Global MCC solutions to meet your application needs

NEMA CENTERLINE 2100
480…600V

IEC CENTERLINE 2500
380…690V

CENTERLINE 1500
2400…7200V
CENTRERLINE MCC Design Strategy

Globally consistent IEC and NEMA MCC solutions to meet your regional manufacturing needs.

Proven CENTERLINE bus design
- Improved heat dissipation
- Easier installation and maintenance
- Increased current carrying capacity
- Lower operating cost

Intelligent motor control components
- Drives, soft starters, electronic overload relays

IntelliCENTER®/Integrated Architecture® platform
- Enhances the intelligence of your MCC using built-in EtherNet/IP to capture information used for predictive maintenance, process monitoring and advanced diagnostics

Safety
- Provides enhanced safety features as part of the standard offering
IntelliCENTER Technology

- A single network for all automation and process control equipment
- Seamlessly linked to the front office for increased access to information
- Common package for both CENTERLINE 2100 NEMA and CENTERLINE 2500 IEC MCCs
Identifies potential faults
- Crucial feedback from your motors helps minimize downtime
- Recording process data allows comparison over time and verifies consistent performance

Facilitates quick repair with direct access to critical component documentation

**Powerful Diagnostic Tools with IntelliCENTER Software**
IntelliCENTER Software provides intuitive tools that are available anywhere, anytime

**Identifies potential faults**
- Crucial feedback from your motors helps minimize downtime
- Recording process data allows comparison over time and verifies consistent performance

**Facilitates quick repair with direct access to critical component documentation**

- **Elevation View**
  Quick status overview of your MCC

- **Monitor View**
  Detailed unit status information and real time trending

- **Maintenance Information**
  Manuals and drawings

- **Engineering Drawings**
  Created specifically for your MCC
Air Circuit Breakers

Molded Case Circuit Breakers

Motor Protection Circuit Breakers

Disconnect Switches

Contactor

Electronic Overload Relays

Soft Starters

Variable Frequency Drives

Programmable Automation Controllers
CL2100 Overload Relay Portfolio

Overload Relay Portfolio

**Premium**
- E200 (Electronic)
- E300 (Electronic)

**Performance**
- E100 (Electronic)

**Basic**
- 193-T (Bi-metal)

**Future**
- Available CTO for non-networked MCC

**Today**
Available CTO with embedded Ethernet or DeviceNet

Modbus/TCP Now Available
Modbus TCP/IP within LVMCC

- Solution includes premium drives, soft starters, and now fixed speed starters for both CENTERLINE 2100 and 2500 offerings

- Aligns with the needs of customers within key industries such as oil and gas and other heavy industries

- Reduces hardware costs required to integrate an LVMCC into a third-party PLC or DCS
Embedded Diagnostics

- Current
- Time to Reset
- Trip / Warning Histories
- Proactively alert users...
- Number of Starts
- Voltage & Energy
- % Thermal Capacity Utilization
- Time to Trip
- Operational Hours
Control Station Terminology

Legacy Control Station

E300 Control Station

E300 Diagnostic Station

E300 Operator Stations
CENTERLINE 2100 Motor Control Centers

Safety By Design

Design
- CENTERLINE 2100 MCCs have safety advantages over other types of enclosures

Operation
- Dependable CENTERLINE 2100 MCCs help prevent unplanned outages

Service and Maintenance
- CENTERLINE 2100 MCCs help provide a safer working environment when service and maintenance is needed

Fault Containment
- CENTERLINE 2100 MCCs robust design helps contain arc flash events
## ArcShield™ Options

### CENTERLINE 2100 with ArcShield

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arc Resistant Rating</td>
<td>Device Limited</td>
</tr>
<tr>
<td>Rated Voltage</td>
<td>Up to 600V</td>
</tr>
<tr>
<td>Available Fault Current</td>
<td>Up to 65 kA</td>
</tr>
<tr>
<td>Horizontal Bus Current Rating</td>
<td>600…1200 A</td>
</tr>
<tr>
<td><em>Top-plate Pressure Relief System</em></td>
<td>Not Required w/ 12” above MCC</td>
</tr>
<tr>
<td>Vertical Wireway Baffle</td>
<td>Not Required</td>
</tr>
<tr>
<td>Arc Containment Latches</td>
<td>2 Latches/Door</td>
</tr>
<tr>
<td>Unit Support Fans</td>
<td>Bolted</td>
</tr>
<tr>
<td>Vented Units Allowed</td>
<td>Yes (Arc Resistant Baffles)</td>
</tr>
<tr>
<td>Door Mounted Devices Allowed</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>Limited (100 ms)</td>
</tr>
<tr>
<td>Rated Voltage</td>
<td>Up to 480V</td>
</tr>
<tr>
<td>Available Fault Current</td>
<td>Up to 65 kA</td>
</tr>
<tr>
<td>Horizontal Bus Current Rating</td>
<td>600…3000 A</td>
</tr>
<tr>
<td><em>Pressure relief system</em></td>
<td>Required</td>
</tr>
<tr>
<td>Vertical Wireway Baffle</td>
<td>Required</td>
</tr>
<tr>
<td>Arc Containment Latches</td>
<td>All Latches</td>
</tr>
<tr>
<td>Unit Support Fans</td>
<td>Bolted</td>
</tr>
<tr>
<td>Vented Units Allowed</td>
<td>No</td>
</tr>
<tr>
<td>Door Mounted Devices Allowed</td>
<td>Yes</td>
</tr>
</tbody>
</table>

- Horizontal ground bus at top and/or bottom
- Arc-resistant latches on all doors
- Reinforced back plates and end plates
- Automatic shutters
SecureConnect™ Overview

- Personnel safety feature that allows operators to disconnect power from a MCC plug-in unit without opening the enclosure door or being in the arc flash boundary\(^1\)
- Address the growing concern of working inside the arc flash boundary on live equipment
- Proactively address known hazards identified by major safety organizations and standards
  - NEC / NFPA 70
  - NFPA 70E
  - IEEE 1584
  - IEEE C37.20.7

\(^1\) Use of safety features varies depending on MCC design
SecureConnect Benefits

Reduce Electrical Shock and Exposure to Harmful Voltages

- Connect and Disconnect unit stabs without having to be exposed to live electrical parts
  - Remote operator allows you to work outside the arc-flash boundary of the MCC

- Further mitigate safety risk using our patented multi-point validation system
  - Provides redundant indication for disconnect position

- Enhanced compliance with NFPA70E Section 110.3 for your Electrical Safety Program
Stab Housing Shutters

• Two sets of shutters for increased electrical isolation
  – Bus cover and stab housing shutters

• Shutters are only opened when a connection to the Vertical Power Bus is needed
  – Provides additional protection of power stabs when unit is removed from structure

• Limit switch provides feedback to indicate the shutters are closed
SecureConnect Remote Operator System
SecureConnect Remote Operator System

Previously, the SecureConnect operation could only be accomplished by using a manual ¼” Hex Driver and Socket Wrench.

Today, the new SecureConnect Remote Operator allows remote operation of the SecureConnect unit further strengthening Personnel Safety.
Other Safety Features Available for CENTERLINE 2100 with ArcShield

- **Covers and barriers**
  - Line side terminal guards
  - Fuse covers
  - Starter/contactor barrier
  - Finger-safe terminal blocks
  - Finger-safe control circuit transformers

- **Keep doors closed**
  - Through the door viewing windows for visible blade disconnect inspection
  - Infrared windows allow thermal inspection
  - Through the door network connections
  - Door mounted voltage detection

- **Awareness**
  - High visibility yellow door for Main
Other Safety Features Available for CENTERLINE 2100 with ArcShield

- SafeZone™ laser scanner (CMOD 0111)
  - Senses presence of personnel within defined arc flash boundary
  - Coordinate with upstream circuit breaker to enable and disable “Maintenance Mode”
  - By eliminating the time delay of the upstream breaker, available energy at the MCC is reduced
  - Prevents “Maintenance Mode” from being left on when not needed, reducing nuisance faults

- Arc flash detection system (CMOD’s 2806-2809)
  - Detection of arc flash in bus compartment
    - Fiber optics and control module
  - Operation
    - Shunt trip upstream circuit breaker
    - Activate crowbar device (speeds trip of CB and significantly reduces energy at point of arc fault)
CENTERLINE 2100 Safety Portfolio

- Insulated Bus
- R-Frame CB with ArcShield
- Device Limited ArcShield
- 100ms Duration Rated ArcShield
- Secure Connect
- Secure Connect Remote Operator
- Maintenance Mode Trip Unit
- Network STO for PowerFlex 755
- IntelliCENTER
- Network STO for PowerFlex 755
- Secure Connect Remote Operator
- Maintenance Mode Trip Unit
- Device Limited ArcShield
- Insulated Bus
- R-Frame CB with ArcShield
Introduction to the CENTERLINE 2500

CENTERLINE 2500 started in 2006 to satisfy the need for an IEC-centric product in the global marketplace

- Adheres to IEC 61439-2
- LV MCC and Switchgear Capabilities

CENTERLINE 2500 is manufactured in locations outside the US in strategic global regions
## CENTERLINE 2500 to 2100 Comparison

### CENTERLINE 2500 (2006-Present)
- IEC Standards (Outside of North America)
- Columns
- Unit Sizing = Modules
- Max of 24 Mod Units per Column
- 1 Mod = 80 mm (~3” or 4 Mod = 1SF)
- Metric Units
- Developing Delivery Programs
- Fully Withdrawable
- Higher Unit Density
- Rotary Handle
- Configure with EST

### CENTERLINE 2100 (1971-Present)
- UL/NEMA Standards-North America
- Sections
- Unit Sizing = Space Factor
- Max of 6.0 SF per Section
- 1 SF = 13” (330 mm)
- English Units
- Standard Delivery Programs
- Partially Withdrawable
- Lower Unity Density
- Flange Handle
- Configure with PCBr

### Common to 2500 and 2100
- Robust CENTERLINE horizontal and vertical bus structure
- EtherNet/IP & DeviceNet™
- Intelligent Motor Control Components & IntelliCENTER
- Premier Integration with Logix
- Configure ROM with CENTERLINE Builder (CLB)
- Optional Safety features of SecureConnect and ArcShield