MNS3.0
The ABB Motor Control Center

- Granted performances
- Electrical performances
- Mechanical Characteristics
- MCC Cubicles
MNS3.0
Granted performances

- 1.2 billion of MNS system installed in the world since 1973
- A long history of tests and certifications
- ASTA certification for internal arc proof up to 100 kA, 300ms at 690V
- Tested according Germanischer Lloyd
- Shock and vibrations test (IABG)
- Seismic test for safety area in nuclear power plants (DLR)
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Electrical performances

- Rated Current: 6300A
- Rated peak withstand current \(I_{pk}\): 250kA
- Rated short time withstand current \(I_{cw}\): 100kA
- Arc fault containment: 100kA x 300ms
- Rated frequency: 50/60Hz
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Electrical performances

- Rated insulation voltage $U_i$ 1000Vac – 1500Vdc
- Rated operating voltage, $U_e$ 690 Vac – 750Vdc
- Rated impulse withstand voltage 6/8/12kV
- Overvoltage category II / III / IV
- Degree of pollution 3
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Electrical performances

Main busbar
- Rated current 6300A
- Peak withstand current 250kA
- Short-time withstand current 100kA

Distribution busbars
- Rated current 2000A
- Peak withstand current 176kA
- Short-time withstand current 100kA
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Mechanical characteristics

Functional compartments column with ACB breaker
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Mechanical characteristics

Functional compartments
column with ACB breaker

- Busbar
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Mechanical characteristics

Functional compartments column with ACB breaker
- Busbar
- Instrumentation
Functional compartments column with ACB breaker

- Busbar
- Instrumentation
- Air circuit breaker
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Mechanical characteristics

Functional compartments column with ACB breaker

- Busbar
- Instrumentation
- Air circuit breaker
- Cable
Mechanical characteristics

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Functional compartments
MCC column
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Mechanical characteristics

Functional compartments
MCC column
- Busbar
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Mechanical characteristics

Functional compartments
MCC column
  ▪ Busbar
  ▪ Equipment
MNS3.0

Mechanical characteristics

Functional compartments
MCC column
- Busbar
- Equipment
- Cable
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Mechanical characteristics

Dimensions (mm)
- Height: 2200
- Width: 400, 600, 800, 1000, 1200
- Depth: 400, 600, 800, 1000, 1200
- Basic grid size (DIN 43660): E=25mm

Surface protection
- Frame: Alu - Zinc coated
- Internal subdivision: Alu - Zinc coated
- Transverse section: Alu - Zinc coated
- Painting: RAL7035
The cubicles structures and the busbars are fixed with special screw and ESLOCK bolts.
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Mechanical characteristics

Main busbars position
- Upper
- Lower
- Upper & Lower (double busbars system)

Busbar Treatment
- Bare
- Silvered
- Sleeved
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Mechanical characteristics

Busbar front access allow wall standing installation and special layout with reduced footprint:

- Back to back: two separated busbar compartments
- Duplex: one common busbar compartment
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Mechanical characteristics

Multifunction wall:

- Segregation and insulation of the distribution busbars
- Segregation of the main busbar from the functional units
- Free Fault zone: sensible reduction of possible to have an internal arc
- IP2X guarantee also with drawers removed
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Mechanical characteristics: from IP20 up to IP54

First digit: protection against solid foreign objects
- 0 = No protection
- 1 = solid bodies > 50mm
- 2 = solid bodies > 12mm
- 3 = solid bodies > 2.5mm
- 4 = solid bodies > 1mm
- 5 = dust protected

Second digit: protection against Water
- 0 = No protection
- 1 = vertically dripping water
- 2 = dripping water (15° tilted)
- 3 = sprayed water (60° tilted)
- 4 = splashing water (all direction)
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Mechanical characteristics: segregation form up to 4b

**Form 4b**: segregation of the busbars from functional units and between functional units; segregation of the terminals from the functional units and from the busbars; the terminal for external conductors are in the same compartment as the associated functional unit.
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MCC Cubicles

Wide range of solution

- Fix modules
- Removable modules (SlimLine)
- Withdrawable modules
### MNS3.0 MCC Cubicles

<table>
<thead>
<tr>
<th>Switch Position</th>
<th>Module position</th>
<th>Main and auxiliary circuits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ON</strong></td>
<td>insert</td>
<td>All main and control circuit are connected</td>
</tr>
<tr>
<td>OFF</td>
<td>insert</td>
<td>All main and control circuit are disconnected</td>
</tr>
<tr>
<td>Can be locked with 3 padlocks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEST</td>
<td>insert</td>
<td>All main circuits are disconnected, the control circuits are connected</td>
</tr>
<tr>
<td>Can be locked with 3 padlocks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOVE</td>
<td>Insert / insulated / removed</td>
<td>All main and control circuits are disconnected</td>
</tr>
<tr>
<td>ISOLATED</td>
<td>The module is 30mm draw out of the cubicle</td>
<td>All main and control circuits are disconnected and the isolating distance is fulfilled</td>
</tr>
<tr>
<td>Can be locked with 3 padlocks</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Friendly use: all the operations are made with only one switch keeping the highest safety standard
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MCC Cubicles

Modularity and flexibility

- Interchangeable modules
- Possibility to modify the modules layout with reduce “out of Service” time
- Modules for industrial drives and Soft starters
- Reactive power compensation modules
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Unit equipped with variable Speed Drive

- MNS *offer* feeders equipped with variable speed drive type ABB ACS 850
- Withdrawable execution up to 55kW, fix version up to 200kW
- Reduction of the plant consumption through the motor speed control: A pump or fan running at half speed consumes only one eighth of energy.
Possibilità di integrare relè multifunzione all’interno dei moduli estraibili

Ad esempio ABB M102 completo di tutte le funzioni di

- Protezione (26, 27, 37, 46, 49, 51LR, 66…)
- Misure (A, V, Hz, kW, kVA, kWh….)
- Comunication (Profibus DP, Modbus RTU)
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….the best choice for:

Plant                  Larbaa, Algeria
Customer               Sonelgaz
EPC                     Ansaldo Energia
Segment                 Power
Notes                   Total installed power 600MW; 280MW in beginning phase plus 380MW of further extension
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....the best choice for:

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**Plant**  
3SUN Solar modules factory Italy

**Customer**  
3SUN (JV Enel Green Power-Sharp-ST)

**EPC**  
MW Italy Srl

**Segment**  
Industries

**Notes**  
First Italian factory for microfilm solar panel
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....the best choice for:

Plant: Shah Gas, Abu Dhabi
Customer: ADNOC
EPC: Saipem, Technicas Reunidas, Samsung
Segment: COG
Notes: Target production 1 billion cubic feet a day (cf/d) of sour, or sulphur-rich, natural gas
Switchgears equipped with MSpeed & M102
MNS3.0
....the best choice for:

Plant                      Colt data center, Italy
Customer                   Colt Telecomunications
Installer                  Atel Sesti
Segment                    Data Center
Notes                      Total installed power 8MVA; supplied 800 PDUs
Power and productivity for a better world™ ABB