

Kokam Solar Integration System with Advance Load Response



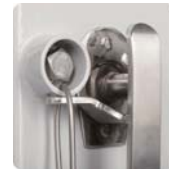
Enclosure: A tamper proof, utility grade enclosure designed for outdoor applications. Meets NEMA 3R standards. Made from 12-gauge mild steel, 73" x 24" x 14".



Wiring: Single point PV and grid terminations reduce onsite errors and installation cost.



Inverter: A hybrid DC/AC and AC/DC controllable inverter/converter with multi-point solar panel power tracking ability.



Door Latch: Three-point pad-lockable or security seal (shown) latching mechanism equipped with a security pentahead bolt to restrict non-authorized personnel.



Gateway: Logs multiple points of telemetry data from the onboard battery management system, charge controller, inverter/converter, Home Area Network appliances and electrical loads.



Switch Panel: Unitized isolation switch subassembly designed with a solid copper bus to reduce footprint and provide a common integration point.



Battery Enclosure: With integrated cross ventilation and convection cooling, designed to provide 7 kWh to 20 kWh energy storage capability.

Multiprotocol Data Processing: A universal communications gateway supporting open standard communication methods at the transport, application and object levels.

Switch Panel Safety: Switch panel assembly additionally protects authorized personnel from electrically energized components.



Energy production is one of the greatest environmental challenges facing our planet. For renewable energy to achieve its full potential, it must address not only consumers' financial needs but utilities' operational hurdles as well. Our answer is the Kokam Solar Integration System, which intelligently distributes the generation and storage of renewable energy. It maximizes savings in generation, transmission and distribution costs. Kokam's comprehensive solar solution features Smart Grid-ready system design, convenient financing, seamless installation and monitoring services that offer greater control over the energy we use.



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Solar Integration System: Release 2.0

➤ The Kokam Solar Integration System (SIS) is a cost-effective energy management system that captures solar energy and stores it for use when it's needed most, thereby optimizing peak load reduction, improving grid reliability, and maximizing return on renewable energy investments. With an innovative grid-tied model that integrates the latest in lithium-ion energy storage, a unique hybrid inverter/converter, and a software platform that aggregates, monitors, and controls distributed generation and stored energy, Kokam aligns the goals of residential consumers, commercial and industrial customers, and electricity utilities to help solve the energy problems of today and tomorrow.



Front View (Open Door)

AC Electrical Specifications		
Model	SIS-6048-X	SIS-4548-X
Continuous Output Power	6,000 W	4,500 W
Surge Rating (10 Seconds)	12,000 W	9,000 W
AC Voltage	120/240 Vac Split-Phase	
Surge Current	105 A-L-N (15 sec) 52.5 A-L-L (15 sec)	75.5 A-L-N (20 sec) 40 A-L-L (20 sec)
AC Inputs (Grid Generator)	2-60A 2-Pole: IEEE 62.41, 62.45 & 1.2x50ms, C37.90.1	
Nominal Frequency	58.5 to 60.5 Hz	
Output Waveform	True Sine Wave; Stable at 120 Vac within 4 cycles	
AC Output Voltage	L-N: 120 Vac ± 3%; L-L: 240 Vac ± 3%	
AC1 Frequency Range	59.4 to 60.4 ± 0.05 Hz (automatically adjusts)	
AC Transfer SW Speed	Isolation Contactor (30 KV BIL, 400 A continuous & interrupt 50 Ka fault duty for 2 cycles) 10 Ka Residential < 8 ms.	
Total Harmonic Distortion	< 5%	
Voltage Correction	Yes. ± 10%	
CEC Weighted Efficiency	92.5%	93.0%
Idle Consumption — Search Mode	< 8 W	
Ambient Air Temperature Operating Range	-13 to 122°F (-25 to 50°C)	
Emissions	FCC Class B	
Anti-islanding	UL1741:2005, CSA 107.1-01, Rule 21 Compliant.	
System Network	CAN BUS	
Cooling	Forced Air — Induction	
Backup Power	Yes. Configurable.	

DC Specifications	
Maximum PV Array Operating	140 Vdc
DC Output (Nominal)	48 Vdc
MPPT PV Operating Range	40 to 150 Vdc
Maximum PV Open Circuit Volts	150 Vdc
Maximum PV Open Circuit Amps	60 A
Ground Fault Protection	GFDI Rated: 80 A
Electronic Overcurrent Protection	Yes. > 0.5A
Separate MPPT Inputs	Yes. One (1)
DC Bus Ground	Enclosure Ground
Battery Chemistry	Li-Ion
Battery Voltage	48 Vdc Nominal 42 to 58 Vdc Op. Range
Battery Capacity	10.77 kWh, 200 Ah, (expandable to 24.3 kWh, 450 Ah)
Max. Discharge Rate	85 A
Max. Charge Rate	60 A
Cycle Life (80% DoD)	3,000 to 5,000 Cycles (temp & usage dependent)

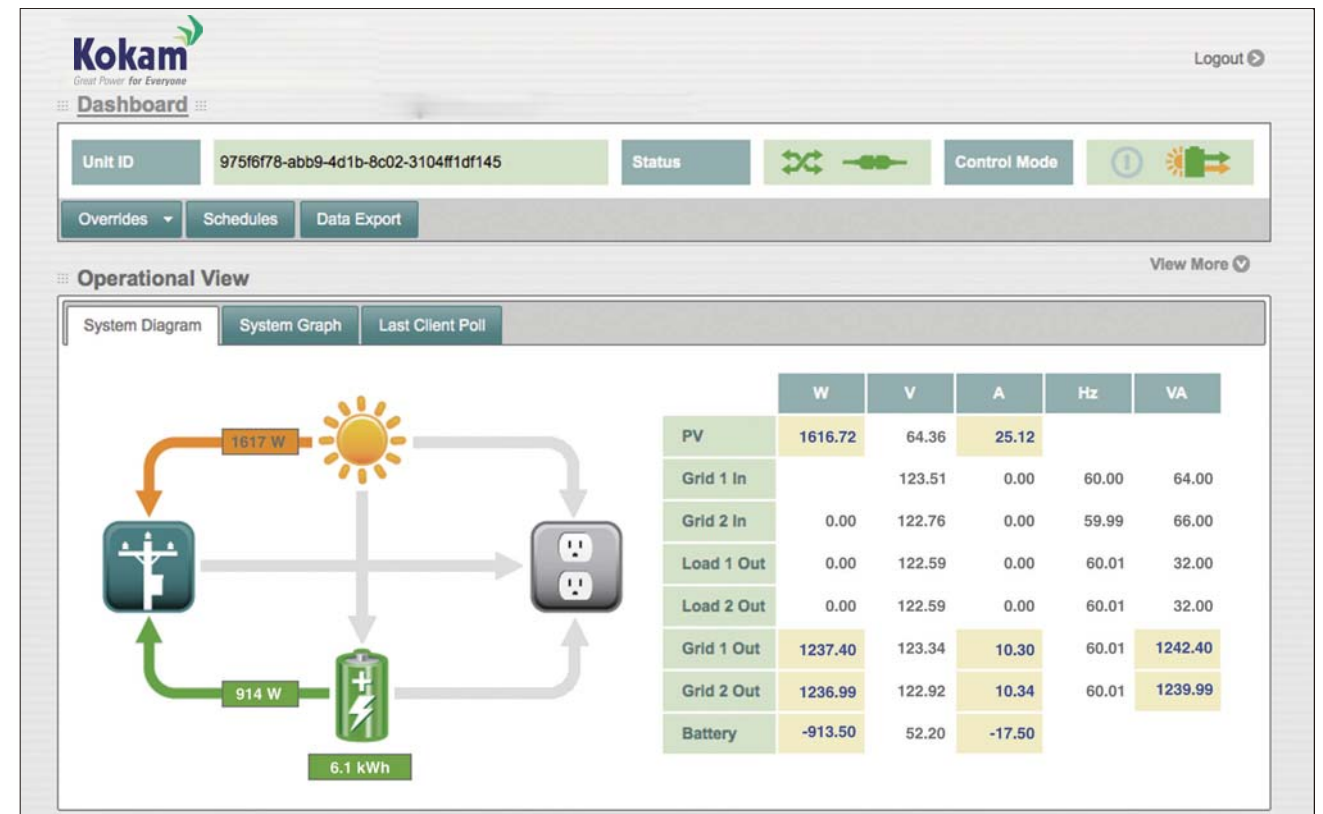
Mechanical Specifications	
Outdoor Rainproof	NEMA 3R: IEEE C57.12.52 Section 6, C57.28 Section 4
Material	Mild Steel (12 ga.)
Paint	IEEE C57.12.28 Section 5, Powder Coating
Mounting	Anchor/Polycrte Pad
Hardware	Stainless Steel
Weight	525 lbs. (238 kg) w/ 10.77 kWh Battery
Grounding	Utility Ground
Nameplate	Conn. Diag. Rating ETC IEEE c57.12.00

The next generation in rechargeable batteries
A Total Solution Provider

Great Power for Everyone

Business Applications	
Peak Load Shifting	Programmable energy control plans to optimize peak load reduction.
Demand Response	Targeted energy dispatch upon demand response signals.
Voltage Support	Grid and critical load voltage support in response to low-voltage events.
Ancillary Services	Sub five-second response time to external signals for frequency regulation, area regulation, and up/down ramping.
UPS	Automatic support of critical loads in event of grid outage. UL 1741 and IEEE 1547-compliant anti-islanding functions.
Firming	Battery support of PV production to smooth intermittent generation.
User Interface	Web-based application for control and monitoring.

Platform Capabilities	
Command & Control	Local control of power components (Battery, Inverter, Charger). Remote command of energy and power flows (manual and scheduled).
Monitoring	Remote monitoring of local components and systems.
Reporting	Operational metrics available in real-time and by historical snapshot.
Management	Local software remotely managed and updated.
Aggregation	SIS units can be targeted individually and by group for all control, monitoring, and reporting functions.
Web Services	Secure 3rd-party access to control, monitoring, and reporting functions through standards-based web service APIs.



Communications	
External APIs	HTTPS Web Services
Remote Communications	HTTPS Over TCP/IP
Local Communications	Ethernet Wi-Fi GPRS (additional option)
Control Frequency	500ms Command Poll
Reporting Frequency	400ms Data Push

Certifications	
Inverter	UL 1741-2005 & CSA 107.1-01 IEEE 1547 Compliant EN50178 FCC Class B
Battery	Type: Kokam SLPB 90255255H, 3.7V, 52Ah Kokam SLPB 110255255H, 3.7V, 63Ah
Other	CPUC Interconnection Rule 21 NEMA 3, NEC