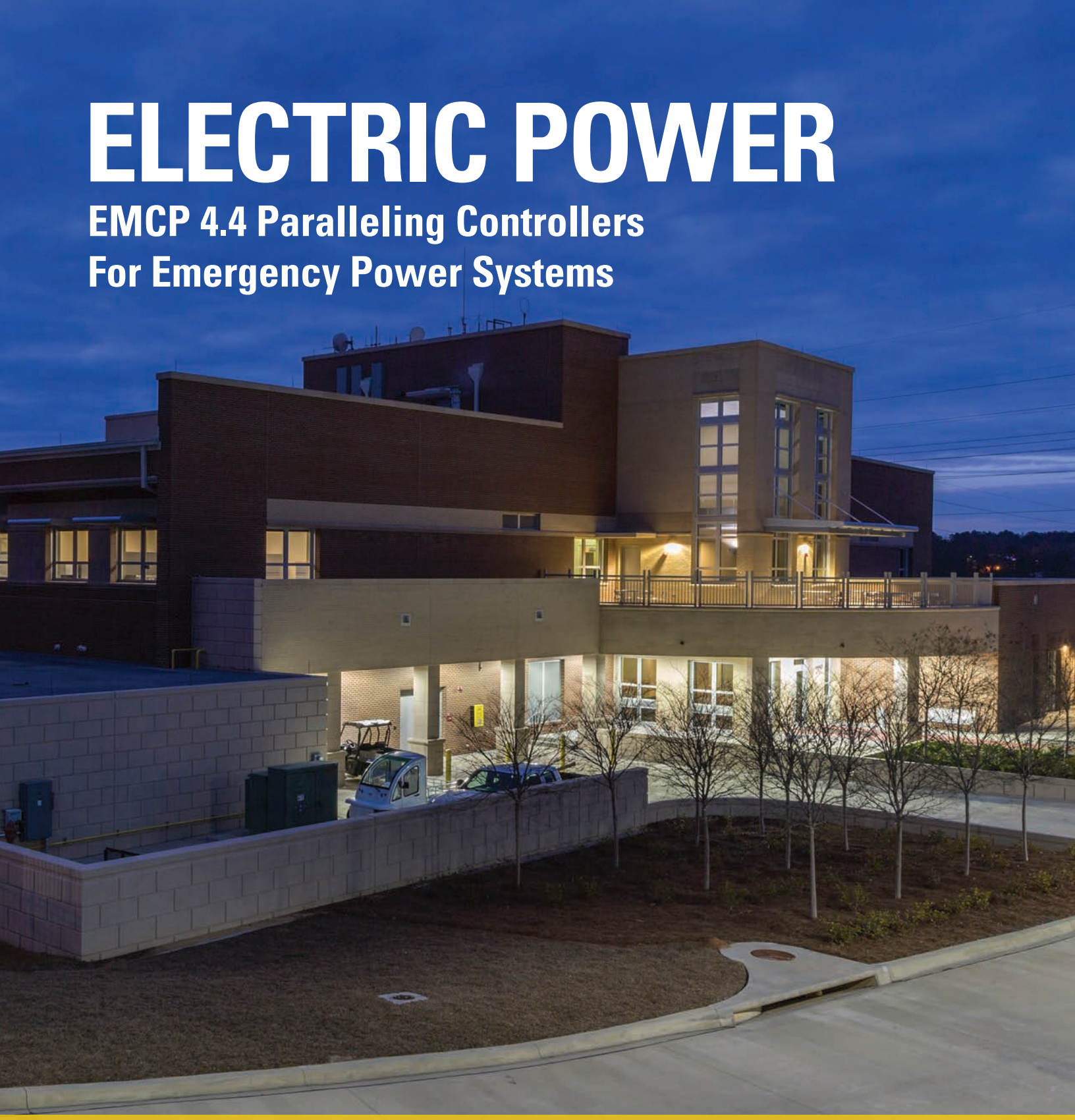
ELECTRIC POWER

EMCP 4.4 Paralleling Controllers For Emergency Power Systems



FLEXIBLE, RELIABLE EMERGENCY POWER SYSTEMS

The EMCP 4.4 engine and generator controller was developed by Caterpillar for exclusive use on Cat® diesel and gas products. It's a scalable control platform suitable for a wide range of applications, from a single module to the paralleling and load sharing of multiple units. The systems can be further customized to meet your needs through programming and expansion modules.

EMCP 4.4 CONTROLLER

- On-genset paralleling and load sharing solution
- Simplified operator interface with system monitoring
- Advanced paralleling features including real (ekW) and reactive (kVAR) load sharing, load shed/add, and load sense demand
- Industry standard communication protocols with ability to transmit to customer SCADA systems
- Intuitive menus and full text fault codes improve troubleshooting and diagnostics
- Integrates with Cat® Connect
- Generator protective relays, including over/under voltage, over/under frequency, over current and reverse power
- Expansion modules, including local annunciators, remote annunciators, input/output, and generator temperature monitoring

FEATURES

Purpose-built synchronizing and paralleling

With standard features such as load shed/add and load sense demand, the EMCP 4.4 controls emergency standby power without the need for a separate system master. Multiple Genset Data Link (MGDL) technology provides advanced system monitoring and control features including a patented adaptive failsafe droop strategy to ensure seamless operation of the system and power to your loads.

Circuit breaker control

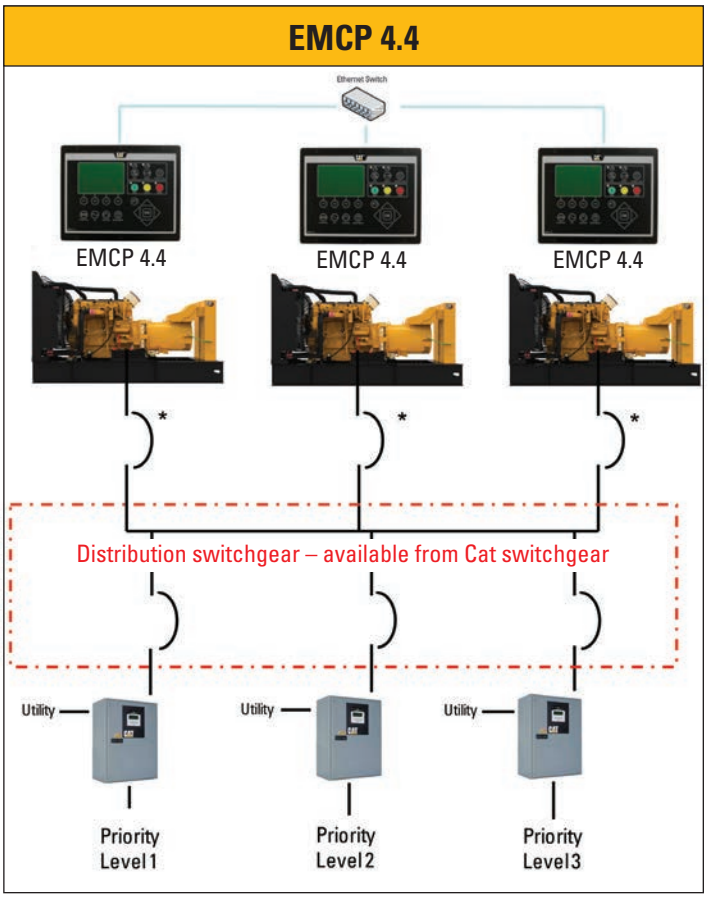
The EMCP 4.4 is factory equipped to control the genset mounted circuit breaker. Circuit breakers have five cycle close/open capability and are equipped with standard and optional interrupt ratings to meet your application needs.

Remote monitoring

The EMCP remote monitoring software offers enhanced monitoring capabilities via RS-485 and Ethernet (Modbus TCP) connections, including the ability to:

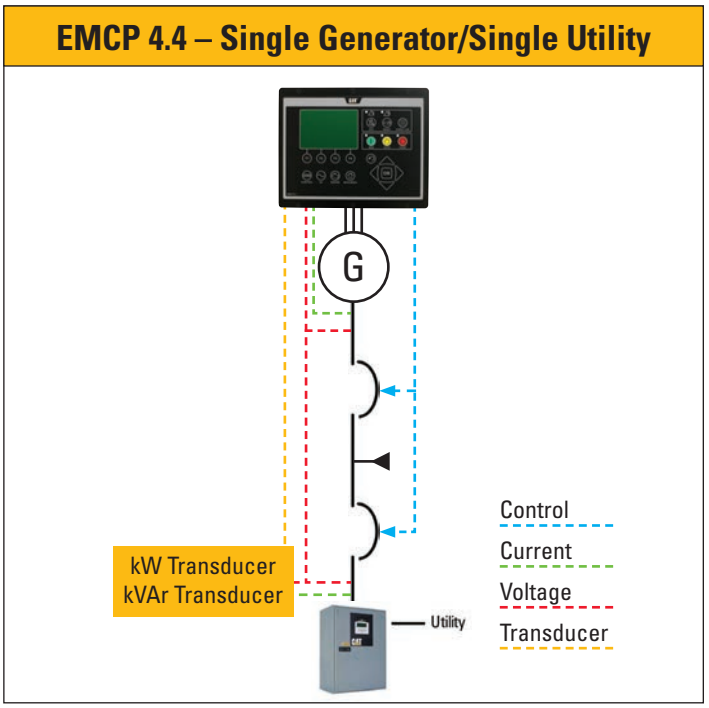
- Monitor
- Log
- Graph
- Control
- Automatic data logging with programmable update parameters

The panel is also compatible with Cat Connect for select generator set platforms.



Example EMCP 4.4 system diagram featuring three stage load shed/add functionality

*Electrically operated circuit breaker – remote or genset-mounted

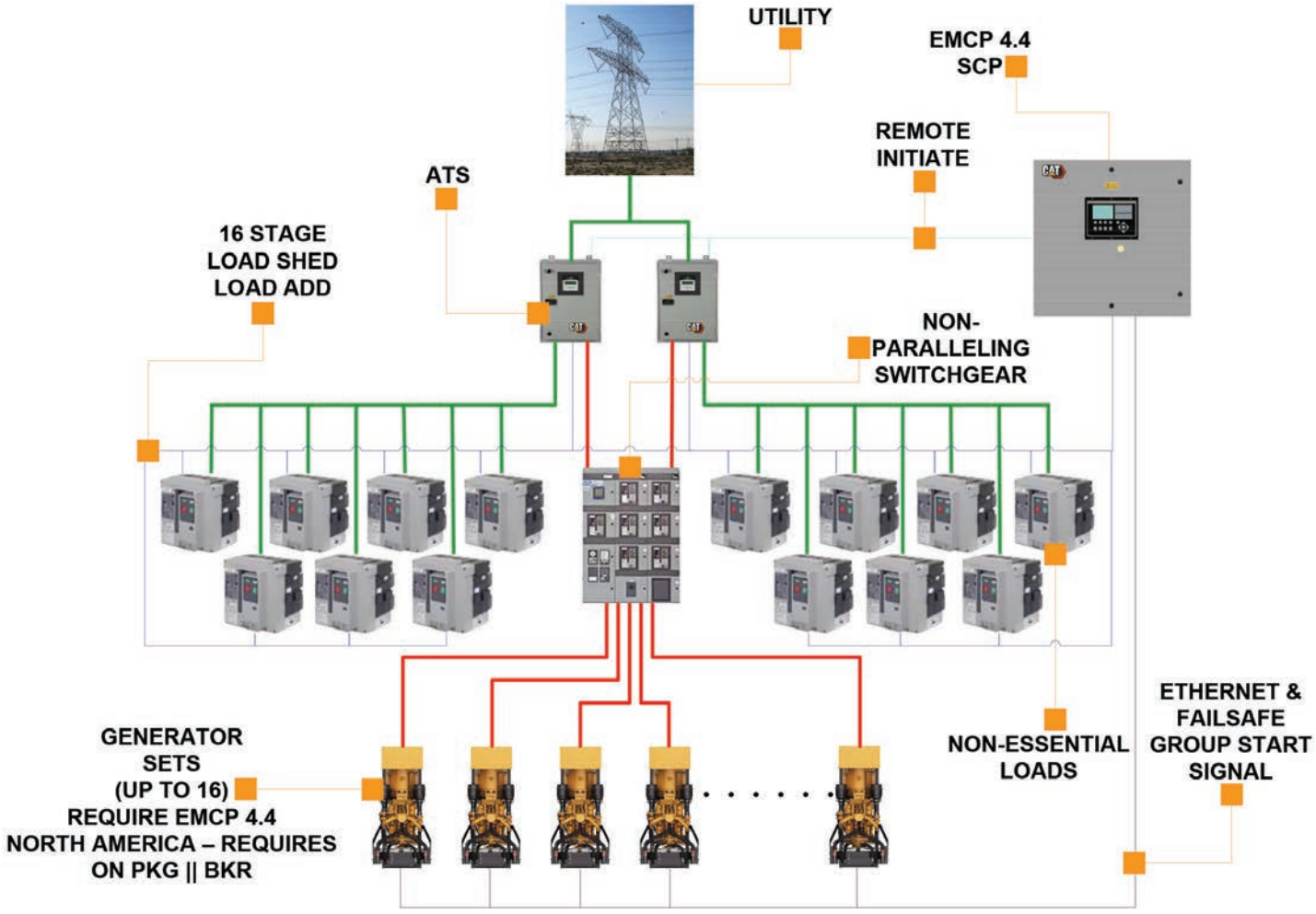


Example EMCP 4.4 single generator single utility with optional transducer

OPTIONS

EMCP 4.4 Supervisory Control Panel (SCP)

The wall-mount SCP expands the capability of on-board EMCP 4.4 paralleling. It provides supervisory level monitoring and control for applications including group start functionality. Available in non-utility paralleling applications, the SCP provides complex 16-stage load shed/add with both manual and automatic control of downstream loads. A best-battery diode system provides uninterrupted power to the MGDL network ensuring the highest levels of reliability of the EMCP 4.4 system.

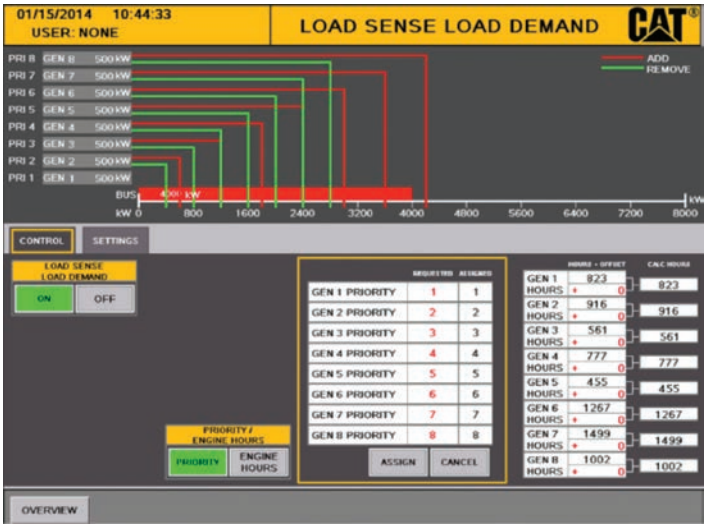


Example diagram EMCP 4.4 with SCP Panel, 16 generators, 16-stage load shed/add

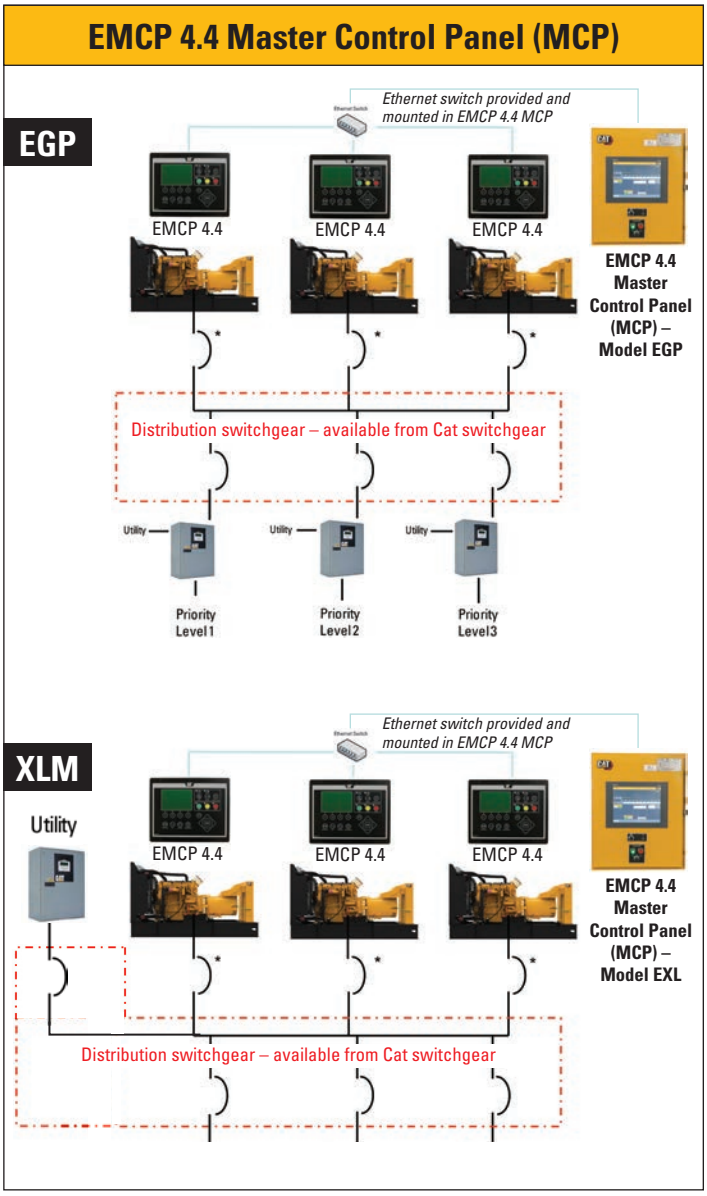
OPTIONS

EMCP 4.4 Master Control Panel (MCP)

The wall-mount MCP expands the capability of the EMCP 4.4 control system with a graphical user interface and parallel with utility capability. It includes a 15-inch color touchscreen interface for enhanced system level monitoring and control for multiple genset (EGP) and utility paralleling (XLM) applications. Standard XLM versions include provisions for control of one utility circuit breaker and import, export, base load control functionality.



Screen shot view of EMCP 4.4 Master Panel



*Electrically operated circuit breaker – remote or genset-mounted

EMCP 4.4 PRODUCT FEATURE COMPARISON

	EMCP 4.4	EMCP 4.4 SCP	EMCP 4.4 Master	
			Engine Generator Paralleling (EGP)	Utility Transfer and Load Management (XLM)
Operating Modes				
Emergency Standby/Island Mode	●	●	●	●
Utility Paralleling	❍ (Note 1)			●
System Capacity				
Number of Units	1 – (Note 1) 8 – Hardwired 16 – MGDL	16	8 (Standard)	8 (Standard)
Voltages				
Low Voltage (< 600 V)	●	●	●	●
Medium Voltage (600 V to 15 kV)	●	●	●	●
Circuit Breakers				
Gen Paralleling CB Control	●	●	●	●
Utility Paralleling CB Control	❍			●
Distribution Breaker Control	●	●	●	●
General Paralleling Functions				
Dead Bus Arbitration	●	(Note 5)	●	●
Synchronization	●		(Note 5)	(Note 5)
Load Sharing	● (Note 2)		●	●
Load Sense / Load Demand (LS/LD)	● (Note 2)		●	●
LS / LD – Engine Hours Balancing	● (Note 2)		●	●
Load Shed / Load Add Stages	Up to 4 (Note 3) Up to 6 (Note 1)	16	8	8
Utility Paralleling Functions				
Base Load Control	●			●
Load Management / Peak Shaving (Utility)	❍			●
Utility Transfer / Control	❍			●
Utility Protective Relaying (Industrial Grade)	❍			●
HMI & Control				
Bus Monitoring	●	●	●	●
System Monitoring and Control	●	●	●	●
Screen Size	5.5 inches	5.5 inches	15 inches	15 inches
Control Power – Best Battery Diode circuit – (Factory Supplied)		●	●	●
Touch Screen Control / Graphical Interface			●	●
Dimensions				
Panel Dimensions	(Note 4)	36"H x 36"W x 13"D	30"Hx24"Wx11.25"D	
Weight	(Note 4)	172 lbs.	74 lbs.	
Communications, Logging & Reporting				
Ethernet Switch (Factory Supplied)		●	●	●
Remote Communication Capability	●	●	●	●
Alarm Logging	●	●	●	●

KEY

(Blank) – Not Available
● – Standard
❍ – Optional

Notes: (1) Paralleling one generator set with one utility
(2) Not available with paralleling one generator set with one utility
(3) Includes 1 fully featured load shed stage (feeder breaker control) plus 3 programmable generator set kW-based load shed stages
(4) EMCP 4.4 installed as part of packaged engine generator set
(5) Function included as part of the system – performed by the EMCP 4.4 generator set controller

TAKE CONTROL

The EMCP 4.4 controllers feature the reliability and durability you have come to expect from your Cat equipment. EMCP 4.4 is a scalable control platform designed to ensure reliable genset operation, providing extensive information about power output and engine operation. These systems can be further customized to meet your needs through programming and expansion modules.

Talk to your local Cat dealer today about the optimum control options for your application.