Solution 2000
Motor Control Center

Being created by diversified industrial electricity technology

Stabilized power supply and maximization of energy efficiency where there is industry and electricity, LSIS always stands by your side.
The modular designed and type tested LV Motor Control Center type Solution 2000 satisfies the ever-increasing demand for high performance, high reliability, safe operation and versatility required in industrial facilities.

The 1st MCC overseas certification (ASTA) in Korea
- Short-time current test (5000A 80kA / 1sec)
- Internal arc test

Enhanced bearing capacity with the use of insulator and liner
- Frame support reinforcement through symmetric structure
- Vertical busbar support: Integral clamp insert type
- Vertical busbar chamber: Frame fixing
- Prevent accident from spreading by installing a vertical busbar arc shield

Largest current capacity in Korea
- Horizontal busbar: 5000A
- Vertical busbar: 1000A / 1500A
- Draw-out unit: ~ 600A

European design
- Control power / neutral line draw-out
- Drawer type unit and elegant exterior
- 1st, 2nd, 3rd draw-out structure
- Single front type / double front type

High reliability and safety
- Robust structure with metal sheet inside
- Easy-to-use draw in/out unit
- Minimized access to charging part
- Effective cooling and sufficient wiring space
- Sufficient wiring duct (400mm max)
- Protected structure to prevent mixed contact short circuit of the charging part without a separate shutter device (IP20)
- Automatic safety shutter for unit draw-out (option)
- Easy-to-change unit composition
- Draw-out unit applicable up to 630A
- Storage capacity: 13 drawers of basic unit / 26 drawers of 100A MCCB unit (Single front type)

Application
- Steel
- Power plant
- Cement
- Subway
- Semiconductor
- Petrochemistry
- Other high class industrial facilities
## Specifications/standard specification code

### Technical data

<table>
<thead>
<tr>
<th>Type</th>
<th>Details</th>
<th>Standard specification code</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td><strong>General characteristics</strong></td>
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<td>IEC61439-1, BSEN61439-1, AS 3439-1</td>
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<tr>
<td>Degree of protection</td>
<td>IP 42 for casing, IP 20 for compartment</td>
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<td>Normal operating conditions</td>
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<td>Place</td>
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<td>Ambient temperature</td>
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<td><strong>Electrical characteristics</strong></td>
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<td>Pole</td>
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<td>Rated current</td>
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<td>Rated short time withstand current</td>
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<td>Peak withstand current</td>
<td>176kA max</td>
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<td>Main busbar</td>
<td>1000~5000A</td>
<td>Double busbar above 3000A</td>
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</tr>
<tr>
<td>Vertical busbar</td>
<td>1000, 1500A</td>
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<tr>
<td>Vertical control bar</td>
<td>80A at 380V</td>
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<td>Overall dimension</td>
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<td>Size</td>
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<tr>
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<tr>
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<td>Door</td>
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<td></td>
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<tr>
<td>Top &amp; side plate</td>
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<td><strong>Unit</strong></td>
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<td>Standard unit</td>
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<tr>
<td>Main circuit</td>
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<td></td>
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<td>Load side</td>
<td>Automatic withdrawal</td>
<td></td>
<td></td>
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<td>Automatic withdrawal</td>
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<td>Coating</td>
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<td>Customer-designated color can be applied</td>
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<td></td>
</tr>
<tr>
<td>Background</td>
<td>White</td>
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</table>

### Standard specification code

- **Basic model name**: SL Solution 2000 MCC
- **Cubicle width**: 09 900mm, 10 1000mm
- **Type**: D Double front type, S Single front type
- **Main busbar rated current**: 10 1000A, 16 1600A, 20 2000A, 25 2500A, 30 3000A, 40 4000A
- **Vertical busbar rated current**: 10 1000A, 15 1500A

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MCC configuration

View of front cover
1. MCCB operating handle (Pad lockable in off-position)
2. Position locking device
3. Operation and indication plate
4. Draw-out handle

Starter arrangement
Ideal device arrangement enabling front-maintenance provides customers with ease of maintenance and safety.
View into the cable compartment

Front maintenance structure provides a wide space for easy B and C wiring and makes it possible to connect main busbar at the front.
Unit

The height of drawable unit ranges from minimum 150mm to maximum 1,050mm. The height is increased by 150mm pitches. MCCB, electro-magnetic switches, motor protection relay, auxiliary relays, timer, CT, ZCT, and fuses are placed at the point of unit while main circuit’s draw-out plug and control power plug, safety shutter opening guide are situated in the rear. Main circuit’s secondary draw-out plug and control plug are installed on the right side of unit.

Unit position

Service position
Main circuit’s primary and secondary draw-out plugs, control power plug, control circuit draw-out connector are connected to the power source and load side components while the unit locking device is in the locked position. If locking is not effected securely, the unit might have been positioned incorrectly.

Test position
Only control power plug and control circuit draw-out connector are connected to the control power source for the test operation. In this position, all output control signals can be checked through the control circuit connector.

Draw-out position
Main circuit’s primary and secondary draw-out plugs, control power plug, control circuit draw-out connector are disconnected in this position. The unit can be completely drawn-out from the cubicle.

Vertical busbar
Power plug for line side
Neutral busbar
Power plug for neutral
Fixed-power plug for load side
Movable power plug for load side
Control power busbar
Control power plug
Plug for control circuit
Socket for control circuit
Draw-out unit
### Standard unit application table

<table>
<thead>
<tr>
<th>Motor capacity (kW)</th>
<th>Rated current</th>
<th>MCCB type</th>
<th>Mag. contactor</th>
<th>Thermal relay</th>
<th>A-CT</th>
<th>Unit size</th>
<th>Wire used (mm²)</th>
<th>Thermal relay</th>
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<tr>
<td>440V</td>
<td>220V</td>
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<tr>
<td>0.2</td>
<td>-</td>
<td>0.5-0.8</td>
<td>CH-5 SMC-20P</td>
<td>TH-5N</td>
<td>0.5</td>
<td>5.5</td>
<td>H1(150)</td>
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</tr>
<tr>
<td>0.4/0.54</td>
<td>0.2</td>
<td>0.8-1.7</td>
<td>CH-6N SMC-25P</td>
<td>TH-1015N</td>
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<td>30.5</td>
<td>H2(300)</td>
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<td>1.3-1.9</td>
<td>CH-7.5N SMC-25P</td>
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<td>0-50</td>
<td>50.5</td>
<td>H2(450)</td>
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<td>0.4/0.54</td>
<td>1.7-2.8</td>
<td>CH-10N SMC-50P</td>
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<td>0-75</td>
<td>75.5</td>
<td>H3(450)</td>
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<td>0.75</td>
<td>2.7-3.9</td>
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<td>3.8-4.9</td>
<td>CH-20N SMC-80P</td>
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<td>3.7</td>
<td>1.5</td>
<td>5.5-7.5</td>
<td>CH-25N SMC-100</td>
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<td>-</td>
<td>2.2</td>
<td>5.5-7.5</td>
<td>CH-30N SMC-125</td>
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<td>-</td>
<td>7.6-9.3</td>
<td>CH-35N SMC-150</td>
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<td>3.7</td>
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<td>CH-40N SMC-200</td>
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<td>11</td>
<td>5.5</td>
<td>18-22</td>
<td>CH-50N SMC-250</td>
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<td>18.5</td>
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<td>30-34</td>
<td>CH-70N SMC-400</td>
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<td>48-56</td>
<td>CH-90N SMC-600</td>
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<td>CH-100N SMC-800</td>
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<td>22</td>
<td>70-80</td>
<td>CH-110N SMC-100</td>
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<td>30</td>
<td>89-108</td>
<td>CH-125N SMC-150</td>
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<td>75</td>
<td>37</td>
<td>117-134</td>
<td>CH-150N SMC-200</td>
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<td>45/55</td>
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<td>75</td>
<td>225-268</td>
<td>CH-300N SMC-400</td>
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<td></td>
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</tr>
</tbody>
</table>

**Note:**
1. A side plate is installed at the end of the line-up.
2. The installation of MCC having bottom cable entries requires foundation with an opening of a cable duct.
3. The horizontal tolerance of the level should not exceed 1mm over length of 1 meter.
4. The MCC can be welded or screwed to the foundation frame.
5. The maximum number of cubicles for transportation is 2.
Main busbar

Main buses are mounted at the upper and/or middle part of the cubicle. Main busbar compartment is structurally isolated from unit compartment and cable way to ensure safety.

**Main busbar size**

<table>
<thead>
<tr>
<th>A</th>
<th>Phase (A,B,C)</th>
<th>Neutral (N)</th>
<th>Earth (PE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>75 × 10</td>
<td>75 × 10</td>
<td>40 × 6</td>
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<tr>
<td>1600</td>
<td>100 × 10</td>
<td>75 × 10</td>
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<tr>
<td>2000</td>
<td>2 × 75 × 10</td>
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<td>40 × 6</td>
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<tr>
<td>2500</td>
<td>2 × 100 × 10</td>
<td>75 × 10</td>
<td>40 × 6</td>
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<tr>
<td>3150</td>
<td>2 × (1-100 × 10)</td>
<td>75 × 10</td>
<td>40 × 6</td>
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<td>4000</td>
<td>2 × (2-75 × 10)</td>
<td>75 × 10</td>
<td>40 × 6</td>
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<tr>
<td>5000</td>
<td>2 × (2-100 × 10)</td>
<td>75 × 10</td>
<td>40 × 6</td>
</tr>
</tbody>
</table>

Note: Neutral and earth busbar size can be changed depending on customer requirements. (Option)

**Vertical busbar**

The vertical riser covered with arc proof is in the rear of module compartment. The plug-in openings finger proof can be covered with automatic shutters as option.

**Vertical busbar size**

<table>
<thead>
<tr>
<th>A</th>
<th>Phase (A,B,C)</th>
<th>Neutral (N)</th>
<th>Earth (PE)</th>
</tr>
</thead>
<tbody>
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<td>1000</td>
<td>72 × 6</td>
<td>40 × 6</td>
<td>40 × 6</td>
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<tr>
<td>1500</td>
<td>72 × 6 + 40 × 6</td>
<td>40 × 6</td>
<td>40 × 6</td>
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</tbody>
</table>

**Main and vertical busbar compartment**
Component details

Solution 2000 Motor Control Center

Structure

1. Arc proof barrier
2. Insulator power busbar
3. Finger proof barrier
4. Safety shutter
5. Module
6. Front cover
7. Draw-out handle
8. Plug for control circuit
9. Socket for control circuit
10. Top plate
11. Lifting lug
12. Upper front cover plate
13. Vertical busbar clamp
14. Vertical busbars
15. Partition plate
16. Door
17. Basic frame
18. Lower front cover plate
19. Door for cable compartment
20. Bottom plate
21. Channel base
22. Main busbars
23. Sleeve for cable protection
24. Control power busbar
25. Power plug for line side
26. Power plug for neutral
27. Power plug for load side (600A)
28. Power plug for load side (250A)
29. Power plug for load side (125A)
30. Cable compartment partition
Layout

**Double front type**

![Double front type diagram](image)

**Single front type**

![Single front type diagram](image)
Basic installation drawing of Solution 2000 MCC

Fixed by welding

Fixed by bolts

Double front type plane view of bottom

Single front type plane view of bottom

Note: 1. The table is based on E class insulation, 4 pole closed type low-voltage cage motor.
2. MCCB model can be changed according to breaking capacity of the system (The standard table is based on 65kA)
3. Applies to cases where there is no control transformer and there is two auxiliary relays.
Global Network

LSIS is engaged in business all over the world. LSIS global network includes 7 overseas corporations, 12 overseas branches, and 224 clients in 77 countries.
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.
- According to the WEEE Directive, please do not discard the device with your household waste.

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