



## XLM Switchgear

Cat® generator set paralleling switchgear has been designed to integrate with Cat EMCP3 generator set controls. Now you get greater efficiency, reliability and dependability all in one package, exclusively from your Caterpillar dealer.

Available in both low- and medium-voltage system applications (up to 15 kV). EMCP3.S is an advanced, multifaceted microprocessor-based control found exclusively in Cat generator set paralleling switchgear.

### FEATURES

XLM switchgear using EMCP 3.S – Generator Paralleling Switchgear for Emergency Transfer (Xfer) and Load Management control of up to 4 standard configurable engine generator sets with one utility source.

- Automatic Transfer to Emergency upon Utility failure
- Automatic Start, Synchronize, Parallel and Load Share on a common bus for Emergency operation
- Open or closed transition transfer back to Utility upon stable return of power, with soft generator unloading
- Closed transition Load Management Mode with soft loading and unloading of generator system
- Closed transition transfer to Emergency Mode to facilitate maintenance, or for storm threat avoidance with soft loading and unloading of generator system
- Load shed/add
- Generator demand priority
- Cost effective, technically superior alternative to conventional ATS arrangement

EMCP 3.S brings the power and reliability of microprocessor technology to your generator power application. Through the use of the operator interface touchscreen display with easy to follow graphical presentations, the EMCP 3.S merges the features of:

- Power Monitoring
- Switchgear Automation
- Optional Remote Communications

### FAULT TOLERANCE

Caterpillar generator set paralleling switchgear has eliminated the single point of failure found in some controller schemes by integrating the following:

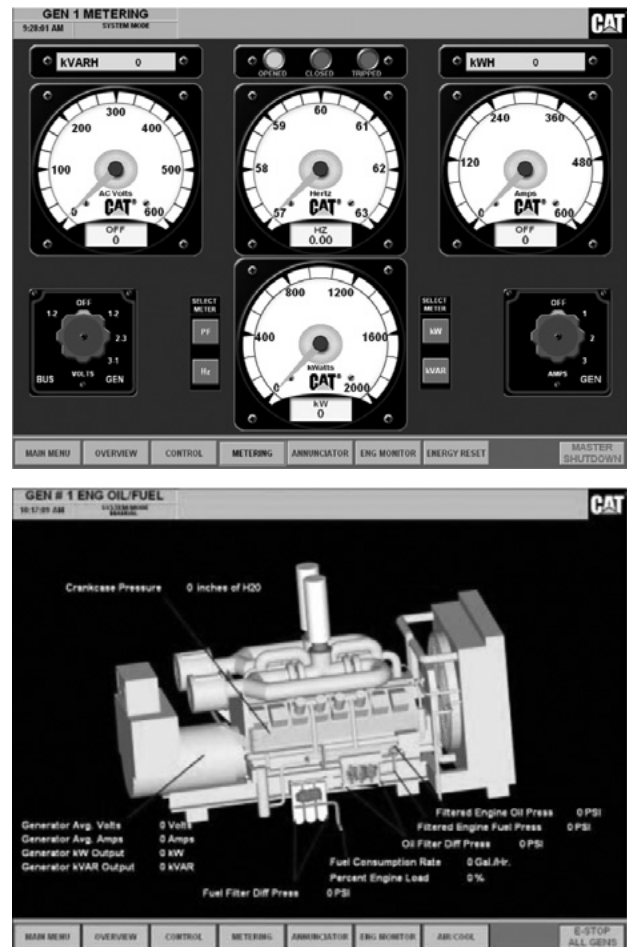
- 1.) True distributed control processors for each power source ensures the system continues to operate even if a single processor fails.
- 2.) Cat generator set paralleling switchgear uses moving master technology. Master control functions, such as, modes of operation, load shed controls, generator demand priority controls, and de-energize bus logic, reside in the generator #1 EMCP 3.S. If generator #1 controller fails for any reason, the master control functions are automatically transferred to the next generator controller. Each generator controller is redundant to the first. As long as a generator set is available, Cat generator set paralleling switchgear will automatically bring it to the bus.
- 3.) If the touchscreen fails, an “Instant Auto” switch is provided to place all software controls in the Auto position, protecting your facility from power outages.
- 4.) Distributed manual control in case the automation feature fails.
- 5.) Redundant networks (on 12" screens and above).

## TOUCHSCREEN INTERFACE

The Cat color touchscreen display is the key to the system's powerful and simple operator interface. The screens give the operator an instantaneous, easily understandable view of the entire system status. To access system controls, simply touch the corresponding portion of the screen.

The easy-to-use touchscreen interface makes it possible to view and monitor:

- Metering
- Engine metering
- Protective relay settings
- Annunciators
- Adjust load shed controls and generator demand priority
- Synchronize and parallel
- Set modes of operations
- Voltage and frequency adjustments



Typical Standard View

## STANDARD & OPTIONAL EQUIPMENT

### STANDARD EQUIPMENT

- Operator Interface Touchscreen Options
  - 15" Surface Acoustic Wave TFT Color Touchscreen
  - 12" Resistive TFT Color Touchscreen
  - Resistive LCD Monochrome Touchscreen or optional EGP2, 10" Resistive Monochrome Touchscreen
- Direct Data Communication to Cat microprocessor based engine generator set control network
- 6" Resistive LCD Monochrome Touchscreen for XLM1, 10" Resistive LCD Monochrome Touchscreen for XLM2 – XLM4
- Full Function 0.5% Accuracy Analog and Digital AC Metering for Utility: Voltage L-L, L-N; Current 1, 2, 3; Frequency; Power Factor; kW; kVAR
- Full Function 0.5% Accuracy Analog and Digital AC Metering for Generators: Voltage L-L, L-N; Current 1, 2, 3; Frequency; Power Factor; kW; kVAR
- Full Function Engine Gauges: RPM, DC Battery Voltage, Oil Pressure, Engine Coolant Temperature, Engine Hours, Number of Starts
- Full Function Synchronizing and Paralleling Controls with Selection for Automatic or Manual Synchronizing
- NFPA 110 Engine/Generator Status, Pre-Alarm and Shutdown Fault Annunciation with color display and 85 dbA alarm horn with silence button
- Full Function 0.5% Accuracy Analog and Digital AC Metering for System: Voltage L-L, L-N; Current 1, 2, 3; Frequency; Power Factor; kW; kVAR
- System Control Functions for Auto (Standby for Emergency), Closed Transition to Emergency and Load Management
- Automatic Load Shed Control with On-Screen Operator Adjustments for Essential (1 level of essential for every generator in the system) and 1 Level of Non-Essential Automatic or Manual Load Shed/Load Add Control
- Automatic Generator Demand Priority with On-Screen Operator Adjustments for Automatic Addition and Removal of Generator to the Load Bus
- System Status and Alarm Annunciation with color display and 85 dbA alarm horn with silence button
- Password secured Settings and Adjustments for Generator and System Setups and Protective Relaying
- Alarm Summary Reports
- Settings Reports
- Engine and Generator Load Charts
- 3-D Engine Data
- UL 891 Listed and Labeled or UL 1558 Listed and Labeled
- NEMA 1, Deadfront Freestanding Construction
- IEEE 1547 Compliant
- UL or CSA Listed
- Copper Bus, braced for 100 kA
- 3-phase, 4-wire, 100% neutral, ¼" × 2" copper ground bus
- Available in 600 V or 480/277 V, 60 Hz
- UL1066 listed Power Circuit Breakers, 100 kAIC, two-step stored energy drawout mounted electrically operated with long time and instantaneous trip, and circuit breaker control switch with lights
- Continuous cross bus ratings up to 6000 amperes at 600 VAC
- Main Output Lugs
- Mechanical lugs for incoming and outgoing conductors
- Top or bottom conduit entry
- Plug together control connections across shipping split

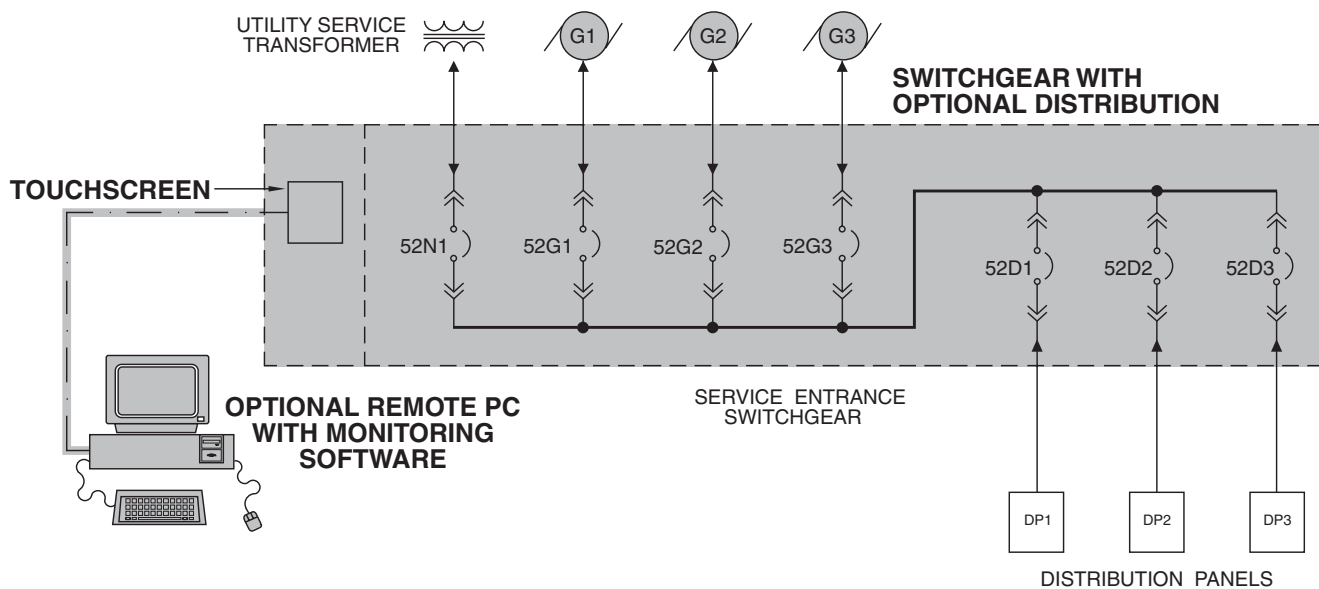
## STANDARD & OPTIONAL EQUIPMENT (continued)

### OPTIONAL EQUIPMENT

- Fixed Mounted Power Circuit Breakers
- Distribution Sections with Fixed or Drawout Mounted Circuit Breakers
- Circuit Breaker Trip Functions – Short Time and/or Ground Fault (in addition to Long Time and Instantaneous)
- Steel Barriers between Switchboard or Switchgear Sections for compartmentalization
- Bus/Cable Barriers
- Also available in 150 kA or 200 kA bus bracing configurations
- Also available in 8,000 and 10,000 amperes continuous cross bus ratings at 600 VAC.

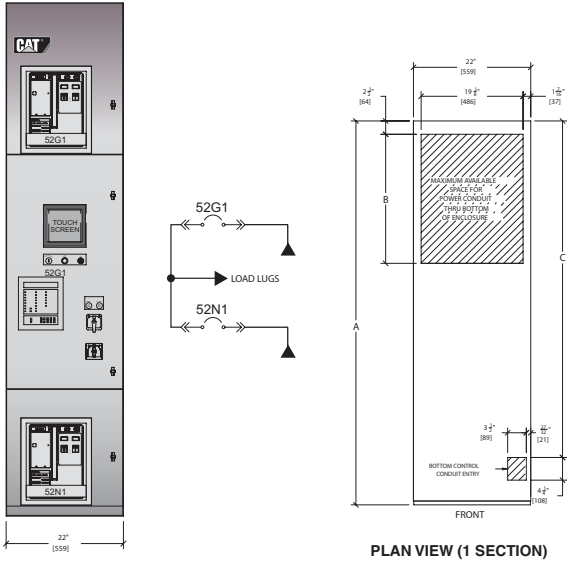
- Also available in 120/208 Volts, 60 Hz
- Also available in 5 kV and 15 kV configurations
- Software for Additional On-Site Monitoring and Control Work Stations
- Software for Off-Site Monitoring and Control
- Building Automation Data Concentrator – Modbus or Ethernet
- Remote Notification
- Historical Data Trending
- Extended Warranty

## TYPICAL APPLICATION

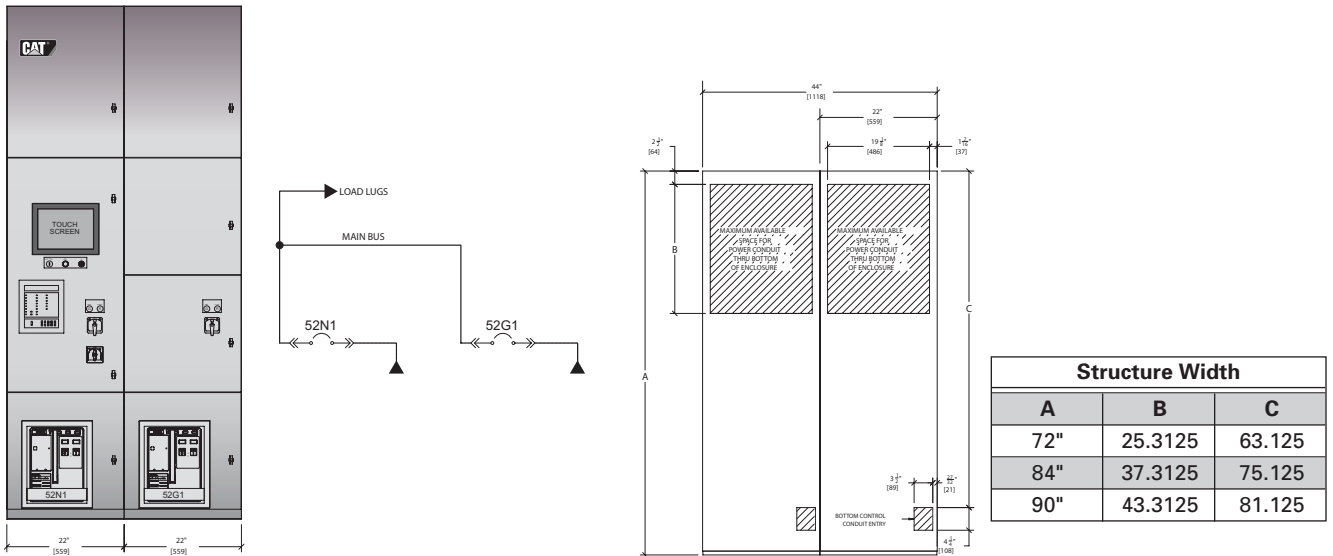


Application: Utilize 1 – 4 generator sets to attain several levels of protection: Use 1 or 2 units to handle emergency loads only, or the entire facility load if desired. Add a redundant generator set for the highest level of protection.

## DIMENSIONS



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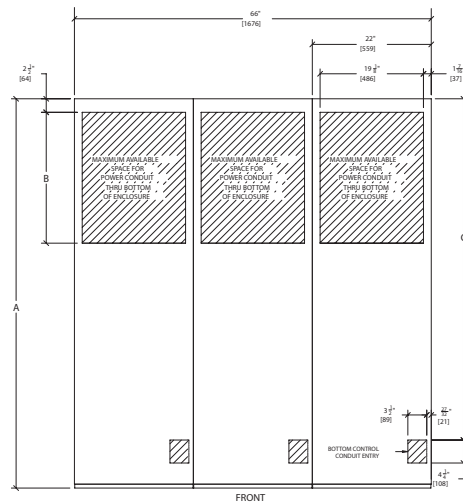
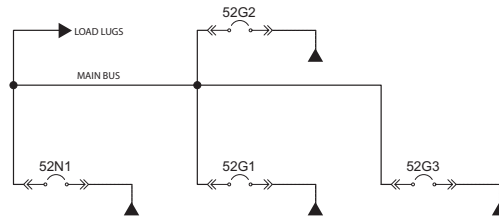
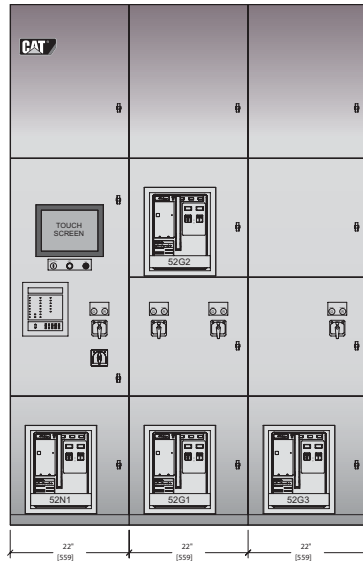


XLM Switchgear (480 Volt)										
Operating Voltage	Model Number	Utility CB Size	Minimum Gen kW	Maximum Gen kW	Generator CB Size	Main Bus Size	Load Lugs	500 mcm Lugs per Phase	Drawing Number	Cabinet Depth
480	XLM1-800**	800	0	532	800	1600	1	3	1	72
	XLM1-1600**	1600	532	1064	1600	1600	1	4	1	78
	XLM1-2000**	2000	665	1330	2000	2000	1	6	1	78
	XLM1-3000**	3000	998	2000	3000	3200	1	8	1	>90

### XLM Notes

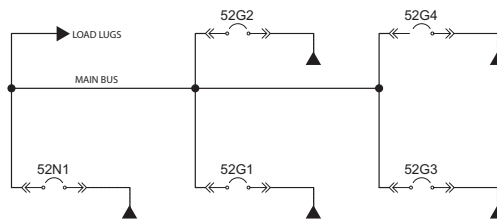
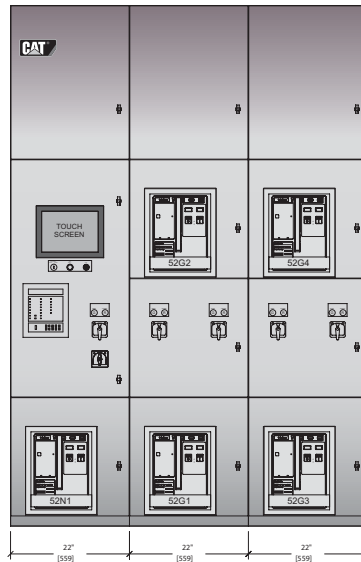
- 1- On XLM product the utility breaker decides the Default size of the main bus
- 2- (\*\*) Insert desired Generator CB size in Model #
- 3- (>90) – Enclosure greater than 90" deep requires both Top and Bottom entry for adequate cable space
- 4- Depth for XLM1 based on a standard product configuration (Single structure design)

## DIMENSIONS



PLAN VIEW (3 SECTIONS)

## DIMENSIONS



XLM Switchgear (480 Volt)										
Operating Voltage	Model Number	Utility CB Size	Minimum Gen kW	Maximum Gen kW	Generator CB Size	Main Bus Size	Load Lugs	500 mcm Lugs per Phase	Drawing Number	Cabinet Depth
480	XLM2-800**	800	0	532	800	1600	1	3	3	72
	XLM2-1600**	1600	532	1064	1600	1600	1	4	3	72
	XLM2-2000**	2000	665	1330	2000	2000	1	6	3	72
	XLM2-3000**	3000	998	2000	3000	3200	1	8	3	84
	XLM3-800**	800	0	532	800	1600	1	3	4	72
	XLM3-1600**	1600	532	1064	1600	1600	1	4	4	72
	XLM3-2000**	2000	665	1330	2000	2000	1	6	4	72
	XLM3-3000**	3000	998	2000	3000	3200	1	8	4	84
	XLM4-800**	800	0	532	800	1600	1	3	5	72
	XLM4-1600**	1600	532	1064	1600	1600	1	4	5	72
	XLM4-2000**	2000	665	1330	2000	2000	1	6	5	72
	XLM4-3000**	3000	998	2000	3000	3200	1	8	5	84

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