



Data Sheet Microgrid Integrated Switchboard

Your most valuable energy asset: a microgrid-enabled switchboard that brings intelligence, resilience, and sustainability to the grid edge.

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Overview

The Siemens Microgrid Integrated Switchboard (MIS) is a fully integrated, packaged low-voltage switchboard solution designed to monitor, control, and optimize a microgrid's Distributed Energy Resources (DERs). Powered by the Siemens SICAM Microgrid Controller (MGC), this system enables seamless transitions between grid-connected and islanded operations, delivering energy resiliency, economic efficiency, and sustainability for commercial and industrial facilities.

Feature details

Feature	Description
Controller	Siemens SICAM MGC (locally hosted software)
HMI	22" Touchscreen Display
Communication protocols	Modbus TCP/IP, Modbus RTU, IEC 61850, IEC 60870-5-101, DNP3
Enclosure type	NEMA 1 (Indoor) / NEMA 3R (Outdoor)
Operating modes	Automatic & Manual
DER integration	Utility, Generator, PV, BESS
Cybersecurity	Firewall, Role-Based Access, IPSec Encryption
Warranty	12 months from commissioning / 18 months from shipment

Key benefits

- Seamless integration
 - Seamless integration of utility, generator, BESS, and PV sources
 - Control and monitoring of the critical bus and sources with SICAM MGC
 - Vendor agnostic approach to DER integration
- Intelligent control and automation
 - Automatic islanding, black start, and demand response functionality
 - Real-time monitoring and control of renewables, storage, EV chargers, generators, and loads
 - Advanced protection and safety with SIPROTEC Universal Relay
- Flexible and complaint
 - Indoor (NEMA 1) and outdoor (NEMA 3R) configurations
 - Available UL 891 switchboard configurations
 - UL 3141 Power Control System-ready architecture and IEEE 2030.7

Electrical specifications

System ratings

Parameter	Available options
System voltage	208Y/120 3P4W · 480Y/277 3P4W · 600Y/347 3P4W · 240V 3P3W Delta · 480V 3P3W Delta · 600V 3P3W Delta
Main bus amperage	800 · 1200 · 1600 · 2000 · 2500 · 3000 · 4000 · 5000 · 6000 A
System Interrupt Rating (AIC)	35,000 · 50,000 · 65,000 · 85,000 · 100,000 A
Bus bracing	42,000 · 50,000 · 65,000 · 100,000 · 150,000 · 200,000 A

Breaker amperage ratings

Breaker	Available ratings
Utility (POI)	800 – 5000 A
Generator	800 – 5000 A
Photovoltaic (PV)	150 – 5000 A

All circuit breakers are electrically operated and support remote open/close via the MGC Ethernet network. Trip units provide overcurrent and ground fault protection.

Physical enclosure specifications

Parameter	Options
Construction	Dead-front, free-standing, metal-enclosed assembly
Access	Front access for all normal operations
Enclosure type	NEMA 1 Indoor / NEMA 3R Outdoor
Enclosure paint	ANSI 61 Gray / ANSI 49 Gray
Bus type	Tin plated aluminum / Silver plated copper
Bus sizing	Fully rated – 65°C rise / Fully rated – Amps per sq. inch
Incoming location	Top / Bottom / Top and Bottom
Incoming type	Cable / Busway
Neutral bus	Fully rated (3P 4W)
Section barriers	Optional
Arc flash mitigation	Optional
Ground fault protection	Modified Differential Ground Fault Protection (3P 4W)
Seismic rating	IBC (Ip=1.0 / 1.5) · CBC (Ip=1.0 / 1.5) · ASCE
Control section mounting	Integrated into switchboard lineup / Standalone enclosure

Components and integration

The MGC includes the following factory-installed, wired, and tested components:

- Siemens SICAM MGC: Locally hosted microgrid controller
- 22" Touchscreen HMI: Operator interface
- Network (ethernet) switch: Minimum one (1) spare port for customer network
- Uninterruptible power supply (UPS): Sized for island operation & blackstart
- Multi-function POI relay: Including, but not limited to overvoltage, undervoltage, reverse power, vector jump, over/under frequency, and sync check protection
- 250 kVA Surge Protection Device (SPD)
- Revenue-grade digital meter
- Up to eight (8) sheddable loads

The MGC integrates and dispatches the following Distributed Energy Resources:

- Utility / Point of Interconnect (POI)
- Photovoltaic (PV) Solar
- Battery Energy Storage System (BESS)
- Emergency / Standby Generator

Operating modes and functions

Automatic mode

The MGC autonomously manages all DERs and transitions:

- **Grid-connected:** Dispatches generation assets per economic, environmental, or resiliency goals selectable via HMI.
- **Islanded:** Maintains stable island grid using grid-forming assets; maximizes renewable utilization; auto-starts/sheds generation based on operating reserves.

Manual mode

Operator-initiated commands only (start, stop, synchronize) via HMI. DERs await operator action — full control in the operator's hands.

Economic dispatch functions

- **Tie line control:** Regulates active power exchange at the POI to a defined setpoint
- **Demand charge reduction (peak shaving):** Limits demand during high-consumption intervals to reduce utility penalties
- **Static power production:** Dispatches supply-side assets to maintain a fixed power production limit
- **Ancillary market services:** Participates in Demand Response programs and ancillary services markets

Load control and shedding

The MGC supports intelligent, multi-mode load shedding to maintain grid stability:

- **EV charger (EVC) management:** Curtails EV charging loads during peak or islanded events
- **State of charge (SOC) based:** Sheds loads based on BESS state of charge thresholds
- **BMS signal integration:** Coordinates with Building Management System for load signals
- **Sequence-based shedding:** Prioritized load disconnection in a defined sequence
- **Power-based shedding:** Sheds loads based on real-time power measurements

All load shedding types are available for current use or reserved for future facility expansion.

HMI display screens

The 22" touchscreen HMI provides the following minimum screens:

- **Single line diagram:** Circuit breaker arrangement, status, and position
- **Power monitoring:** Real power, reactive power, voltage, frequency, and current per breaker/meter
- **DER status:** Power output and operational status of each DER
- **Alarms and event logs:** Real-time and historical alarm management
- **Settings screen:** Change operational modes and economic dispatch priorities

Cybersecurity

The SICAM MGC includes built-in, multi-layered cybersecurity protections:

- Configurable software-based firewall
- Role-Based Access Control (RBAC): Prevents unauthorized or accidental system changes
- Integrated crypto chip and IPSec encryption

Quality assurance and testing

Factory testing

- Factory testing performed prior to shipment
- Test report documenting results, assumptions, and corrective actions
- IO and communications loop testing

Customer witness testing

- Simulated environment testing (no live DERs required)
- Includes: islanding simulation, reconnect sequence, and economic dispatch verification
- Factory accepted testing and witness testing optional

Site commissioning testing

- Full energization and operational verification of all MGC components
- DER integration testing (coordinated between DER vendor and MGC vendor)
- Formal **Site Acceptance Test (SAT)** procedure developed cooperatively

Warranty

Milestone	Warranty Period
From date of commissioning	12 months
From date of shipment	18 months

Whichever period expires first applies. Manufacturer will repair or replace defective products during the warranty period.

Manufacturer information

Manufacturer	Siemens
Product	SICAM MGC — Microgrid Integrated Switchboard
Technical support	24/7 — 365 days per year

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