5.5  |               |             | 0.78            | 27          | 2.50            | 25          |
|                      | 7.5  | 35            |             | 0.59            | 35          | 1.90            | 32          |
|                      | 11   | 50            |             | 0.46            | 44          | 1.40            | 41          |
|                      | 15   | 63            |             | 0.40            | 52          | 1.00            | 49          |
|                      | 18.5 | 70            |             | 0.30            | 68          | 0.70            | 64          |
|                      | 22   | 100           |             | 0.29            | 69          | —               | —           |
|                      | 30   | 125           |             | 0.24            | 85          | —               | —           |
|                      | 37   |               |             | 0.20            | 100         | —               | —           |
|                      | 45   | 160           |             | 0.15            | 134         | —               | —           |
|                      | 55   | 200           |             | 0.13            | 160         | —               | —           |
|                      | 75   |               |             |                 |             |                 |             |

※ Only use Class H or RK5, UL listed input fuses and UL listed circuit breakers. See the table above for the voltage and current ratings for fuses and circuit breakers.

## ❖ Dynamic braking unit(DBU)

| UL form              | Capacity of applied motor | Braking unit  | Terminal arrangement & Dimensions |
|----------------------|---------------------------|---------------|-----------------------------------|
| UL type (A type)     | 30~37kW                   | SV370DBU-4U   | Refer to Group 1.                 |
|                      | 45~55kW                   | SV550DBU-4U   |                                   |
|                      | 75kW                      | SV750DBU-4U   |                                   |
| Non UL type (B type) | 30~37kW                   | SV037DBH-4    | Refer to Group 2.                 |
|                      | 45~75kW                   | SV075DBH-4    |                                   |
|                      |                           | SV075DB-4     | Refer to Group 3.                 |
| Non UL type (C type) | 30~37kW                   | SV0370DBU-4HN | Refer to Group 4.                 |
|                      |                           | SV0370DBU-4LN | Refer to Group 5.                 |
|                      | 45~75kW                   | SV0750DBU-4LN |                                   |

※ Please refer to the manual for dimensions of DB Unit.

- It is not necessary to use option type dynamic braking unit for S100 below 22kW capacity because basically the dynamic braking unit is built in.
- You must refer to dynamic braking unit manual for usage recommended dynamic braking unit in the table above due to changeable table.

## ❖ Terminal arrangement

Group 1 :

|          |          |          |           |           |
|----------|----------|----------|-----------|-----------|
| <b>P</b> | <b>N</b> | <b>G</b> | <b>B1</b> | <b>B2</b> |
|----------|----------|----------|-----------|-----------|

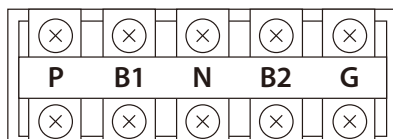
| Terminals | Functions                              |
|-----------|--|
| <b>G</b>  | Ground Terminal                        |
| <b>B2</b> | Terminal for connection with B2 of DBU |
| <b>B1</b> | Terminal for connection with B1 of DBU |

Group 2 :

|          |          |           |             |
|----------|----------|-----------|-------------|
| <b>G</b> | <b>N</b> | <b>B2</b> | <b>P/B1</b> |
|----------|----------|-----------|-------------|

| Terminals | Functions                                |
|-----------|--|
| <b>N</b>  | Terminal for connection with N of Drive  |
| <b>P</b>  | Terminal for connection with P1 of Drive |

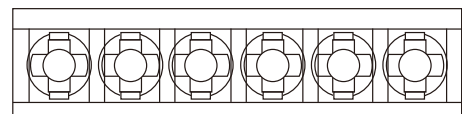
Group 3 :



| Terminals | Functions                                |
|-----------|--|
| <b>G</b>  | Ground Terminal                          |
| <b>B2</b> | Terminal for connection with B2 of DBU   |
| <b>B1</b> | Terminal for connection with B1 of DBU   |
| <b>N</b>  | Terminal for connection with N of Drive  |
| <b>P</b>  | Terminal for connection with P1 of Drive |

Group 4, 5 :

**P(+)** **N(-)** **B1** **B2** **N.C** **E**



| Terminals   | Functions                               |
|-------------|---|
| <b>P(+)</b> | Terminal for connection with P of Drive |
| <b>N(-)</b> | Terminal for connection with N of Drive |
| <b>B1</b>   | Terminal for connection with B1 of DBU  |
| <b>B2</b>   | Terminal for connection with B2 of DBU  |
| <b>N.C</b>  | Unused                                  |
| <b>E</b>    | Ground Terminal                         |

※ You must refer to dynamic braking unit manual for braking resistor to use dynamic braking unit.