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PROJECT NO. 57236

PROJECT TO DEVELOP THE TEXAS BACKUP POWER PACKAGE PROGRAM	**§ § §**	**PUBLIC UTILITY COMMISSION OF TEXAS**

COMMENTS OF GENERAC POWER SYSTEMS, INC ON TEXAS BACKUP POWER PACKAGE PROGRAM VIRTUAL WORKSHOP AGENDA AND RESPONSES TO COMMISSION QUESTIONS

Generac Power Systems, Inc, (Generac) files these comments in response to Commission questions and invitation for public comment in the design and specifications for proposed backup power packages as part of the Texas Energy Fund. Our filing includes information on Generac, responses to the PUC's specific questions, example microgrid configurations and technical specifications. Generac is available to engage with the Commission, Patrick Engineering, and the Advisory Committee on any clarifications or additional information we can provide.

Generac is a leading resiliency provider with over 65 years of experience manufacturing and deploying technology solutions for residential and commercial needs alike. With our comprehensive suite of product offerings, Generac is supporting homes, business, communities, and the grid with greater resiliency. Generac is a leader in the residential energy solutions industry with offerings including smart thermostats, EV charging, batteries, load management, and generators. In the commercial sector, Generac offers a complete portfolio of solutions including generators, battery energy storage systems, microgrid controllers, cybersecure monitoring and control, and distributed energy resource management system (DERMS) software. This product suite works together to reinforce the electrical grid and provide immediate backup power in the case of an outage, ensuring comfort and reliability at the home, business, and providing stability to critical facilities throughout the country. Generac appreciates your consideration of the following comments.

I. Introduction

The Texas Energy Fund is the leading national example of state investment to enable a stronger more resilient grid. With the increasing frequency and severity of weather events, this

investment could not have been created at a more critical time. The investment in large generation as well as smaller microgrids concurrently allows for planning entities and businesses alike to work together to provide the most value and resilience where needed across Texas. Generac is fully committed to supporting this program and eager to begin bringing these systems online as soon as possible.

Generac takes no position on the implementation of the electric school bus pathway and focuses our response on the Texas Backup Power Package's three-asset package including generator, battery, and solar. This system design can provide facilities and the state with significant benefits. It is vital to appropriately size and engineer the microgrid package to manage the technical complexity, drive economies of scale and minimize overall package cost, while still meeting the program resiliency requirements within the constraints of each candidate site and utility distribution company. Broadly, we see a few areas where increased flexibility or clarity in intent would be helpful to Generac and other providers. We will also provide responses to Commission questions.

In our experience in the design and deployment of microgrids, site constraints and customer energy needs are our first point of concern. While the ideal of designing modular and interoperable microgrid packages for deployment across the state is admirable, in many cases it can be cheaper to design and to fit the system to specific site needs and therefore we request increased flexibility within the design of the microgrid package. While remaining consistent with legislative direction to provide solar, battery, and a generator, we would work to design a system that achieves the program's reliability goals at the lowest end cost to the customer. Limiting systems to five module sizes, as currently recommended in the Patrick Engineering report, may impact the technical and financial feasibility for projects. We request either additional sizes or flexibility within each package to more appropriately respond to the individual site needs and constraints.

Second, the Patrick Engineering report also identifies thousands of "small commercial" critical facilities. These sites can be especially crucial to the communities they serve. Due to their smaller size and potentially limited space available they can present technical and financial constraints for package design and fit. Generac requests additional flexibility in the microgrid

packages for these "small commercial" critical facilities to ensure the best system at the best possible price can be provided.

Third, in designing packages, a standalone generator can provide good resiliency on its own. Adding solar and a battery, as per the legislation, can provide a redundant backup power supply for increased resilience while also reducing fuel costs and emissions. This does come with a higher capital cost. We expand on this further below.

II. Responses to Commission Questions.

Technology Components and Specifications

1. What are the feasibility considerations for the specifications of the range of technologies supported by the program?
    - Standard Package Sizes – Patrick Engineering and the Texas Backup Package Program Advisory Committee have each proposed a set of five different standard package sizes (ranging from 10kW to 2500kW). Patrick Engineering's report specifies that a 150kW load could be served by two 75kW packages. Developing a suite of interoperable packages of various sizes that can be combined in this way is technically feasible; however, it is not necessarily cost-efficient. Individual pieces of equipment within the microgrid package are typically more economic on a per unit basis as the size of the equipment grows. For example, a 500 kWh battery will typically cost less than two 250 kWh batteries, since it makes more effective use of the container, HVAC system, and other auxiliary equipment. Additionally, each microgrid package will include switchgear and associated control and protection components that will be more cost-effective if upsized for a respective site versus combined with smaller components to meet the requirement of a larger site. Given the significant variability of sites, a revised approach could be to increase the number of package options or allow flexibility in system design when the standard packages are cost prohibitive.

- Generac requests the PUC provide clarity on the application of this program in critical facilities which may have program eligible power systems onsite already (i.e., such as existing propane or gas engines, or solar).
- Generac is committed to supporting Texas customers with the right set of solutions to meet resiliency needs and requirements. In response to broadening customer needs, we have assembled a comprehensive suite of technologies for the commercial and industrial market including natural gas and propane generators, battery energy storage systems, microgrid controllers, and cybersecure system monitoring and control. As a result, Generac, or our customers and partners, can configure a multitude of complete interoperable systems to meet program requirements. In addition, Generac can provide warranty and service for customers, developers, and other interested parties. Alternatively, customers, developers, and other parties interested in the program could procure products on an individual basis from Generac (ex: purchase just a generator, or battery, or microgrid controller for their project, etc.). Accordingly, the PUC may not only consider complete packages provided by vendors such as Generac but also approve the specifications of underlying components and equipment which can be combined to meet the package requirements.
- Included in this filing, Generac has provided sample 250kW and 1000kW 3-asset microgrid configurations, bill of materials, mode of operations, and technical product specifications. These two configurations can be scaled up or down in size and maintain a modular and interoperable approach.

2. What specific challenges or considerations should we keep in mind when finalizing the specifications for the backup power technologies (e.g., traditional generators, solar + storage, electric school buses)?
   - In reviewing Patrick Engineering's report on the character and quantity of eligible facilities, we note that thousands of candidate customers would be commonly referred to as "small commercial" (i.e., police stations, nursing homes, alert systems, dialysis, etc.). In these customer settings, the physical space for a 3-asset microgrid and project economics may be challenging. Given the significant number of smaller critical sites,

Generac recommends a revised approach to allow flexibility in system design when the standard packages are commercially and/or technically prohibitive.

- To ensure that microgrid deployments meet the intended goals of the program and the resiliency needs of the critical facilities, we request additional clarification regarding the required capabilities of each power source during an outage. As written, the system must be capable of operating for at least 48 hours without refueling or connecting to a separate power source. This is a straightforward requirement for a generator-only application, but it leaves open the possibility for different approaches to microgrid system design depending on the goals of the program. Consider, for example, the following system designs for various systems designed to cover a 1000kW customer:

Solution	1. **Traditional Generator Only**	2. **TBPP Microgrid (Resiliency-Optimized)**	3. **TBPP Microgrid (Cost-Optimized)**
TBPP Eligible	No	Yes	Yes
Generator Size	1000 kW	1000 kW	1000 kW
PV Size	-	2000 kW	25 kW
Battery Size	-	1000 kW / 2000 kWh	25 kW / 100 kWh
Capital Cost (after incentives / credits)	Lowest	High	Lower
48-hour Resiliency Capability	High (unless fuel supply is impacted)	High (high redundant power)	High (limited redundant power)

Given these options, Solution #3 is closer to the $500/kW than Solution #2. However, Solution #3 provides limited incremental resiliency when compared to Solution #1. The Resiliency-Optimized design (#2) provides better resiliency but has more significant technical and cost

considerations. Given the significant number of technical and financial variables with sites, a revised approach could be to allow flexibility in system design.

3. Are there any technical specifications or interconnection standards that need to be addressed to ensure that the prescribed technologies are effective for different types of critical facilities?

Our approach to this would involve using SEL relay, inverter technology, and switchgear with motorized breakers. All meet utility standards for interconnection and islanding. Specification sheets included in our filing provide a list of IEEE and UL Standards for connecting such technologies to utility systems. In addition, we offer the following:

- The SEL 751 Protective relay is widely accepted by utilities across the US for grid interconnection of generators and inverters. The SEL 751 provides protection for under and over voltage, under and over Hz, Zero and Negative sequence, sync check, and reverse power to prevent export. In addition to the protections provided by the SEL 751 the inverter itself can comply with UL 1741 active anti islanding. Electrically operated circuit breakers and/or contactors in the switchgear are used as the physical means of disconnect in addition to providing over current protection.
- In smaller systems the same SEL 751 will provide protection at the point of interconnection for any system where the inverter will operate in parallel with the utility for peak shaving. However, alternative designs can be employed such as using a transfer switch that isolates the BESS, PV and/or generator on an isolated emergency bus that is only utilized isolated from the utility like a demand response generator and ATS that isolates from the utility and operates off grid. (if allowed by the program)
- Utility grade power meters will be used to measure kW's at the equipment and utility interconnect side
- Equipment with approved industry certifications including 1741SB on inverters
- Microgrid controller will manage generation assets to ensure no export, per program requirements.

4. What is the volume of units of the various size ranges, and can the supply chain support it?

Generac operates three manufacturing facilities in the United States, with a fourth plant, Beaver Dam, coming online in 2025. Based on the estimated quantity of eligible facilities (~30,000 per the Patrick Engineering report) and varying package sizes which are still being refined, we believe Generac and the industry can support the program. It is important to note that in most projects, currently long-lead items are switchgear and transformers, but we anticipate improvements in timeline are coming.

Ownership Models and Financing

1. What are the considerations for alternate or flexible ownership models?

Generac does not take ownership interest in projects and does not take a position as to funding sources and ownership models for projects. As an OEM, Generac works with end-users, energy companies, developers, EPC's, 3rd party owners, and operators.

2. What would you take into consideration when structuring a lease-to-own or resilience-as-a-service model? If you focus on the ability of the critical facility to implement or adopt that alternate ownership model, would that change the way you consider structuring the model?

Generac does not take a position as to ownership models. We do suggest the below changes be considered to achieve high uptake and success for the program:

- Flexibility or changes in technical requirements to help reduce project cost while still maintaining program requirements.
- In line with the Advisory committee's 10/1 recommendation, the PUC should investigate the possibility of combining grants and loans.

3. Do you anticipate costs exceeding the $500/kW cap for grants? If so, what strategies might keep costs below the cap on grants while still ensuring quality and reliability?
    - Yes, Generac does anticipate that costs will exceed $500/kW. Designing the 3-asset systems to meet program requirements and be as cost effective as possible necessitates sizing the generator to meet the majority or all of the customer's critical

loads or peak demand and minimizing the storage and solar due to their high cost per kW and limited ability to provide firm continuous power. In a majority of cases, even this approach exceeds the $500/kW grant.

- We recommend the commission consider combining grants and loans, or perhaps allow for a sliding scale in grants which provides a higher $/kW for smaller projects. We have also described concerns around smaller systems, and recommended the PUC consider additional flexibility for that subset of locations.
- We recommend increasing the number of packages to allow for better economies of scale.

4. What factors should be considered to support long-term maintenance and operational readiness for backup power systems?

Generac has a robust dealer and distributor network in Texas as well as relationships with 3rd parties who provide similar services. These networks provide preventative maintenance and unplanned maintenance and repair. We recommend the commission consider:

- Safety training for on-site staff and copies of O&M manuals should include emergency and non-emergency contacts and procedures.
- Servicing organizations must be properly trained to test, maintain, and operate the equipment. This is particularly important for multi-asset projects such as these. Training plans should be developed to a standard and maintained.
- Routine Preventative Maintenance includes testing, servicing, and physical inspections. Major servicing as prescribed by OEM. Logs should be maintained and provided to local jurisdictional authorities as currently required by code enforcement.
- Maintain appropriate quantities of key parts in market.
- Pre-demand season system reviews to ensure readiness before heating and cooling seasons may be considered.
- Recurring communication testing of monitoring and dispatching equipment should be considered.
- We recommend customers, owners, or operators of Packages enter into a long term service agreement with organizations capable of providing these services.

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III. Conclusion

Generac appreciates the opportunity to contribute to the development of the Backup Power Package program and looks forward to continuing our engagement. We are excited about the potential of this program to provide robust support to Texas' reliability landscape, and we are eager to contribute our technologies and expertise towards realizing this potential. Please do not hesitate to contact me at Meredith.Roberts@generac.com with any questions about our recommendations.

Thank you for your consideration of our questions and comments.

Meredith Roberts
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Waukesha, WI 53189
Via electronic submission.

Multi Asset Microgrid Solutions

Texas Backup Power Program

Generac At a Glance

Founded in 1959

GENERAC 65TH Anniversary

LTM Net Sales:
$4.0 Billion

8,600
Employees
Worldwide

Omni-Channel Distribution
Thousands of Dealers, Wholesalers, Retailers, and E-Commerce Partners

1,000+
Engineers
Worldwide

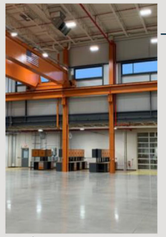
LTM Product Net Sales Mix:
53% Residential
36% Commercial & Industrial
11% Other

LEADING INNOVATION

We are proven leaders in the energy transition with a track record of pioneering solutions.

We continuously build on our deep engineering expertise to optimize products and services for the future of energy.

We manufacture more natural gas generators than anyone else in the world



We invest millions of dollars researching and developing the next generation of energy solutions

Our category leading acquisitions integrate the best companies and products into our energy portfolio

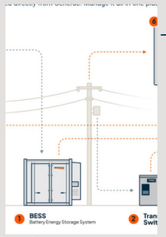
We have an expansive manufacturing footprint across the globe

We invented modern-day integrated paralleling

GENERAC
65
Anniversary

We have been in business for 65 years and have been publicly traded for 15 years

We have a high ratio of engineers to total employees: 1:9, which is higher than most of our competitors



We have a microgrid innovation facility in Toronto, Canada that our customers can visit to test and learn

Generac U.S. Manufacturing Presence

Beaver Dam

*Under Construction
Opening ~March 2025

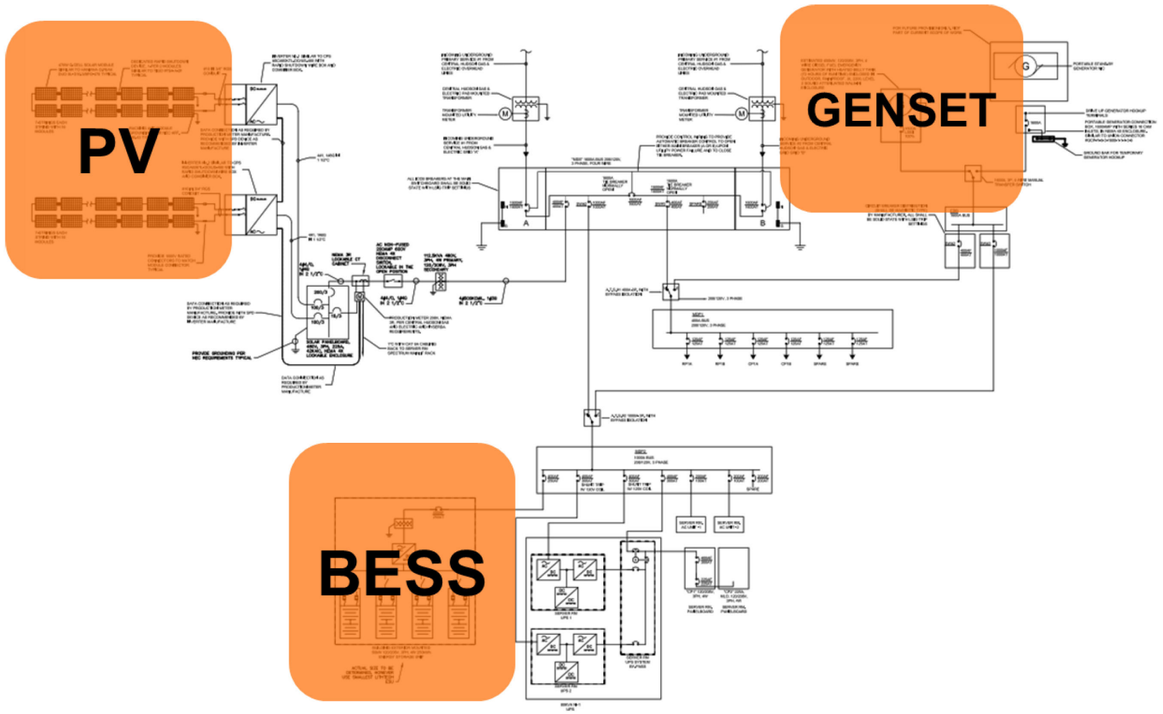
Berlin

Eagle

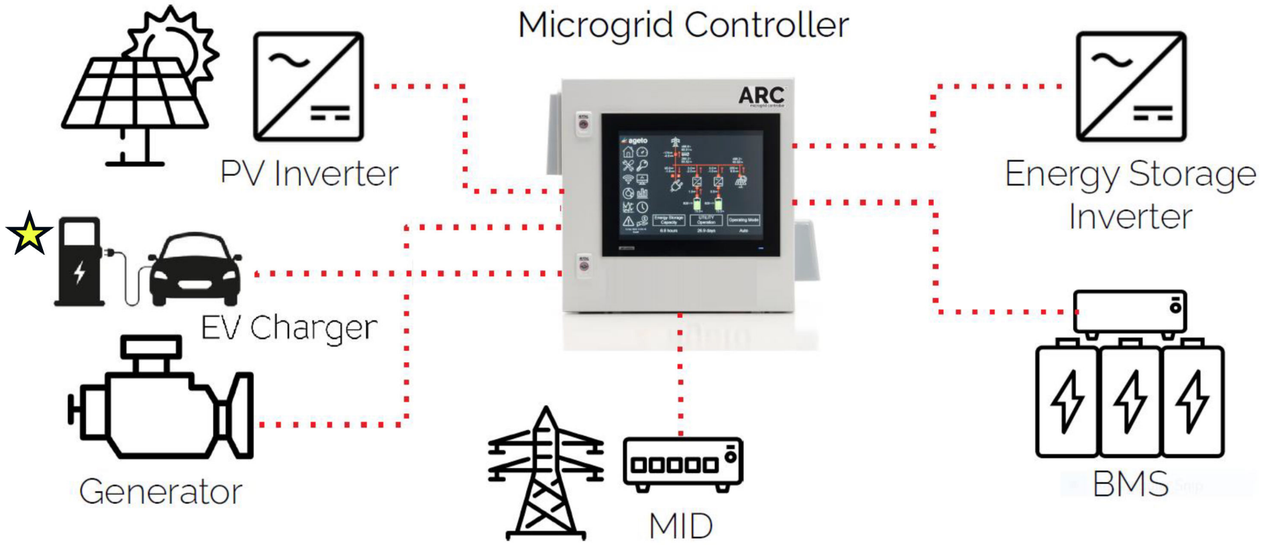
Oshkosh

What is a multi asset microgrid?

e.g. Multi asset microgrid 1-Line



EMS +



★ EV Chargers not prescribed in TBPPP; however, electric school buses are contemplated

Generac Capabilities

1. **Single source of supply** for BESS, generators, EMS, microgrid controller, islanding and load control hardware, metering, PV & switchgear*
2. **In house controls hardware, software ecosystem** for integration with BESS, PV, generators
3. **Use case expertise** around microgrid engineering and system integration
4. **Service / O&M** capabilities via direct and our dealer network in Texas
5. **Real world project expertise** from having completed over 100 microgrids globally
6. **Cybersecure Industrial Connectivity and Control** system deployed on >6.8MM connected assets

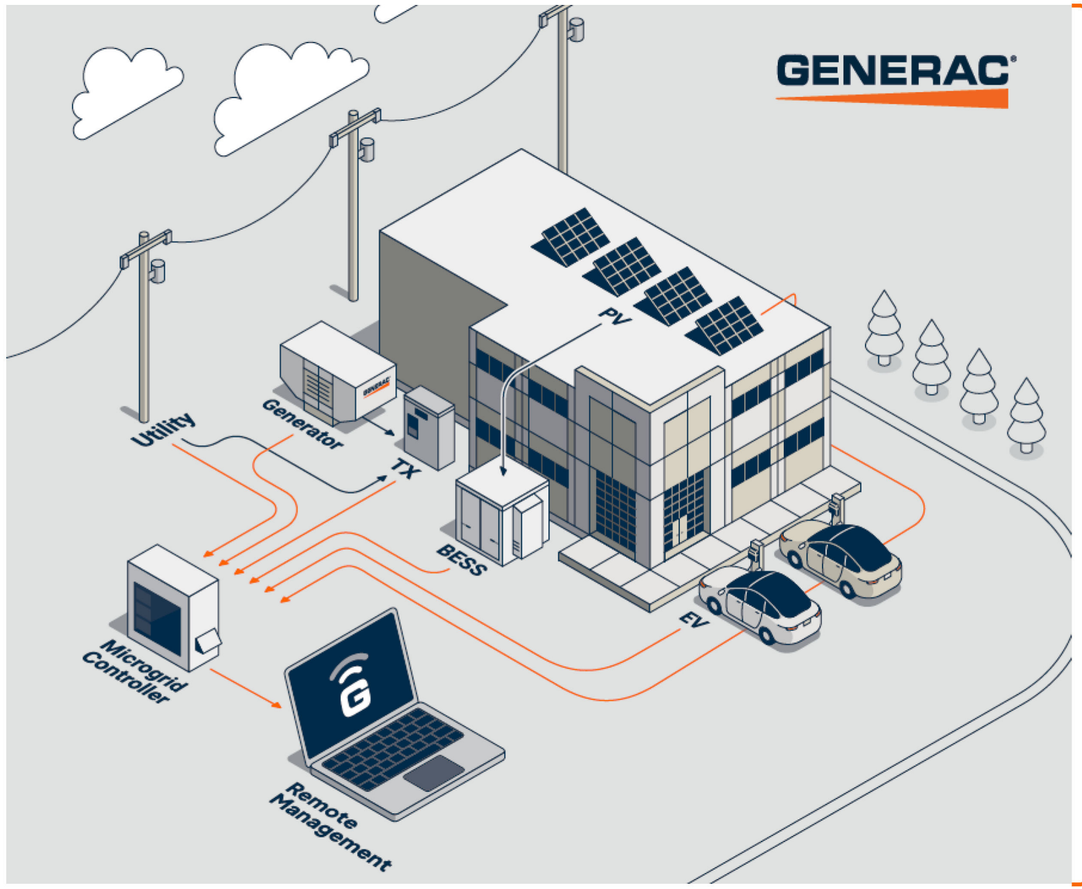
*Provided by partners

1. Single source of supply

Cybersecure and Interoperable

Generac Scope

Partner Scope



Cloud: Generac Grid Services (GGS) for multi site DER aggregation

IoT gateway
(Connect to cloud for live ops. data, grid signal, alarms, asset control parameter data streams)

Microgrid controller + EMS
(On-prem. analytics layer; backup to cloud as needed)

Paralleling Switchgear

Battery Unit & Master Controller

Gen/ATS Controls

L2, L3 EV Charger

SEL-751 Protective Relay Cabinet

Load Control Panel

Power Meters

Building Controls

Solar

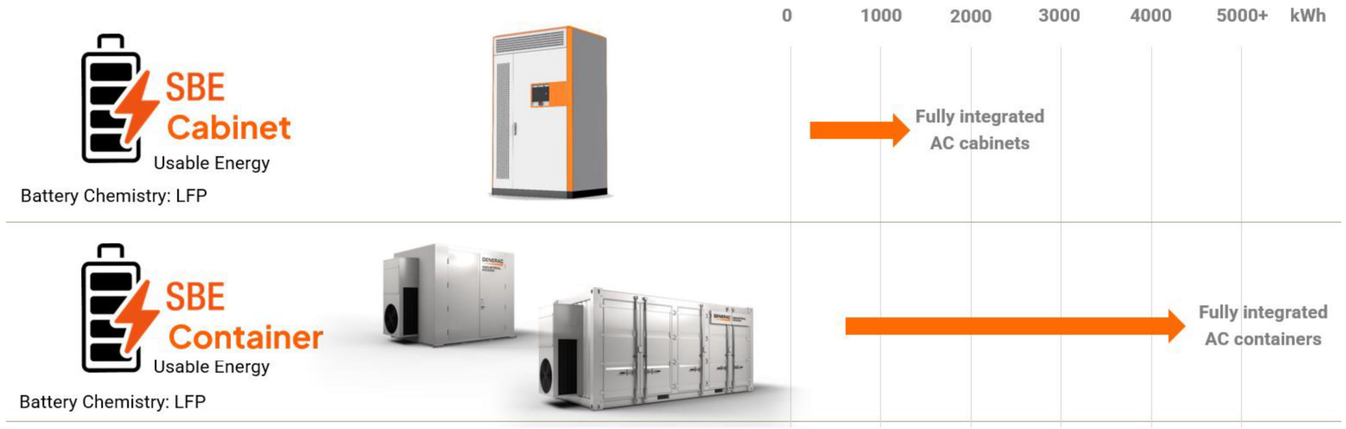
2a. In house controls hardware and software ecosystem

- Unit, Master and Microgrid controller, EMS (software 100% Generac owned)
- Protective relay cabinet (SEL-751) for islanding coordination, including SEL programming for site needs
- Load control panel
- Revenue grade power meter

2b. In house battery and generator portfolio of products

From small to large, parallelable

Battery Energy Storage Systems



Natural Gas Generators

- 25-30 kWe: 1.5L N.A.
- 22-45 kWe: 2.4L N.A.
- 32-60 kWe: 2.4L turbo
- 35-50 kWe: 4.5L N.A.
- 50-80 kWe: 4.5L turbo
- 80-100 kWe: 9.0L N.A.
- 130-150 kWe: 9.0L turbo
- 150-300 kWe: 14.2L
- 350-450 kWe: 21.9L
- 500 kWe: 25.8L
- 625-750 kWe: 33.9L
- 1000 kWe: 49.0L

Dual Fuel (NG/Propane) up to 150 kW
Rich-burn, Four stroke gensets
NFPA 110, Level 1, Type 10 (<10 sec. quick start)
Maximum Load Step: 100%
Ultra-low emissions with 3-way catalyst
EPA Emergency & Non-emergency Certified

Liquid Propane Generators available under 150kW

3. Use case expertise around microgrid engineering & integration

GENERAC | INDUSTRIAL POWER

Multi Assets Energy Solutions – Use Cases Design Guide

GENERAC | INDUSTRIAL POWER

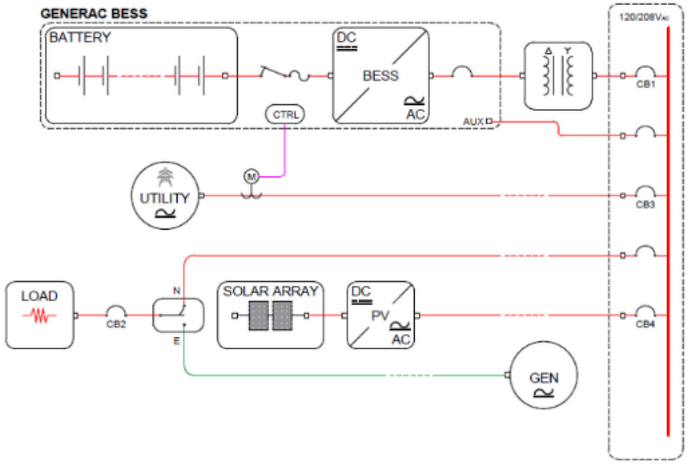
Contents

GENERAC | INDUSTRIAL POWER

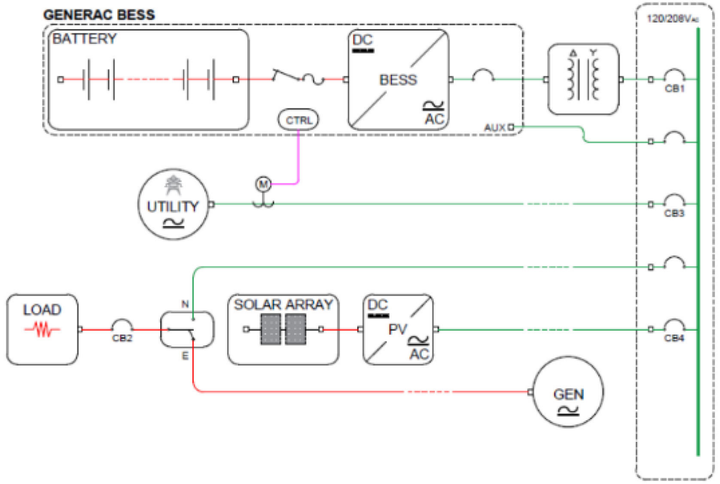
Events Table

Step	CB1	BESS	CB2	Load	CB3	Utility	Description
1	Closed	Following	Closed	Energized	Closed	Available	Initial conditions. Utility normal, BESS & PV in following mode, BESS charges and discharges as configured / PV supports load.
2	Closed	Following	Closed	Energized	Closed	Abnormal	Utility disturbance detected. BESS & PV will stay in following until utility parameters are out of range.
3	Closed	Faulted	Closed	De-energized	Closed	Unavailable	Utility unavailable. BESS & PV will fault and remain like that until utility is restored.
4	Closed	Faulted	Closed	Energized	Closed	Unavailable	Utility unavailable / Generator starts. ATS goes from normal to emergency and load power is now supplied from the backup generator until utility is restored.
5	Closed	Following	Closed	Energized	Closed	Available	Utility restored. ATS will go back to normal and generator will shut down. BESS & PV sense utility available and will resume normal operations. Back to Step 1.

Normal Conditions



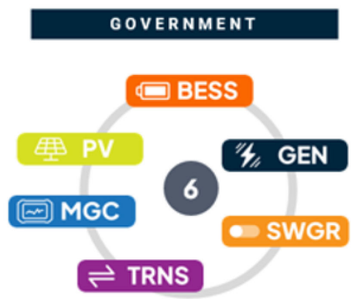
Utility Failure



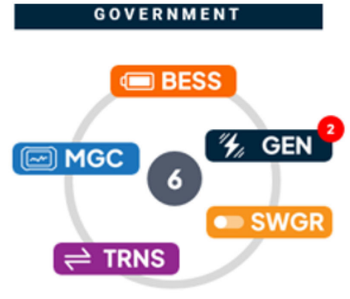
4. Service / O&M – Update for TX

Our comprehensive in-house Generac factory service team + dealer network sells, commissions and services our entire onsite energy systems, from battery energy storage systems to generators to more complex microgrids. Factory-trained and certified technicians provide expertise in system design, sizing, installation, commissioning, diagnostics and repairs when customers need it most.

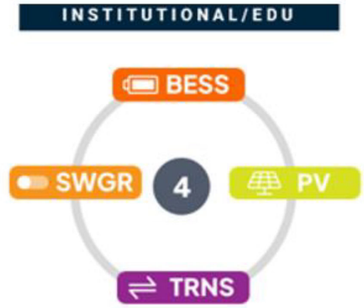
5. Real world microgrid expertise on 100+ projects



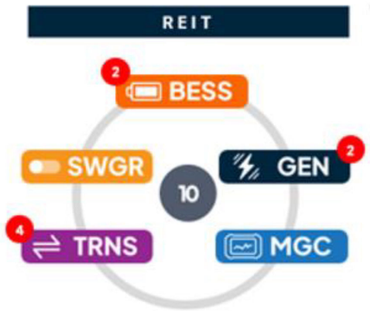
PROJECT GOAL:
Navy test microgrid



PROJECT GOAL:
Resilience



PROJECT GOAL:
Energy and demand charge savings



PROJECT GOAL:
Resilience
Green building certification

6. Industrial Connectivity and Control Expertise

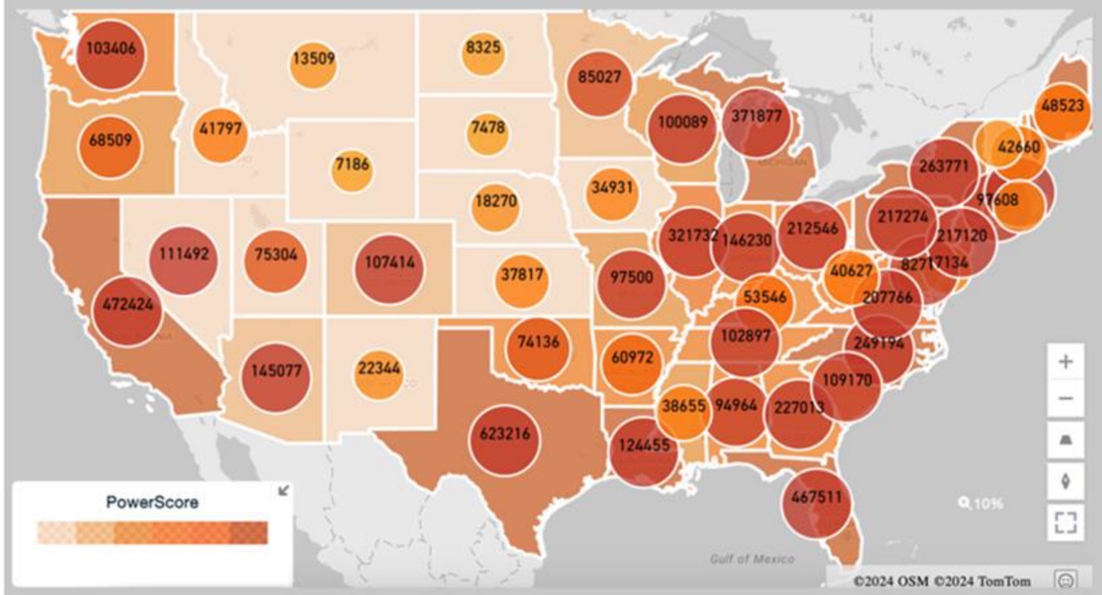
GENERAC

Our Evolution
Experience at Scale

Monitoring and Management of Devices

190 GW Installed Capacity

6.8 MM Connected Assets



Industrial Connectivity and Control Expertise

Cybersecurity Architecture

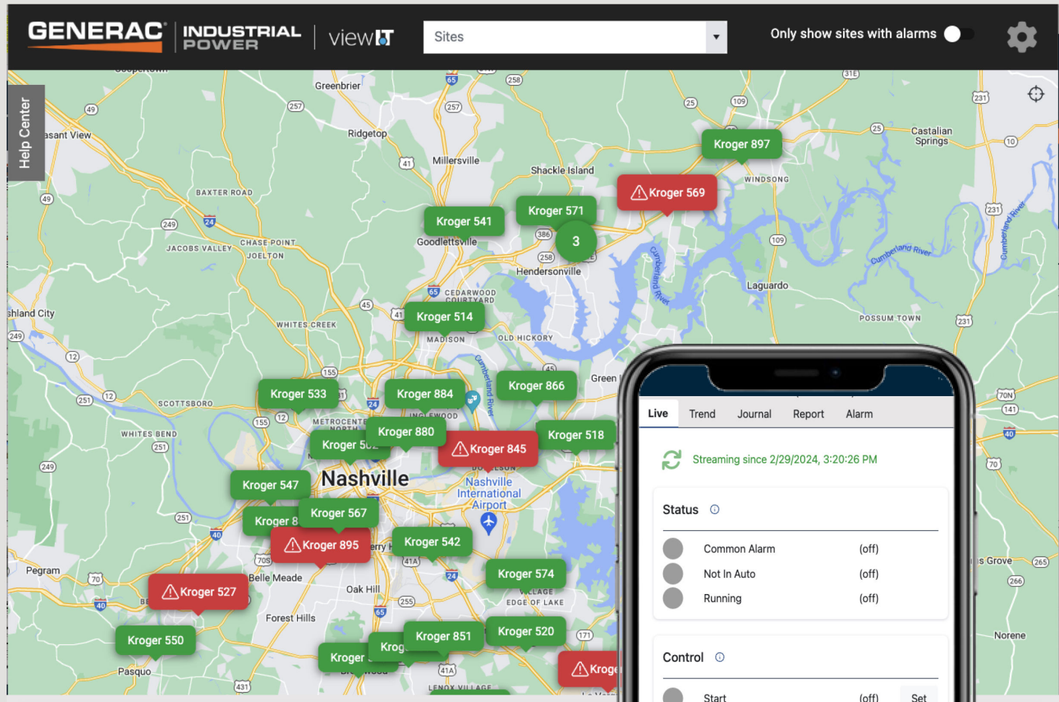
- OAUTH 2.0 for runtime connections; separate security communications pathway.
- Data services layer containerized to a single tenant environment.
- Transport security for all data transactions (TLS/SSL). All web application endpoints are hosted in MS Azure App Service containers and only accessible via HTTPS.
- Generac personnel access to cloud resources managed via Azure VPN Client, connected to user Active Directory.
- Authentication via Azure IoT Hub with key regeneration.
- Extendable end-point security.
- No transfer or management of global credentials.
- Gateway acts as a Fieldbus boundary, securing data packets for traffic required outside of local networks.

API Connection Security

- Expirable/Renewable connection token
- Additional end-point security methods can layer on top of the token.
- Whitelisting the 3rd party IP address to limit traffic to explicit addresses/ranges.

Interface Security

- User Access: Administrators invite select users and assign site associations. Sites associated with other accounts are not visible.
- Environments: Dedicated cloud environments for each customer. Logins only perform on those instances.
- User Controls: Features to delete or temporarily disable users to eliminate inactive vulnerability.



Active Alarms

Building	Equipment	Alarm Data
No items to display		

Generator Set(s)

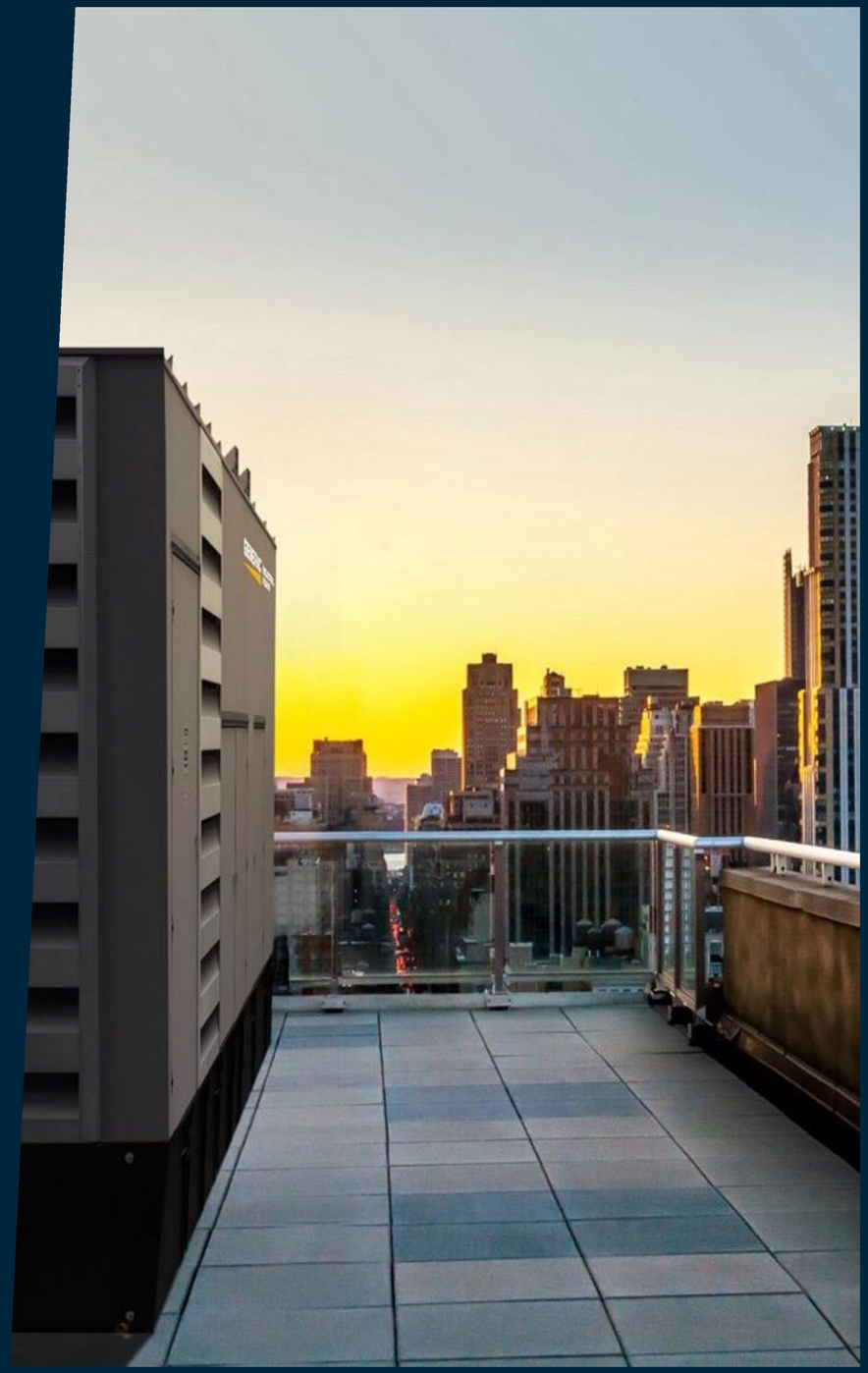
Building	Equipment	Battery Voltage	Running
Main	Generator	24.1	Off

Transfer Switch(s)

Building	Equipment	Connected to Emergency	Connected to Utility	Emergency Available	Utility Source Available	Remote Test
Main	ATS CR1	Off	On	Off	On	Off
Main	ATS EQ1	Off	On	Off	On	Off
Main	ATS LS1	Off	On	Off	On	Off
Main	ATS LS2	Off	On	Off	On	Off
Main	ATS X1	Off	On	Off	On	Off

GENERAC®

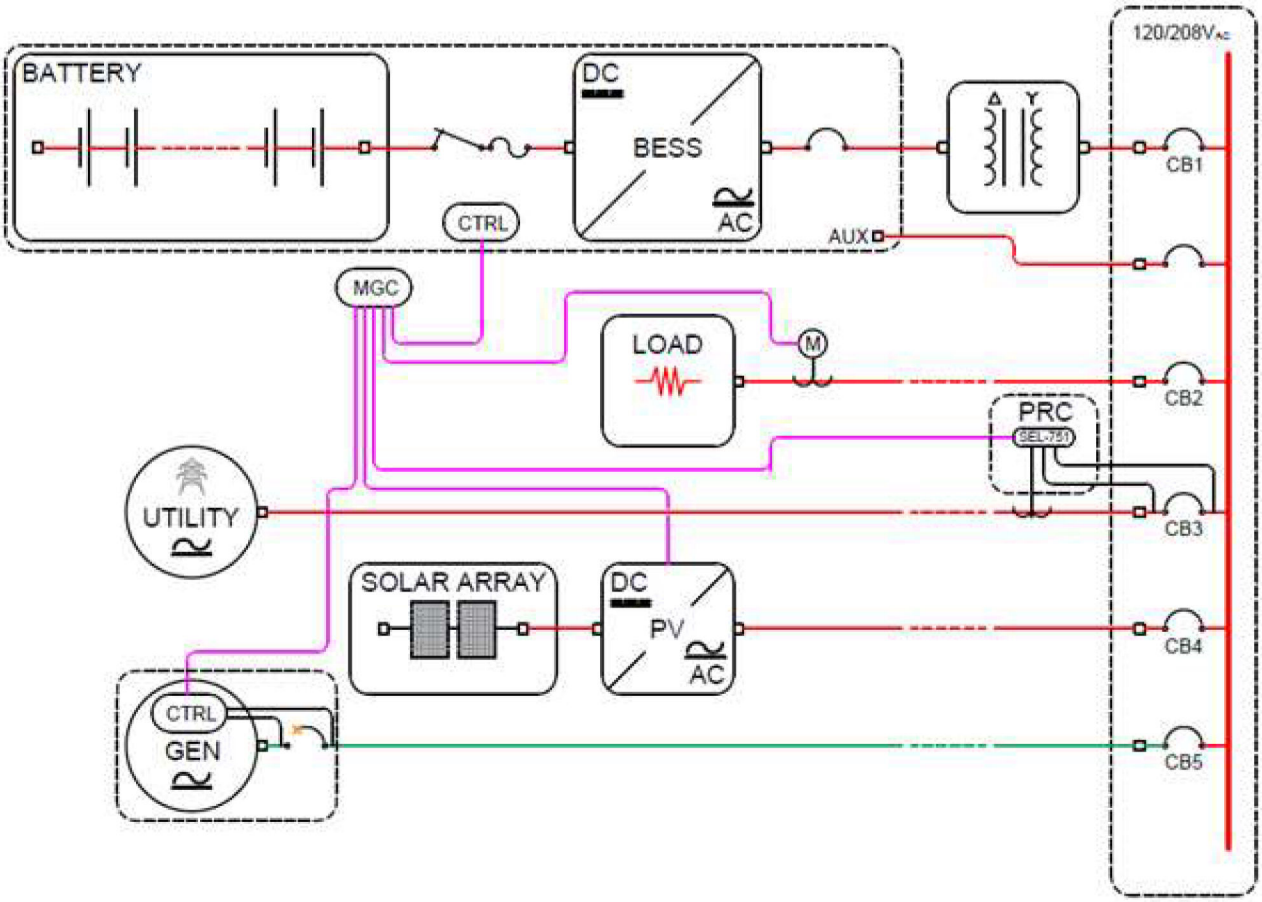
Thank You



Generac - Texas Backup Power Package - Standard Microgrid Overview

We have included an overview of a 3-asset Microgrid system including generator, Battery Energy Storage System, and Solar. These 3-assets conform with the TBPP Package requirements. This Microgrid Configuration can be applied to Packages of varying size without significant changes to the fundamental design; however, depending on customer facility design and requirements, there may be additional complexity. A Bill of Materials and associated Specifications has been included for these 250kW and 1000kW Package. Additional documentation pertaining to component or system cost, as well as operation and maintenance information, can be provided upon request.

Section I – Microgrid Configuration



This design is the simplest and preferred method of integrating a generator into a system so that it can operate in parallel with a battery energy storage system (BESS). This design allows for the most operational flexibility and full integration with the generator controller, meaning increased visibility to alarms, run hours, etc. This design requires a generator with a generator controller that can parallel and synchronize to a hot bus formed by the BESS and operate in baseload (also called grid-following) mode.

Sequence of Operations

The Microgrid Controller (MGC) communicates directly with the energy resources to coordinate and optimize the system.

Grid-tied Operation

1. MGC measures power consumption at the point of interconnection with the utility and leverages the energy systems in a manner which is most beneficial to the site within the program design and limitations.

2. In a non-export or limited export scenario, MGC actively curtails solar production to meet utility interconnection export requirements, which may be zero, as needed dependent on energy storage state of charge (SOC). If SOC is at low levels, any solar production exceeding the load will be used to charge the energy storage. In the case where SOC is at high levels, solar production will be curtailed to avoid an overcharge event and to avoid exceeding the export limits. In an export allowed scenario, MGC will not curtail solar production.
3. MGC can be configured to only allow charging the energy storage with solar production.
4. MGC operates the system within safe recommended limits and provides autonomous fault resolution when possible.

Islanding and Off-grid Operation

1. The Protective Relay Cabinet (PRC) detects a grid failure and opens the grid contactor.
2. MGC receives feedback from the PRC and configures the energy storage system to operate in off-grid (grid-forming) mode.
3. The system load is first met with solar-plus-storage using the energy storage inverter as the grid-forming resource.
4. MGC curtails solar when the energy storage is at a high SOC and the solar production exceeds the load.
5. Load is met by solar and storage until the energy storage reaches a preconfigured low SOC. Once the low SOC is reached, MGC will send a start signal to the generator controller.
6. The energy storage inverter will remain in grid-forming mode and the generator will seamlessly be brought on in grid-following mode.
7. MGC will give the generator a power setpoint and operate it in either a cycle-charging or load-following approach. This approach can be changed within the MGC user interface at any time.
8. If using a cycle-charging approach, MGC will start the generator at a low SOC and charge the energy storage until a preconfigured high SOC is reached. At this point, MGC will command the generator to stop and the system will seamlessly return to solar and storage only operation. MGC will continue to cycle charge the energy storage with the generator until utility power is restored.
9. If using a load-following approach, the generators will produce enough power to meet the load (rather than enough to meet load and charge the storage). The storage will be charged from solar production only. Solar will be curtailed to respect generator minimum loading as needed. MGC will stop the generator when there is enough solar production and energy stored to meet the load without the generator.
10. Once utility power is restored and stays within acceptable thresholds for the preconfigured length time, the PRC closes the grid contactor and normal grid-tied operation is resumed.

Section II – Bill of Materials

Generac BOM – 250kW / 806kWh System		
System Capabilities: Sized to meet a customer whose peak demand does not exceed 250kW		
Item	**Qty.**	**Description**
BESS	1x per site	Generac containerized solution. Enclosure houses battery, storage inverter, HVAC, fire suppression system and the unit level controller. Quantity driven by needed capacity. *BESS size may be modified/adjusted for application based on final program requirements.
Isolation / Step-down transformer	1x per BESS	Microgrid side voltage is driven by site operating voltage, could be just for isolation purposes 480/277V_{AC} or a step-down to 120/208V_{AC}.
Aux Loads transformer	1x per site	Only needed if the site operating voltage is different than 120/208V_{AC}.
Power meter	1x per site	Needed for implementing algorithms and for load consumption data gathering. Requires properly rated CT's.
Feeder Protection Relay (PRC)	1x per site	Takes care of monitoring both sides of the PCC (CB3 in the above diagram). It oversees opening & closing PCC based on utility status. Requires properly rated CT's to act as the utility power meter. May require PTs depending on utility voltage.
PCC (CB3)	1x per site	Required for islanding operation purposes, CB3 must be an electrically operated breaker to meet functions needed. Note that an in-line contactor could also serve as PCC (note that it does not replace the need for CB3).
Microgrid Controller (MGC)	1x per site	Serves the purpose of the master controller for power generating assets. master controller, Talks directly to BESS unit controller, PV inverter(s), feeder protection relay, PCC, and power meter(s). Manages transitions through the different modes the system can operate without human intervention. Operates based on pre-defined rules.
Generator	1x per site	MG250 model. Gas powered, paralleling capable. *Generator sizing may be modified/adjusted for application based on final program requirements.
Solar PV Array	1x per site	***Provided by a third party. Solar array size may be modified/adjusted for application based on final program requirements.
Switchboard	1x per site	Specific bus sizing is determined by the site main utility feeder and site loads. Includes provisions for: Solar PV Array, BESS, Load, Utility and Generator.

Generac BOM – 1000kW / 1613kWh System		
System Capabilities: Sized to meet a customer whose peak demand does not exceed 1000kW		
Item	**Qty.**	**Description**
BESS	1x per site	Generac containerized solution. Enclosure houses battery, storage inverter, HVAC, fire suppression system and the unit level controller. Quantity driven by needed capacity. *BESS size may be modified/adjusted for application based on final program requirements.
Isolation / Step-down transformer	1x per BESS	Microgrid side voltage is driven by site operating voltage, could be just for isolation purposes 480/277V_{AC} or a step-down to 120/208V_{AC}.
Aux Loads transformer	1x per site	Only needed if the site operating voltage is different than 120/208V_{AC}.
Power meter	1x per site	Needed for implementing algorithms and for load consumption data gathering. Requires properly rated CT's.
Feeder Protection Relay (PRC)	1x per site	Takes care of monitoring both sides of the PCC (CB3 in the above diagram). It oversees opening & closing PCC based on utility status. Requires properly rated CT's to act as the utility power meter. May require PTs depending on utility voltage.
PCC (CB3)	1x per site	Required for islanding operation purposes, CB3 must be an electrically operated breaker to meet functions needed. Note that an in-line contactor could also serve as PCC (note that it does not replace the need for CB3).
Microgrid Controller (MGC)	1x per site	Serves the purpose of the master controller for power generating assets. master controller, Talks directly to BESS unit controller, PV inverter(s), feeder protection relay, PCC, and power meter(s). Manages transitions through the different modes the system can operate without human intervention. Operates based on pre-defined rules.
Generator Option 1	2x per site	MG500 model. Gas powered, paralleling capable. *Generator sizing may be modified/adjusted for application based on final program requirements.
Generator Option 2	1x per site	MG1000 model. Gas powered, paralleling capable. *Generator sizing may be modified/adjusted for application based on final program requirements.
Solar PV Array	1x per site	***Provided by a third party. Solar array size may be modified/adjusted for application based on final program requirements.
Switchboard	1x per site	Specific bus sizing is determined by the site main utility feeder and site loads. Includes provisions for: Solar PV Array, BESS, Load, Utility and Generator.

Section III – Spec Sheets

SBE500 Spec Sheet

SBE500 | LFP | 500 kWh

LITHIUM ION BATTERY ENERGY STORAGE SYSTEM

Power Rating:
125 kW / 250 kW / 500 kW

Energy Rating:
500 kWh

Enclosure Style:
Custom 10 ft

Codes and Standards

Contact Generac for details.

- UL 1642
- UL 1973
- UL 9540A
- UL 1741
- UL 9540
- CSA 22.2
- UN 38.3
- IEEE 1547
- NFPA 855

The Generac Solution

Energy management today means balancing a combination of carbon reduction, energy savings, and energy resilience goals. Generac's Stationary Battery Energy storage system (SBE) is our latest addition to a portfolio of products and technologies helping commercial and industrial customers to meet their current and future energy goals.

The SBE energy storage systems enable commercial and industrial customers to:

- Reduce peak demand charges and save on energy costs.
- Pair with on-site solar and lower both carbon footprint and energy costs.
- Provide site resilience during brownouts/power quality issues, back up critical loads during shorter duration blackouts, and pair with our line of gas and diesel generators for full facility resilience during long duration blackouts.
- Earn additional revenue by monetizing the asset to support broader grid resilience.

SBE500 | LFP | 500 kWh

LITHIUM ION BATTERY ENERGY STORAGE SYSTEM

GENERAC | INDUSTRIAL POWER

BESS SPECIFICATIONS	125 kW / 500 kWh	250 kW / 500 kWh	500 kW / 500kWh
Nameplate DC energy	599 kWh	599 kWh	599 kWh
DC voltage range	874-1,123 VDC	874-1,123 VDC	874-1,123 VDC
Nominal voltage	998.4 VDC	998.4 VDC	998.4 VDC
AC connection	3-wire (3P3W)	3-wire (3P3W)	3-wire (3P3W)
Nominal AC voltage	480 V	480 V	480 V
Frequency	60 Hz	60 Hz	60 Hz
Overload capacity	120%, 10s	110%, 10 min; 125%, 10 s	110%, 10 min; 125%, 10 s
Power factor	Full 4-quadrant operation	Full 4-quadrant operation	Full 4-quadrant operation
Inverter efficiency	Up to 98.7%	Up to 98.4%	Up to 98.4%
Dimensions (approx.)	10 ft x 8 ft x 9.6 ft (3.1 m x 2.4 m x 2.9 m)	10 ft x 8 ft x 9.6 ft (3.1 m x 2.4 m x 2.9 m)	10 ft x 8 ft x 9.6 ft (3.1 m x 2.4 m x 2.9 m)
Weight (approx.)	23,103 lb (10,479 kg)	23,552 lb (10,683 kg)	23,627 lb (10,717 kg)

Contact Generac for smaller capacities within the 10 ft enclosure; minimum capacity is 200 kWh.

ENVIRONMENTAL

Operating temperature	-13 °F to 113 °F -25 °C to 45 °C	-13 °F to 113 °F -25 °C to 45 °C	-13 °F to 113 °F -25 °C to 45 °C
Enclosure	NEMA 3R (Outdoor)	NEMA 3R (Outdoor)	NEMA 3R (Outdoor)
Altitude before derate	3,280 ft (1,000 m)	3,280 ft (1,000 m)	3,280 ft (1,000 m)
Noise (approx.)	<65 dB @ 3.3 ft (1 m)	<65 dB @ 3.3 ft (1 m)	<65 dB @ 3.3 ft (1 m)

STANDARD FEATURES

ELECTRICAL SYSTEMS
- Auxiliary load panel
- Lighting
- BESS controller panel
- Ground fault monitoring

CONTROLS
- Door open alarm switch

BIDIRECTIONAL INVERTER
- Dynamic transfer
- Grid forming
- Grid following
- 4 quadrant operation
- THD < 2%
- Load imbalance capable

FIRE PREVENTION AND SUPPRESSION SYSTEM
- Smoke detectors
- Audible alarm
- Visual alarm
- Remote E-Stop
- Dry solution suppression
- Remote alarm
- Temperature sensors

ENCLOSURE
- NEMA 3R
- Structural steel base
- Insulated enclosure and doors
- Reinforced cable cutouts entry points
- Corner cast lifting provisions

SBE500 | LFP | 500 kWh

LITHIUM ION BATTERY ENERGY STORAGE SYSTEM

BESS CONTROL SYSTEM

USE CASES
- Peak shaving
- Arbitrage
- Back up power
- Black start
- Renewable energy shifting
- Voltage regulation
- Frequency response
- Engineered UPS
- Grid forming - off-grid

FEATURES
- Local data server
- HMI interface
- Cloud based monitoring
- Multilevel authentications for security operation
- Data acquisition and control functions
- Event reporting
- Remote configuration firmware and software upgrade
- Ramp rate control demand management
- Modbus TCP
- Sunspec protocol
- CAN
- Ethernet based communication
- Compatibility with 3rd party EMS, SCADA systems

OPTIONS

ELECTRICAL SYSTEMS
- Automatic transfer switch
- Isolation transformer
- LV circuit breaker

HVAC
- Electric reheat with humidity control

CONTROLS
- Custom HMI screen interface

FIRE PREVENTION & SUPPRESSION SYSTEM
- Off gas detection (Li-ion Tamers)
- Dry pipe and sprinkler system
- Deflagration venting panels

O&M
- 10 year extended warranty
- Long term service contract

ENCLOSURE
- Security camera
- Exterior flood lights
- Seismic rating
- Arctic rated
- Key pad lock

Contact Generac for a one stop solution to integrate our line of generators with our SBE battery system.
Contact Generac for partner(s) referral regarding on-site Engineer/Procurement/Construct (EPC) services.

Generac Power Systems, Inc. | S45 W29290 HWY. 59 | Waukesha, WI 53189 | generac.com

Part No. A0003997951
Rev. D 10/30/2024

SBE1000 | LFP | 1,000 kWh

LITHIUM ION BATTERY ENERGY STORAGE SYSTEM

GENERAC | INDUSTRIAL POWER

Power Rating:
250 kW / 500 kW / 1,000 kW

Energy Rating:
1,000 kWh

Enclosure Style:
Custom 20 ft

Codes and Standards

Contact Generac for details.

- UL 1642
- UL 1973
- UL 9540A
- UL 1741
- UL 9540
- CSA 22.2
- UN 38.3
- IEEE 1547
- NFPA 855

The Generac Solution

Energy management today means balancing a combination of carbon reduction, energy savings, and energy resilience goals. Generac's Stationary Battery Energy storage system (SBE) is our latest addition to a portfolio of products and technologies helping commercial and industrial customers to meet their current and future energy goals.

The SBE energy storage systems enable commercial and industrial customers to:

- Reduce peak demand charges and save on energy costs.
- Pair with on-site solar and lower both carbon footprint and energy costs.
- Provide site resilience during brownouts/power quality issues, back up critical loads during shorter duration blackouts, and pair with our line of gas and diesel generators for full facility resilience during long duration blackouts.
- Earn additional revenue by monetizing the asset to support broader grid resilience.

SBE1000 | LFP | 1,000 kWh

LITHIUM ION BATTERY ENERGY STORAGE SYSTEM

GENERAC | INDUSTRIAL POWER

BESS SPECIFICATIONS	250 kW / 1,000 kWh	500 kW / 1,000 kWh	1,000 kW / 1,000 kWh
Nameplate DC energy	1,198 kWh	1,198 kWh	1,198 kWh
DC voltage range	874-1,123 VDC	874-1,123 VDC	874-1,123 VDC
Nominal voltage	998.4 VDC	998.4 VDC	998.4 VDC
AC connection	3-wire (3P3W)	3-wire (3P3W)	3-wire (3P3W)
Nominal AC voltage	480 V	480 V	480 V
Frequency	60 Hz	60 Hz	60 Hz
Overload capacity	110%, 10 min 125%, 10 s	110%, 10 min 125%, 10 s	110%, 10 min 125%, 10 s
Power factor	Full 4-quadrant operation	Full 4-quadrant operation	Full 4-quadrant operation
Inverter efficiency	Up to 98.4%	Up to 98.4%	Up to 98.4%
Dimensions (approx.)	20 ft x 8 ft x 9.6 ft (6.1 m x 2.4 m x 2.9 m)	20 ft x 8 ft x 9.6 ft (6.1 m x 2.4 m x 2.9 m)	20 ft x 8 ft x 9.6 ft (6.1 m x 2.4 m x 2.9 m)
Weight (approx.)	48,146 lb (21,839 kg)	48,209 lb (21,867 kg)	49,051 lb (22,249 kg)

Contact Generac for smaller capacities within the 20 ft enclosure; minimum capacity is 600 kWh.

ENVIRONMENTAL

Operating temperature	-13 °F to 113 °F -25 °C to 45 °C	-13 °F to 113 °F -25 °C to 45 °C	-13 °F to 113 °F -25 °C to 45 °C
Enclosure	NEMA 3R (Outdoor)	NEMA 3R (Outdoor)	NEMA 3R (Outdoor)
Altitude before derate	3,280 ft (1,000 m)	3,280 ft (1,000 m)	3,280 ft (1,000 m)
Noise (approx.)	<65 dB @ 3.3 ft (1 m)	<65 dB @ 3.3 ft (1 m)	<65 dB @ 3.3 ft (1 m)

STANDARD FEATURES

ELECTRICAL SYSTEMS
- Auxiliary load panel
- Lighting
- BESS controller panel
- Ground fault monitoring

CONTROLS
- Door open alarm switch

BIDIRECTIONAL INVERTER
- Dynamic transfer
- Grid forming
- Grid following
- 4 quadrant operation
- THD < 2%
- Load imbalance capable

FIRE PREVENTION AND SUPPRESSION SYSTEM
- Smoke detectors
- Audible alarm
- Visual alarm
- Remote E-Stop
- Dry solution suppression
- Remote alarm
- Temperature sensors

ENCLOSURE
- NEMA 3R
- Structural steel base
- Insulated enclosure and doors
- Reinforced cable cutouts entry points
- Corner cast lifting provisions

SBE1000 | LFP | 1,000 kWh

LITHIUM ION BATTERY ENERGY STORAGE SYSTEM

BESS CONTROL SYSTEM

USE CASES

- Peak shaving
- Arbitrage
- Back up power
- Black start
- Renewable energy shifting
- Voltage regulation
- Frequency response
- Engineered UPS
- Grid forming - off-grid

FEATURES

- Local data server
- HMI interface
- Cloud based monitoring
- Multilevel authentications for security operation
- Data acquisition and control functions
- Event reporting
- Remote configuration firmware and software upgrade
- Ramp rate control demand management
- Modbus TCP
- Sunspec protocol
- CAN
- Ethernet based communication
- Compatibility with 3rd party EMS, SCADA systems

OPTIONS

ELECTRICAL SYSTEMS

- Automatic transfer switch
- Isolation transformer
- LV circuit breaker

HVAC

- Electric reheat with humidity control

CONTROLS

- Custom HMI screen interface

FIRE PREVENTION & SUPPRESSION SYSTEM

- Off gas detection (Li-ion Tamers)
- Dry pipe and sprinkler system
- Deflagration venting panels

O&M

- 10 year extended warranty
- Long term service contract

ENCLOSURE

- Security camera
- Exterior flood lights
- Seismic rating
- Arctic rated
- Key pad lock

Contact Generac for a one stop solution to integrate our line of generators with our SBE battery system.
Contact Generac for partner(s) referral regarding on-site Engineer/Procurement/Construct (EPC) services.

Part No. A0003997953
Rev. D 10/30/2024

MG250 | 14.2L | 250 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

DEMAND RESPONSE READY

Standby Power Rating
250 kW, 313 kVA, 60 Hz

Demand Response Rating
250 kW, 313 kVA, 60 Hz

Prime Power Rating
225 kW, 281 kVA, 60 Hz

** Offered on units sold in the U.S. and Canada

Image used for illustration purposes only

Codes and Standards

Not all codes and standards apply to all configurations. Contact factory for details.

- UL2200, UL6200, UL1236, UL489
- CSA C22.2, B149
- BS5514 and DIN 6271
- SAE J1349
- NFPA 37, 70, 99, 110
- NEC700, 701, 702, 708
- NEMA ICS10, MG1, 250, ICS6, AB1
- ANSI C62.41
- IBC 2009, CBC 2010, IBC 2012, ASCE 7-05, ASCE 7-10, ICC-ES AC-156 (2012)

Powering Ahead

Generac provides superior quality by designing and manufacturing most of its generator components, such as alternators, enclosures, control systems and communications software. Generac also makes its own spark-ignited engines, and they can be found on every Generac gaseous-fueled generator. We engineer and manufacture them from the block up — all at our facilities throughout Wisconsin. Applying natural gas and LP-fueled engines to generators requires advanced engineering expertise for reliability, durability and necessary performance. By designing specifically for these dry, hotter-burning fuels, the engines last longer and require less maintenance. Building our own engines also means we control every step of the supply chain and delivery process, so you benefit from single-source responsibility.

Plus, Generac Industrial Power's distribution network provides all parts and service so owners don't have to deal with third-party suppliers. It all leads to a positive owner experience and higher confidence level. Generac spark-ignited engines give more options in commercial and industrial generator applications as well as extended run time from utility-supplied natural gas.

MG250 | 14.2L | 250 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

STANDARD FEATURES

DEMAND RESPONSE READY

ENGINE SYSTEM
- Oil Drain Extension
- Engine Coolant Heater
- Air Cleaner
- Stainless Steel Flexible Exhaust Connection
- Factory Filled Oil and Coolant
- Radiator Duct Adapter (Open Set Only)
- Critical Silencer (Open Set Only)
- Oil Temperature Indication and Alarm

FUEL SYSTEM
- NPT Fuel Connection on Frame
- Primary and Secondary Fuel Shutoff

COOLING SYSTEM
- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Factory-Installed Radiator
- 50/50 Ethylene Glycol Antifreeze
- Radiator Drain Extension

ELECTRICAL SYSTEM
- Battery Charging Alternator
- Battery Cables
- Battery Tray
- Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor

ENCLOSURE (If Selected)
- Rust-Proof Fasteners with Nylon Washers to Protect Finish
- High Performance Sound-Absorbing Material (Sound Attenuated Enclosures)
- Gasketed Doors
- Upward Facing Discharge Hood (Radiator and Exhaust)
- Stainless Steel Lift Off Door Hinges
- Stainless Steel Lockable Handles
- RhinoCoat™ - Textured Polyester Powder Coat Paint

GENERATOR SET
- Internal Genset Vibration Isolation
- Separation of Circuits - High/Low Voltage
- Separation of Circuits - Multiple Breakers
- Wrapped Exhaust Piping
- Standard Factory Testing
- 2 Year Limited Warranty (Standby and Demand Response Rated Units)
- 1 Year Limited Warranty (Prime Rated Units)
- Silencer Mounted in the Discharge Hood (Enclosed Units Only)

ALTERNATOR SYSTEM
- UL2200 GENprotect™
- Motorized Main Line Circuit Breaker
- Class H Insulation Material
- 2/3 Pitch
- Skewed Stator
- Permanent Magnet Excitation
- Sealed Bearing
- Amortisseur Winding
- Full Load Capacity Alternator

CONTROL SYSTEM

Power Zone® Pro Sync Controller

Program Functions
- NFPA 110 Level 1 Compliant
- Engine Protective Functions
- Alternator Protective Functions
- Digital Engine Governor Control
- Digital Voltage Regulator
- Multiple Programmable Inputs and Outputs
- Remote Display Capability
- Remote Communication via Modbus® RTU, Modbus TCP/IP, and Ethernet 10/100
- Alarm and Event Logging with Real Time Stamping
- Expandable Analog and Digital Inputs and Outputs
- Remote Wireless Software Update Capable
- BMS and Remote Telemetry
- Built-In Programmable Logic Eliminates the Need for External Controllers Under Most Conditions
- Ethernet Based Communications Between Generators
- Programmable I/O Channel Properties
- Built-In Diagnostics
- Arc Flash Maintenance Mode (When Correctly Equipped)

Alarms and Warnings
- Low Oil Pressure
- Low Coolant Level
- High/Low Coolant Temperature
- Sensor Failure
- Oil Temperature
- Over/Under Speed
- Over/Under Voltage
- Over/Under Frequency
- Over/Under Current
- Over Load
- High/Low Battery Voltage
- Battery Charger Current
- Phase to Phase and Phase to Neutral Short Circuits (I^2T Algorithm)

7 Inch Color Touch Screen Display
- Resistive Color Touch Screen
- Sunlight Readable (1400 NITS)
- Easily Identifiable Icons
- Multi-Lingual
- On Screen Editable Parameters
- Key Function Monitoring
- Three Phase Voltage, Amperage, kW, kVA, and kVAr
- Selectable Line to Line or Line to Neutral Measurements
- Frequency
- Engine Speed
- Engine Coolant Temperature
- Engine Oil Pressure
- Engine Oil Temperature
- Battery Voltage
- Hourmeter
- Warning and Alarm Indication
- Diagnostics
- Maintenance Events/Information

PARALLELING CONTROLS
- Paralleling Control (Synchronizing)
- Reverse Power
- Loss of Synchronization Between Gensets
- Load and VAR Sharing

MG250 | 14.2L | 250 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

CONFIGURABLE OPTIONS

DEMAND RESPONSE READY

ENGINE SYSTEM
- Engine Coolant Heater
- Baseframe Cover/Rodent Guard
- 2 Stage Air Cleaner
- Oil Heater
- Air Filter Restriction Indicator
- Radiator Stone Guard (Open Set Only)
- Level 1 Fan and Belt Guards (Enclosed Units Only)

FUEL SYSTEM
- NPT Flexible Fuel Line

ELECTRICAL SYSTEM
- 10A UL Listed Battery Charger
- Battery Warmer

ALTERNATOR SYSTEM
- Alternator Upsizing
- Anti-Condensation Heater
- Tropical Coating

CIRCUIT BREAKER OPTIONS
- Shunt Trip and Auxiliary Contact
- Electronic Trip Breakers

GENERATOR SET
- Demand Response Rating
- Extended Factory Testing
- 12 Position Load Center
- Vapor Recovery Heater

ENCLOSURE
- Weather Protected Enclosure
- Level 1 Sound Attenuated
- Level 2 Sound Attenuated
- Level 2 Sound Attenuated with Motorized Dampers
- Level 3 Sound Attenuated (Steel Only)
- Steel Enclosure
- Aluminum Enclosure
- Up to 200 MPH Wind Load Rating (Contact Factory for Availability)
- AC/DC Enclosure Lighting Kit
- Enclosure Heaters (with Motorized Dampers Only)
- IBC Certification
- Door Open Alarm Switch

CONTROL SYSTEM
- NFPA 110 Level 1 Compliant 21-Light Remote Annunciator
- Remote Relay Assembly (8 or 16)
- Remote E-Stop (Break Glass-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Flush Mount)
- 10A Engine Run Relay
- Ground Fault Annunciator
- 120V GFCI and 240V Outlets
- Damper Alarm Contacts (with Motorized Dampers Only)
- 100 dB Alarm Horn
- Permissive/Load Shed Module

WARRANTY (Standby Gensets Only)
- 2 Year Extended Limited Warranty
- 5 Year Extended Limited Warranty
- 7 Year Extended Limited Warranty
- 10 Year Extended Limited Warranty

ENGINEERED OPTIONS

ENGINE SYSTEM
- Fluid Containment Pans

CIRCUIT BREAKER OPTIONS
- 2nd Breaker System

CONTROL SYSTEM
- Battery Disconnect Switch

GENERATOR SET
- Special Testing
- Battery Box

MG250 | 14.2L | 250 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

APPLICATION AND ENGINEERING DATA

DEMAND RESPONSE READY

ENGINE SPECIFICATIONS

General

Make	Generac
Cylinder #	6
Type	In-line
Displacement - in³ (L)	864.71 (14.2)
Bore: in (mm)	5.31 (135)
Stroke: in (mm)	6.50 (165)
Compression Ratio	9.5:1
Intake Air Method	Turbocharged/Aftercooled
Number of Main Bearings	7
Connecting Rods	Steel Alloy
Cylinder Head	Cast Iron
Cylinder Liners	Ductile Iron
Ignition	Electronic
Piston Type	Aluminum Alloy
Crankshaft Type	Ductile Iron
Lifter Type	Solid
Intake Valve Material	Special Heat-Resistant Steel
Exhaust Valve Material	High Temperature Steel Alloy
Hardened Valve Seats	High Temperature Steel Alloy

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	±0.25%

Lubrication System

Oil Pump	Gear
Oil Filter Type	Full Flow Cartridge
Engine Oil Capacity: qt (L)	36.2 (34.3)

Cooling System

Cooling System Type	Pressurized Closed Recovery
Fan Type	Pusher
Fan Speed (RPM)	1,894
Fan Diameter - in (mm)	30 (762)

Fuel System

Fuel Type	Natural Gas
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
Operating Fuel Pressure- in H_2O (kPa)	7 - 11 (1.7 - 2.7)

*When designing the external fuel system, assume a 20% safety factor to the upper and lower limit of the specified fuel pressure range to account for site variation and measurement at the generator test port. Refer to Generac document 10000046207, latest rev. for proper gas supply design guidelines. (Contact Factory for Details)

Engine Electrical System

System Voltage	24 VDC
Battery Charger Alternator	57.5 A
Battery Size	See Battery Index 0161970SBY
Battery Voltage	(2) - 12 VDC
Ground Polarity	Negative (-)

ALTERNATOR SPECIFICATIONS

Standard Model	K0250124Y21
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5%
Telephone Interference Factor (TIF)	<50
Standard Excitation	Permanent Magnet
Bearings	Single Sealed Ball
Coupling	Direct via Flexible Disc
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Full Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	±0.25%

MG250 | 14.2L | 250 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

OPERATING DATA

DEMAND RESPONSE READY

POWER RATINGS - NATURAL GAS

	Standby/Demand Response		Prime	
Three-Phase 120/208 VAC @0.8pf	250 kW/313 kVA	Amps: 868	225 kW/281 kVA	Amps: 782
Three-Phase 277/480 VAC @0.8pf	250 kW/313 kVA	Amps: 376	225 kW/281 kVA	Amps: 339
Three-Phase 346/600 VAC @0.8pf	250 kW/313 kVA	Amps: 301	225 kW/281 kVA	Amps: 271

MOTOR STARTING CAPABILITIES (skVA)

skVA vs. Voltage Dip

277/480 VAC	30%	120/208 VAC	30%
K0250124Y21	630	K0250124Y21	506
K0300124Y21	790	K0300124Y21	609

FUEL CONSUMPTION RATES*

Natural Gas – scfh (m^3/hr)

Percent Load	Standby/Demand Response	Prime
25%	1,020 (28.9)	990 (28.0)
50%	1,620 (45.9)	1,260 (35.7)
75%	2,520 (71.4)	1,980 (56.1)
100%	3,180 (90.0)	2,700 (76.5)

*1.5X maximum site rated fuel consumption should be used for gas supply design practices. Refer to Generac 10000046207, latest rev., for more information or contact factory for details.

COOLING

		Standby/Demand Response	Prime
Air Flow (Fan Air Flow Across Radiator)	cfm (m^3/min)	10,078 (285.4)	10,078 (285.4)
Coolant Flow	gpm (Lpm)	90 (340.7)	90 (340.7)
Coolant System Capacity	gal (L)	15 (54.9)	15 (54.9)
Maximum Operating Ambient Temperature	°F (°C)	122 (50)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)		See Bulletin No. 0199270SSD	See Bulletin No. 0199270SSD
Maximum Additional Radiator Backpressure	in H_2O (kPa)	0.5 (0.12)	0.5 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby/Demand Response	Prime
Flow at rated power cfm - (m^3/min)	506 (14.3)	455 (12.9)

ENGINE

		Standby/Demand Response	Prime
Rated Engine Speed	RPM	1,800	1,800
Horsepower at Rated kW**	hp	375	337
Piston Speed	ft/min (m/min)	1,950 (594)	1,950 (594)
BMEP	psi (kPa)	190 (1,313)	171 (1,182)

** See "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

EXHAUST

		Standby/Demand Response	Prime
Exhaust Flow (Rated Output)	cfm (m^3/min)	1,703 (48)	1,517 (43)
Max. Backpressure (Post Silencer)	inHG (kPa)	0.75 (2.54)	0.75 (2.54)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	1,357 (736)	1,340 (727)

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions.
Please contact a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with BS5514 and DIN6271 standards.
Standby - See Bulletin 0187500SSB • Demand Response - See Bulletin 10000018250 • Prime - See Bulletin 0187510SSB

MG250 | 14.2L | 250 kW

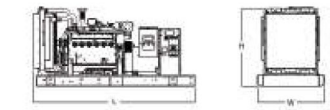
INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

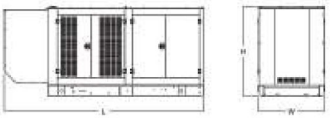
DIMENSIONS AND WEIGHTS*

DEMAND RESPONSE READY



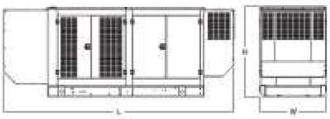
OPEN SET (Includes Exhaust Flex)

L x W x H - in (mm)	136.0 (3,454) x 57.1 (1,450) x 67.9 (1,725)
Weight - lbs (kg)	5,883 - 6,031 (2,668 - 2,735)



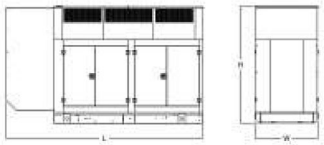
WEATHER PROTECTED ENCLOSURE

L x W x H - in (mm)	174.7 (4,437) x 57.5 (1,461) x 77.8 (1,976)
Weight - lbs (kg)	Steel: 7,448 - 7,596 (3,378 - 3,445) Aluminum: 6,654 - 6,801 (3,018 - 3,084)



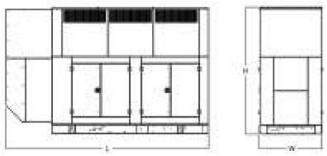
LEVEL 1 SOUND ATTENUATED ENCLOSURE

L x W x H - in (mm)	200.2 (5,085) x 57.5 (1,461) x 77.8 (1,976)
Weight - lbs (kg)	Steel: 7,911 - 8,059 (3,588 - 3,655) Aluminum: 6,853 - 7,000 (3,108 - 3,175)



LEVEL 2 SOUND ATTENUATED ENCLOSURE

L x W x H - in (mm)	180.6 (4,587) x 57.5 (1,461) x 111.3 (2,827)
Weight - lbs (kg)	Steel: 8,484 - 8,632 (3,848 - 3,915) Aluminum: 7,099 - 7,247 (3,220 - 3,287)



LEVEL 3 SOUND ATTENUATED ENCLOSURE

L x W x H - in (mm)	207.3 (5,265) x 63.7 (1,618) x 128.9 (3,274)
Weight - lbs (kg)	Steel: 10,840 - 10,990 (4,916 - 4,984)

* All measurements are approximate and for estimation purposes only.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings

SPEC SHEET

Generac Power Systems, Inc. | S45 W29290 HWY. 59 | Waukesha, WI 53189 | generac.com

Part No. 10000039051
Rev. D 10/23/2024

MG500 | 25.8L | 500 kW

INDUSTRIAL SPARK IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

Standby Power Rating
500 kW, 625 kVA, 60 Hz

Demand Response Rating
500 kW, 625 kVA, 60 Hz

Prime Power Rating
450 kW, 563 kVA, 60 Hz

**Offered on units sold in the U.S. and Canada.

Codes and Standards

Not all codes and standards apply to all configurations. Contact factory for details.

- UL2200, UL6200, UL1236, UL489
- CSA C22.2, B149
- BS5514 and DIN 6271
- SAE J1349
- NFPA 37, 70, 99, 110
- NEC700, 701, 702, 708
- NEMA ICS10, MG1, 250, ICS6, AB1
- ANSI C62.41
- IBC 2009, CBC 2010, IBC 2012, ASCE 7-05, ASCE 7-10, ICC-ES AC-156 (2012)

Powering Ahead

Generac provides superior quality by designing and manufacturing most of its generator components, such as alternators, enclosures, control systems and communications software. Generac also makes its own spark-ignited engines, and you'll find them on every Generac gaseous-fueled generator. We engineer and manufacture them from the block up — all at our facilities throughout Wisconsin. Applying natural gas and LP-fueled engines to generators requires advanced engineering expertise for reliability, durability and necessary performance. By designing specifically for these dry, hotter-burning fuels, the engines last longer and require less maintenance. Building our own engines also means we control every step of the supply chain and delivery process, so you benefit from single-source responsibility.

Plus, Generac Industrial Power's distribution network provides all parts and service so you don't have to deal with third-party suppliers. It all leads to a positive owner experience and higher confidence level. Generac spark-ignited engines give you more options in commercial and industrial generator applications as well as extended run time from utility-supplied natural gas.

MG500 | 25.8L | 500 kW

INDUSTRIAL SPARK IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

STANDARD FEATURES

ENGINE SYSTEM
- Oil Drain Extension
- Heavy Duty Air Cleaner
- Oil Drain Extension
- Heavy Duty Air Cleaner
- Stainless Steel Flexible Exhaust Connection
- Factory Filled Oil and Coolant
- Radiator Duct Adapter (Open Set Only)
- Shipped Loose Catalyst Silencer (Open Set Only)
- Oil Temperature Indication and Alarm

FUEL SYSTEM
- NPT Fuel Connection on Framer
- Primary and Secondary Fuel Shutoff

COOLING SYSTEM
- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Factory-Installed Radiator
- 50/50 Ethylene Glycol Antifreeze
- Radiator Drain Extension

ELECTRICAL SYSTEM
- Battery Charging Alternator
- Battery Cables
- Battery Tray
- Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor

ALTERNATOR SYSTEM
- UL2200 GENprotect™
- Class H Insulation Material
- 2/3 Pitch
- Skewed Stator
- Permanent Magnet Excitation
- Main Line Circuit Breaker
- Sealed Bearing
- Amortisseur Winding
- Full Load Capacity Alternator

GENERATOR SET
- Internal Genset Vibration Isolation
- Separation of Circuits - High/Low Voltage
- Separation of Circuits - Multiple Breakers
- Wrapped Exhaust Piping
- Standard Factory Testing
- 2 Year Limited Warranty (Standby Rated Units)
- 1 Year Limited Warranty (Prime Rated Units)
- Silencer Mounted in the Discharge Hood (Enclosed Units Only)

ENCLOSURE (If Selected)
- Rust-Proof Fasteners with Nylon Washers to Protect Finish
- High Performance Sound-Absorbing Material (Sound Attenuated Enclosures)
- Gasketed Doors
- Upward Facing Discharge Hoods (Radiator and Exhaust)
- Stainless Steel Lift Off Door Hinges
- Stainless Steel Lockable Handles
- RhinoCoat™ - Textured Polyester Powder Coat Paint

CONTROL SYSTEM

Power Zone® Pro Sync Controller
- NFPA 110 Level 1 Compliant
- Engine Protective Functions
- Alternator Protective Functions
- Digital Engine Governor Control
- Digital Voltage Regulator
- Multiple Programmable Inputs and Outputs
- Remote Display Capability
- Remote Communication via Modbus® RTU, Modbus TCP/IP, and Ethernet 10/100
- Alarm and Event Logging with Real Time Stamping
- Expandable Analog and Digital Inputs and Outputs
- Remote Wireless Software Update Capable
- BMS and Remote Telemetry
- Built-In Programmable Logic Eliminates the Need for External Controllers Under Most Conditions
- Ethernet Based Communications Between Generators
- Programmable I/O Channel Properties
- Built-In Diagnostics
- On-Board Manual Storage

Protections
- Low Oil Pressure
- Low Coolant Level
- High/Low Coolant Temperature
- Sensor Failure
- Oil Temperature
- Over/Under Speed
- Over/Under Voltage
- Over/Under Frequency
- Over/Under Current
- Over Load
- High/Low Battery Voltage
- Battery Charger Current
- Phase to Phase and Phase to Neutral Short Circuits (I^2T Algorithm)

7 Inch Color Touch Screen Display
- Resistive Color Touch Screen
- Sunlight Readable (1400 NITS)
- Easily Identifiable Icons
- Multi-Lingual
- On Screen Editable Parameters
- Key Function Monitoring
- Three Phase Voltage, Amperage, kW, kVA, and kVAr
- Selectable Line to Line or Line to Neutral Measurements
- Frequency
- Engine Speed
- Engine Coolant Temperature
- Engine Oil Pressure
- Engine Oil Temperature
- Battery Voltage
- Hourmeter
- Warning and Alarm Indication
- Diagnostics
- Maintenance Events/Information

PARALLELING CONTROLS
- Auto-Synchronization Process
- Isochronous Load Sharing
- Reverse Power Protection
- Maximum Power Protection
- Electrically Operated, Mechanically Held Paralleling Switch
- Sync Check System
- Independent On-Board Paralleling
- Optional Programmable Logic Full Auto Back-Up Controls (PLS)
- Shunt Trip and Auxiliary Contact

MG500 | 25.8L | 500 kW

INDUSTRIAL SPARK IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

CONFIGURABLE OPTIONS

ENGINE SYSTEM
- Engine Coolant Heater
- Oil Heater
- Air Filter Restriction Indicator
- Radiator Stone Guard (Open Set Only)
- Level 1 Fan and Belt Guards (Enclosed Units Only)
- Engine Coolant Heater
- Shipped Loose Catalyst Silencer (Open Set Only)

FUEL SYSTEM
- NPT Flexible Fuel Line

ELECTRICAL SYSTEM
- 10A UL Listed Battery Charger
- Battery Warmer

ALTERNATOR SYSTEM
- Alternator Upsizing
- Anti-Condensation Heater

CIRCUIT BREAKER OPTIONS
- Shunt Trip and Auxiliary Contact
- Electronic Trip Breakers

GENERATOR SET
- Demand Response Rating
- Extended Factory Testing
- 12 Position Load Center

ENCLOSURE
- Weather Protected Enclosure
- Level 1 Sound Attenuated
- Level 2 Sound Attenuated
- Level 2 Sound Attenuated with Motorized Dampers
- Level 3 Sound Attenuated (Steel Only)
- Steel Enclosure
- Aluminum Enclosure
- Up to 200 MPH Wind Load Rating (Contact Factory for Availability)
- AC/DC Enclosure Lighting Kit
- Enclosure Heaters (with Motorized Dampers Only)
- Door Open Alarm Switch

CONTROL SYSTEM
- NFPA 110 Level 1 Compliant 21-Light Remote Annunciator
- Remote Relay Assembly (8 or 16)
- Remote E-Stop Break Glass-Type, Surface Mount
- Remote E-Stop Red Mushroom-Type, Surface Mount
- Remote E-Stop Red Mushroom-Type, Flush Mount
- 10A Engine Run Relay
- Ground Fault Annunciator
- 100 dBA Alarm Horn
- 120V GFCI and 240V Outlets
- Damper Alarm Contacts (with Motorized Dampers Only)

WARRANTY (Standby Gensets Only)
- 2 Year Extended Limited Warranty
- 5 Year Extended Limited Warranty
- 7 Year Extended Limited Warranty
- 10 Year Extended Limited Warranty

ENGINEERED OPTIONS

ENGINE SYSTEM
- Coolant Heater Ball Valves
- Fluid Containment Pan

CONTROL SYSTEM
- Battery Disconnect Switch

GENERATOR SET
- Special Testing
- Battery Box

MG500 | 25.8L | 500 kW

INDUSTRIAL SPARK IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

APPLICATION AND ENGINEERING DATA

ENGINE SPECIFICATIONS

General

Make	Generac
Cylinder #	12
Type	V12
Displacement - in³ (L)	1,574.4 (25.8)
Bore - in (mm)	5.19 (132)
Stroke - in (mm)	6.30 (160)
Compression Ratio	10.0:1
Intake Air Method	Turbocharged/Intercooled
Number of Main Bearings	7
Connecting Rods	Steel Alloy
Cylinder Head	Cast Iron
Cylinder Liners	Electronic
Ignition	Cast Aluminum Alloy
Piston Type	Cast Aluminum Alloy
Crankshaft Type	Forged Steel Alloy
Lifter Type	Solid
Intake Valve Material	High Temperature Steel Alloy
Exhaust Valve Material	High Temperature Steel Alloy
Hardened Valve Seats	High Temperature Steel Alloy

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	±0.25%

Lubrication System

Oil Pump Type	Gear Driven
Oil Filter Type	Full Flow Cartridge
Crankcase Capacity - qt (L)	95 (90)

Cooling System

Cooling System Type	Pressurized Closed Recovery
Fan Type	Pusher
Fan Speed - RPM	1,640
Fan Diameter - in (mm)	44 (1,118)

Fuel System

Fuel Type	Natural Gas
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
Operating Fuel Pressure - in H2O (kPa)	11 - 14 (2.7 - 3.5)
Optional Operating Fuel Pressure - in H2O (kPa)	7 - 11 (1.7 - 2.7)

*When designing the external fuel system, assume a 20% safety factor to the upper and lower limit of the specified fuel pressure range to account for site variation and measurement at the generator test port. Refer to Generac document 10000046207, latest rev. for proper gas supply design guidelines. (Contact Factory for Details)

Engine Electrical System

System Voltage	24 VDC
Battery Charger Alternator	60 A
Battery Size	See Battery Index 0161970SBY
Battery Voltage	(2) – 12 VDC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	K0500124Y23
Poles	4
Field type	Revolving
Insulation class - Rotor	H
Insulation class - Stator	H
Total harmonic distortion	<5%
Telephone Interference Factor (TIF)	<52
Standard Excitation	Permanent Magnet
Bearings	Sealed Ball
Coupling	Direct via Flexible Disc
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Full Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	±0.25%

MG500 | 25.8L | 500 kW

INDUSTRIAL SPARK IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

OPERATING DATA

POWER RATINGS — NATURAL GAS

	Standby/Demand Response		Prime	
Three-Phase 120/208 VAC @0.8pf	500 kW/625 kVA	Amps: 1,737	450 kW/563 kVA	Amps: 1,563
Three-Phase 120/240 VAC @0.8pf	500 kW/625 kVA	Amps: 1,505	450 kW/563 kVA	Amps: 1,355
Three-Phase 277/480 VAC @0.8pf	500 kW/625 kVA	Amps: 753	450 kW/563 kVA	Amps: 677
Three-Phase 346/600 VAC @0.8pf	500 kW/625 kVA	Amps: 602	450 kW/563 kVA	Amps: 542

MOTOR STARTING CAPABILITIES (SKVA)

skVA vs. Voltage Dip			
277/480 VAC	30%	208/240 VAC	30%
K0500124Y23	1,020	K0500124Y23	1,140
K0600124Y23	1,560	K0792124Y23	2,120
K0832124Y23	2,800	K0832124Y23	2,070

FUEL CONSUMPTION RATES*

Natural Gas – scfh (m³/hr)		
Percent Load	Standby/Demand Response	Prime
25%	2,550 (72.2)	2,431 (68.8)
50%	3,624 (102.6)	3,409 (96.5)
75%	4,770 (135.1)	4,426 (125.3)
100%	5,862 (166.0)	5,425 (153.6)

*1.5X maximum site rated fuel consumption should be used for gas supply design practices. Refer to Generac 10000046207, latest rev., for more information or contact factory for details.

COOLING

		Standby/Demand Response	Prime
Air Flow (Fan Air Flow Across Radiator) - Open Set	cfm (m³/min)	31,400 (889)	31,400 (889)
Coolant Flow	gpm (Lpm)	225 (852)	225 (852)
Coolant System Capacity	gal (L)	24.5 (92.7)	24.5 (92.7)
Maximum Operating Ambient Temperature	°F (°C)	122 (50)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)		See Bulletin No. 0199270SSD	
Maximum Additional Radiator Backpressure	in H_2O (kPa)	0.5 (0.12)	0.5 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby/Demand Response	Prime
Flow at Rated Power cfm — (m³/min)	935 (26.5)	865 (24.5)

ENGINE

		Standby	Prime
Rated Engine Speed	rpm	1,800	1,800
Horsepower at Rated kW**	hp	729	656
Piston Speed	ft/min (m/min)	1,890 (576)	1,890 (576)
BMEP	psi (kPa)	204 (1,404)	183 (1,263)

** See "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

EXHAUST

		Standby	Prime
Exhaust Flow (Rated Output)	cfm (m³/min)	3,186 (90)	2,907 (82)
Maximum Allowable Back Pressure (Post Silencer)	inHg (kPa)	0.75 (2.54)	0.75 (2.54)
Exhaust Temperature (Rated Output)	°F (°C)	1,380 (749)	1,355 (735)

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions. Please contact a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with BS5514, and DIN6271 standards.Standby - See Bulletin 0187500SSB

Demand Response - See Bulletin 10000018250

Prime - See Bulletin 0187510GSB

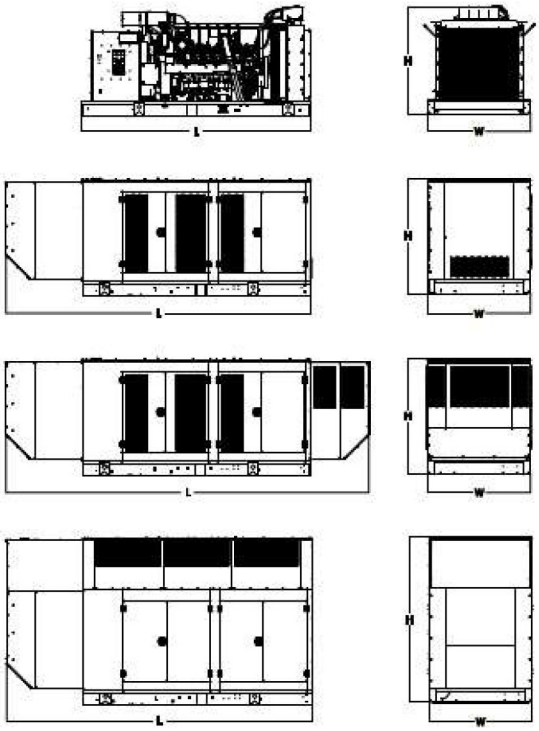
MG500 | 25.8L | 500 kW

INDUSTRIAL SPARK IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

DIMENSIONS AND WEIGHTS*



OPEN SET

L x W x H - in (mm)	154.4 (3,922) x 70.5 (1,791) x 74.9 (1,902)
Weight lbs (kg)	9,386 - 9,739 (4,257 - 4,417)

WEATHER PROTECTED ENCLOSURE

L x W x H - in (mm)	207.4 (5,268) x 70.9 (1,801) x 80.0 (2,032)
Weight lbs (kg)	Steel: 11,576 - 11,929 (5,250 - 5,410) Aluminum: 10,489 - 10,841 (4,757 - 4,917)

LEVEL 1 SOUND ATTENUATED ENCLOSURE

L x W x H - in (mm)	247.5 (6,287) x 70.9 (1,801) x 80.0 (2,032)
Weight lbs (kg)	Steel: 12,583 - 12,936 (5,707 - 5,867) Aluminum: 10,921 - 11,274 (4,953 - 5,113)

LEVEL 2 SOUND ATTENUATED ENCLOSURE

L x W x H - in (mm)	207.4 (5,268) x 70.9 (1,801) x 114.1 (2,898)
Weight lbs (kg)	Steel: 12,921 - 13,658 (5,860 - 6,194) Aluminum: 11,066 - 11,565 (5,019 - 5,245)

LEVEL 3 SOUND ATTENUATED ENCLOSURE

L x W x H - in (mm)	232.0 (5,893) x 76.9 (1,953) x 129.2 (3,282)
Weight lbs (kg)	15,950 - 16,303 (7,234 - 7,394)

*All measurements are approximate and for estimation purposes only.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.

SPEC SHEET

Generac Power Systems, Inc. | S45 W29290 HWY. 59 | Waukesha, WI 53189 | generac.com

Part No. 10000038091
Rev. E 10/16/2024

MG1000 | 49.0L | 1,000 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

DEMAND RESPONSE READY

Standby Power Rating
1,000 kW, 1,250 kVA, 60 Hz

Demand Response Rating
1,000 kW, 1,250 kVA, 60 Hz

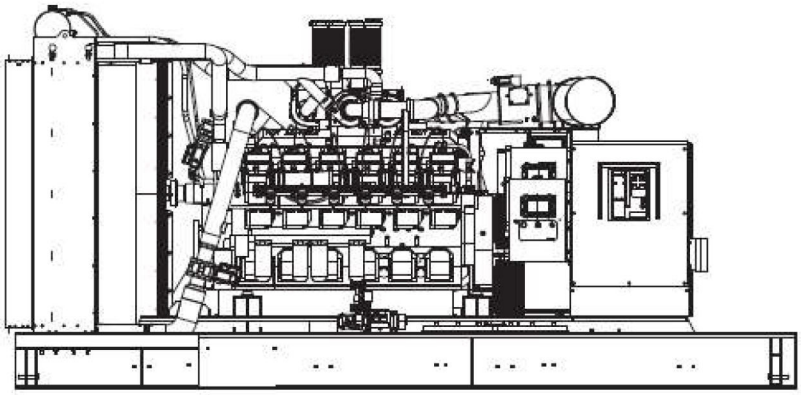


Image used for illustration purposes only

Codes and Standards

Not all codes and standards apply to all configurations. Contact factory for details.

- UL2200, UL6200, UL1236, UL489
- CSA C22.2, B149
- BS5514 and DIN 6271
- SAE J1349
- NFPA 37, 70, 99, 110
- NEC700, 701, 702, 708
- ISO 3046, 7637, 8528, 9001
- NEMA ICS10, MG1, 250, ICS6, AB1
- ANSI C62.41

Powering Ahead

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MG1000 | 49.0L | 1,000 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

STANDARD FEATURES

DEMAND RESPONSE READY

ENGINE SYSTEM

- Oil Drain System
- Heavy Duty Air Cleaner
- Level 1 Fan and Belt Guards (Open Set Only)
- Stainless Steel Flexible Exhaust Connection
- Factory Filled Oil and Coolant
- Radiator Duct Adapter (Open Set Only)
- Critical Silencer/Catalyst
- Coolant Heater Ball Valves
- Oil Temperature Sender with Indication Alarm

FUEL SYSTEM

- NPT Fuel Connection on Frame
- Primary and Secondary Fuel Shutoff

COOLING SYSTEM

- Closed Coolant Recovery System
- Factory-Installed Radiator
- 50/50 Ethylene Glycol Antifreeze
- Radiator Drain Extension

ELECTRICAL SYSTEM

- Battery Charging Alternator
- Battery Cables
- Battery Tray
- Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor

ALTERNATOR SYSTEM

- UL2200 GENprotect™
- Class H Insulation Material
- 2/3 Pitch
- Skewed Stator
- Permanent Magnet Excitation
- Sealed Bearing
- Amortisseur Winding
- Temperature Rise < (120 °C)
- Motorized Main Line Circuit Breaker

GENERATOR SET

- Spring Isolators Under Frame
- Separation of Circuits - High/Low Voltage
- Separation of Circuits - Multiple Breakers
- Standard Factory Testing
- 2 Year Limited Warranty (Standby or Demand Response Rated Units)
- Ready to Accept Full Load in <10 Seconds

ENCLOSURE (If Selected)

- Structural Steel Sub-Base
- Sub-Base Lifting Eyes
- Enamel Finish
- Zinc Plated Fasteners
- Zinc Plated Cast Aluminum Keylock Door Handles
- Heavy Duty Stainless Steel Hinges
- Modular Construction
- Rhino Coat™ - Textured Polyester Powder Coat Paint

CONTROL SYSTEM

Power Zone® Pro Sync Controller

- NFPA 110 Level 1 Compliant
- Engine Protective Functions
- Alternator Protective Functions
- Digital Engine Governor Control
- Digital Voltage Regulator
- Multiple Programmable Inputs and Outputs
- Remote Display Capability
- Remote Communication via Modbus® RTU, Modbus TCP/IP, and Ethernet 10/100
- Alarm and Event Logging with Real Time Stamping
- Expandable Analog and Digital Inputs and Outputs
- Remote Wireless Software Update Capable
- BMS and Remote Telemetry
- Built-In Programmable Logic Eliminates the Need for External Controllers Under Most Conditions
- Ethernet Based Communications Between Generators
- Programmable I/O Channel Properties
- Built-In Diagnostics
- Arc Flash Maintenance Mode (When Properly Equipped)

Alarms and Warnings

- Low Oil Pressure
- Low Coolant Level
- High/Low Coolant Temperature
- Sensor Failure
- Oil Temperature
- Over/Under Speed
- Over/Under Voltage
- Over/Under Frequency
- Over/Under Current
- Over Load
- High/Low Battery Voltage
- Battery Charger Current
- Phase to Phase and Phase to Neutral Short Circuits (I^2T Algorithm)

7 Inch Color Touch Screen Display

- Resistive Color Touch Screen
- Sunlight Readable (1400 NITS)
- Easily Identifiable Icons
- Multi-Lingual
- On Screen Editable Parameters
- Key Function Monitoring
- Three Phase Voltage, Amperage, kW, kVA, and kVAr
- Selectable Line to Line or Line to Neutral Measurements
- Frequency
- Engine Speed
- Engine Coolant Temperature
- Engine Oil Pressure
- Engine Oil Temperature
- Battery Voltage
- Hourmeter
- Warning and Alarm Indication
- Diagnostics
- Maintenance Events/Information

CONTROLS

- Auto-Synchronization Process
- Isochronous Load Sharing
- Reverse Power Protection
- Maximum Power Protection
- Electrically Operated, Mechanically Held Paralleling Switch
- Sync Check System
- Independent On-Board Paralleling
- Optional Programmable Logic Full Auto Back-Up Controls (PLS)
- Shunt Trip and Auxiliary Contact

MG1000 | 49.0L | 1,000 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

CONFIGURABLE OPTIONS

DEMAND RESPONSE READY

ENGINE SYSTEM

- Engine Coolant Heater
- Oil Heater
- Level 1 Fan and Belt Guards (Enclosed Units Only)
- Two Stage Air Cleaner
- Air Filter Restriction Indicator
- Radiator Stone Guard (Open Set Only)
- Baseframe Cover/Rodent Guard

ELECTRICAL SYSTEM

- 20A UL Listed Battery Charger
- Battery Warmer

ALTERNATOR SYSTEM

- Alternator Upsizing
- Anti-Condensation Heater

FUEL SYSTEM

- NPT Flexible Fuel Line

CIRCUIT BREAKER OPTIONS

- Main Line Circuit Breaker
- Electronic Trip Breakers
- Shunt Trip and Auxiliary Contacts

GENERATOR SET

- Spring Vibration Isolator
- Extended Factory Testing
- 24 Position Load Center

ENCLOSURE

- Level 0 Sound Attenuated
- Level 1 Sound Attenuated
- Level 2 Sound Attenuated
- Level 2 Sound Attenuated with Motorized Dampers
- Steel Enclosure
- Aluminum Enclosure
- AC/DC Enclosure Lighting Kit
- Enclosure Heater (With Motorized Dampers Only)
- Up to 180 MPH Wind Load Rating (Contact Factory for Availability)

CONTROL SYSTEM

- NFPA 110 Level 1 Compliant 21-Light Remote Annunciator
- Remote Output Relays (8 or 16)
- Remote E-Stop (Break Glass-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Flush Mount)
- 10A Engine Run Relay
- Ground Fault Annunciator
- 100 dB Alarm Horn
- 120V GFCI and 240V Outlets
- Permissive/Load Shed Module
- Damper Alarm Contacts (With Motorized Dampers Only)

WARRANTY (Standby Gensets Only)

- 2 Year Extended Limited Warranty
- 5 Year Limited Warranty
- 5 Year Extended Limited Warranty
- 7 Year Extended Limited Warranty
- 10 Year Extended Limited Warranty

ENGINEERED OPTIONS

CONTROL SYSTEM

- Battery Disconnect Switch
- Additional Spare Inputs/Outputs

GENERATOR SET

- Special Testing
- Battery Box

ALTERNATOR SYSTEM

- Unit Mounted Load Banks
- Medium Voltage Alternators

ENCLOSURE

- Door Open Alarm Horn

MG1000 | 49.0L | 1,000 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

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APPLICATION AND ENGINEERING DATA

DEMAND RESPONSE READY

ENGINE SPECIFICATIONS

General

Make	Generac
Cylinder #	12
Type	V
Displacement - in^3 (L)	2,992 (49.03)
Bore - in (mm)	6.69 (170)
Stroke - in (mm)	7.09 (180)
Compression Ratio	10.0:1
Intake Air Method	Turbocharged/Aftercooled
Number of Main Bearings	7
Number of Connecting Rods	12
Cylinder Head	4 Valve
Cylinder Liners	Yes
Ignition	MotorTech
Piston Type	Cast Aluminum Alloy
Crankshaft Type	Chromium Molybdenum Steel SCM440H
Lifter Type	Solid
Intake Valve Material	Proprietary Alloy
Exhaust Valve Material	Proprietary Alloy
Hardened Valve Seats	Proprietary Alloy

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	±0.25%

Lubrication System

Oil Pump Type	Gear Driven
Oil Filter Type	Full Flow Spin-On Cartridge
Crankcase Capacity with Filter - qt (L)	285 (270)

Cooling System

Cooling System Type	Forced Circulation by Centrifugal Pump
Fan Type	Pusher
Fan Speed - RPM	1,025
Fan Diameter - in (mm)	76 (1,930)

Fuel System

Fuel Type	Natural Gas
Carburetor	Variable Venturi
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
Operating Fuel Pressure - in H_2O (kPa)	14 - 28 (3.5 - 7.0)

Engine Electrical System

System Voltage	24 VDC
Battery Charger Alternator	Standard
Battery Size	See Battery Index 0161970SBY
Battery Voltage	(4) - 12 VDC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	K1248064N22
Poles	4
Field Type	Rotating
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5%
Telephone Interference Factor (TIF)	<50
Standard Excitation	Permanent Magnet
Bearings	Single
Coupling	Flexible Plates
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Full Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	±0.5%

MG1000 | 49.0L | 1,000 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

GENERAC | INDUSTRIAL POWER

OPERATING DATA

DEMAND RESPONSE READY

POWER RATINGS

	Standby/Demand Response	
Three-Phase 277/480 VAC @0.8pf	1,000 kW/1,250 kVA	Amps: 1,505
Three-Phase 346/600 VAC @0.8pf	1,000 kW/1,250 kVA	Amps: 1,204

MOTOR STARTING CAPABILITIES (skVA)

skVA vs. Voltage Dip	
277/480 VAC	30%
K1248064N22	3,300
K1344064N22	4,000
K1500064N22	4,500

FUEL CONSUMPTION RATES*

Natural Gas – scfh (m^3/hr) at Standard Conditions 68 °F (20 °C), 14.7 psi (101 kPa)

Percent Load	Standby/Demand Response
25%	3,418 (96.8)
50%	6,021 (170.5)
75%	8,655 (245.1)
100%	11,243 (318.4)

* Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

		Standby/Demand Response
Air Flow (Fan Air Flow Across Radiator) - Open Set	cfm (m^3/min)	57,846 (1,638)
Coolant Flow	gpm (Lpm)	489 (1,850)
Coolant System Capacity	gal (L)	80 (303)
Maximum Operating Ambient Temperature	°F (°C)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)		See Bulletin No. 0199270SSD
Maximum Additional Radiator Backpressure	in H_2O (kPa)	0.5 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby/Demand Response
Flow at Rated Power - cfm (m^3/min)	2,205 (62.4)

ENGINE

		Standby/Demand Response
Rated Engine Speed	RPM	1,800
Horsepower at Rated kW**	hp	1,467
Piston Speed	ft/min (m/min)	2,126 (648)
BMEP	psi (kPa)	216 (1,488)

EXHAUST

		Standby/Demand Response
Exhaust Flow (Rated Output)	cfm (m^3/min)	8,500 (241)
Maximum Allowable Backpressure (Post Silencer)	inHg (kPa)	0.73 (2.49)
Exhaust Temperature (Rated Output)	°F (°C)	1,458 (792)

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions.
Please contact a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528, and DIN6271 standards.
Standby - See Bulletin 0187500SSB
Demand Response - See Bulletin 10000018250

MG1000 | 49.0L | 1,000 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency and Non-Emergency

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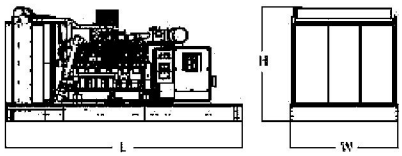
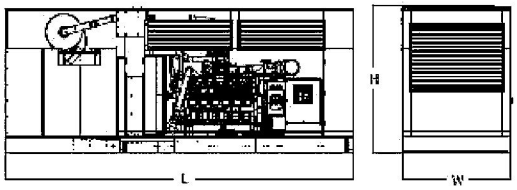
DIMENSIONS AND WEIGHTS*

DEMAND RESPONSE READY



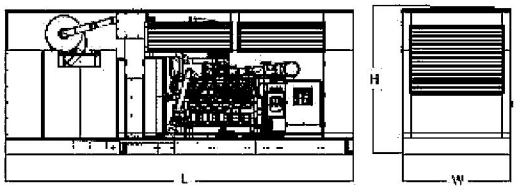
OPEN SET

L x W x H - in (mm)	220.3 (5,597) x 102.0 (2,590) x 108.1 (2,745)
Weight - lbs (kg)	22,798 - 24,495 (10,334 - 11,114)



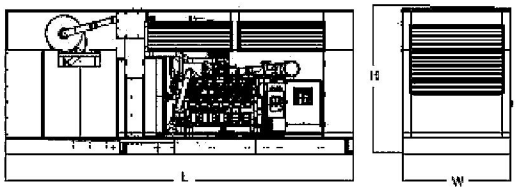
LEVEL 0 SOUND ATTENUATED ENCLOSURE

L x W x H - in (mm)	329.3 (8,366) x 105.8 (2,688) x 136.9 (3,477)
Weight - lbs (kg)	Steel - 26,558 - 28,256 (12,050 - 12,820) Aluminum - 24,092 - 25,789 (10,931 - 11,701)



LEVEL 1 SOUND ATTENUATED ENCLOSURE

L x W x H - in (mm)	329.3 (8,366) x 105.8 (2,688) x 136.9 (3,477)
Weight - lbs (kg)	Steel - 27,801 - 29,499 (12,614 - 13,384) Aluminum - 25,337 - 27,034 (11,496 - 12,266)



LEVEL 2 SOUND ATTENUATED ENCLOSURE

L x W x H - in (mm)	329.3 (8,366) x 105.8 (2,688) x 136.9 (3,477)
Weight - lbs (kg)	Steel - 29,697 - 31,394 (13,474 - 14,244) Aluminum - 26,279 - 27,976 (11,923 - 12,693)

* All measurements are approximate and for estimation purposes only.

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Specification characteristics may change without notice. Please contact a Generac Power Systems Industrial Dealer for detailed installation drawings.

SPEC SHEET

5 of 6

Part No. A0000863975
Rev. B 07/06/2022

Microgrid Controller Spec Sheet (Ageto is 100% Owned by Generac)

ageto

Making Renewable Energy Simple

Ageto Renewable Controller™ (ARC) Microgrid Control Software

The Ageto ARC Microgrid Controller is a robust, reliable and highly flexible control solution designed to amplify the value of your energy resources in three-phase behind-the-meter and off-grid microgrid installations.

The ARC controller acts as the single interface for your entire system, providing autonomous system control and optimization, data collection and visualization, alarm handling, and countless other features designed to ease the operation and maintenance of these complex systems. ARC maximizes clean, renewable energy by seamlessly integrating and optimizing conventional and renewable energy resources.

Features

- Energy resource agnostic
- Demand charge management
- Time-of-use arbitrage
- Resilient backup power
- Load management/shedding
- Storage/generator paralleling
- Cycle charging
- Customer dashboard
- Secure remote visibility
- Historian and trending
- Data aggregation and visualization
- Alarm management
- SMS/Email notifications

"Ageto is the maestro standing in front of the orchestra, making sure the horn section, strings and percussion all play at the right time. That's what they make happen."

– Ken McCauley, Executive Vice President, Turtle Energy Storage Services

Certified B Corporation

The Ageto Difference

The microgrid experts at Ageto are committed partners calling on decades of storage and generator experience to exceed project expectations. Visit agetoenergy.com to see our 85+ validated energy resources.

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Fort Collins, Colorado, USA
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Hardware Options

ARC Pro Cabinet

The ARC Pro Cabinet is the most capable and durable hardware option for the ARC microgrid control solution. The ARC Pro includes an active cooling system that allows for installation in more extreme environments, and a touchscreen for increased ease of operation and on-site access.

Features

- UL508A listed
- NEMA 3R rated
- Gland plate for easy conduit installation
- 16-port network switch
- Active cooling for harsh environments

ARC Lite Cabinet

The ARC Lite Cabinet is a lighter weight and more compact hardware solution. This option may be better suited for projects that have less complexity and fewer assets. Lockable and secure, while capable of remote access, it retains the same software solution and usage of ARC Pro with a simplified design.

Features

- UL508A listed
- NEMA 4X rated
- Compact polycarbonate enclosure
- 8-port network switch
- Lighter weight
- Smaller footprint

Powerful Microgrid

Technology—Within Your Reach

Ageto's robust hardware drives highly effective microgrid control with superior reliability

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Hardware Technical Specifications

	ARC Pro	ARC Lite
Cabinet Data		
External Dimensions (height x width x depth)	500 mm x 500 mm x 300 mm (19.7" x 19.7" x 11.8")	424 mm x 373 mm x 219 mm (16.7" x 14.7" x 8.6")
Mounting Dimensions (height x width)	460 mm x 460 mm (18.1" x 18.1")	424 mm x 307 mm (16.7" x 12.1")
Mounting Style	Wall-mount	Wall-mount
Mounting Location	Out of direct sunlight	Out of direct sunlight
Cable Entry (width x depth)	Metal gland plate, 303 mm x 113 mm (11.9" x 4.4")	n/a (field installed)
Certifications	UL 508A	UL 508A
NEMA Rating	NEMA 3R NEMA 1 (UL 508A listing)	NEMA 4X
Weight	31 kg (68 lb)	13.6 kg (30 lb)
Power Supply		
Voltage	100 - 240V AC single phase	100 - 240V AC single phase
Frequency	50/60 Hz	50/60 Hz
Current Requirement	2A @ 120V AC	2A @ 120V AC
Wire Gauge	14 AWG	14 AWG
Climate Limit		
Operating Temperature Range	-20 to +55°C (-4 to +131°F)	-10 to +40°C (14 to +104°F)
Humidity	5 - 95% RH (non-condensing)	5 - 80% RH (non-condensing)
Altitude Limit	3000 m (9,842 ft)	3000 m (9,842 ft)
Communication		
Network Switch	(16) total, (14) available ports	(8) total, (6) available ports
Remote Communications	Ethernet Cellular	Ethernet Cellular
External Communication Interfaces	Modbus RS485, Modbus TCP, DNP3, API	Modbus RS485, Modbus TCP, DNP3, API
User Interface		
Screen Size	15" viewable	n/a (DisplayPort available)
Touchscreen	IP 66, 400 cd/m2 luminance Sunlight-readable	n/a
Resolution	1024 x 768	n/a

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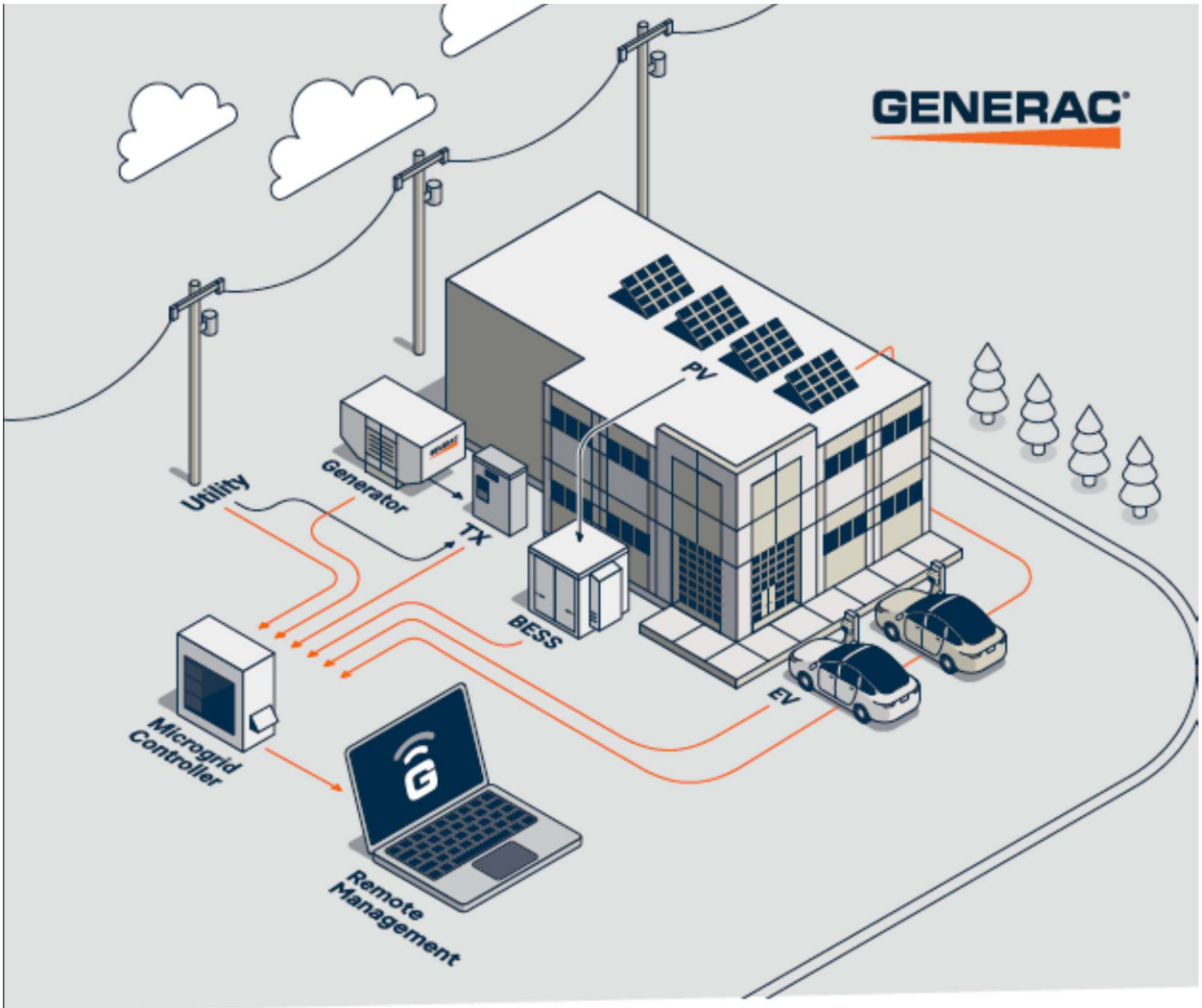


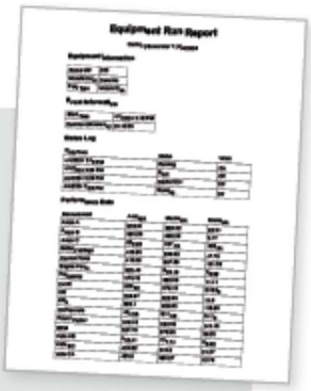
GENERAC LINK MANAGER

Simplifying Remote Energy Management

Designed to empower customers with real-time insights, remote monitoring and control of your energy management, Generac Link Manager delivers an uninterrupted experience that brings next-level energy resiliency.

Equipment Uninterrupted

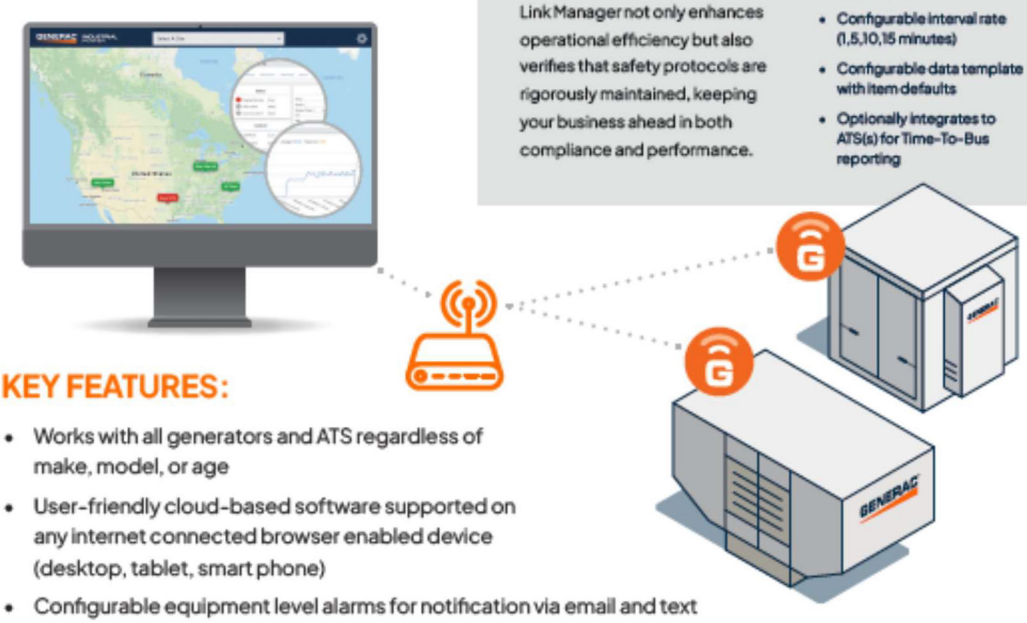
Generac Link Manager is an advanced remote management solution that transforms how you manage your power equipment. It provides real-time monitoring, control and automated compliance reports, enhancing equipment reliability, operational efficiency, and satisfaction through advanced analytics. It's the essential tool for maximizing not just Generac equipment potential but any OEM equipment.



Staying compliant with industry standards is crucial. Generac Link Manager now offers advanced reporting capabilities, designed to streamline and simplify compliance procedures.

This innovative feature enables your business to adhere to the latest code compliance standards, providing detailed and accurate reporting with ease. Generac Link Manager not only enhances operational efficiency but also verifies that safety protocols are rigorously maintained, keeping your business ahead in both compliance and performance.

- Includes asset nameplate information
- Configurable interval rate (1,5,10,15 minutes)
- Configurable data template with item defaults
- Optionally integrates to ATS(s) for Time-To-Bus reporting



KEY FEATURES:

- Works with all generators and ATS regardless of make, model, or age
- User-friendly cloud-based software supported on any internet connected browser enabled device (desktop, tablet, smart phone)
- Configurable equipment level alarms for notification via email and text
- Remotely start/stop the generator for no load testing or activate the ATS test mode for load testing
- Historical trending and analysis of critical equipment data
- Out-of-the-box generator run reports in PDF format, with historian storage
- and many more features and customizations

Try Generac Link Manager FREE for 3 months and connect next-level resiliency.

GENERAC®

Generac Power Systems, Inc.
S45 W29290 Hwy. 59, Waukesha, WI 53189

1-888-GENERAC (1-888-436-3722)
10/24

Advanced Gateway

BP-ADVGW-V1

GENERAC | INDUSTRIAL POWER

Certification

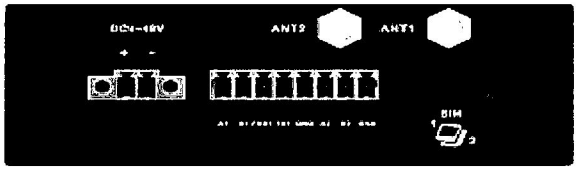
- CE
- FCC
- PTCRB
- RoHS
- AT&T
- Verizon

Image used for illustration purposes only

Front Panel

Interface	Description
PWR	Power Status LED
WARN	Warning LED
Status	Device Status LED
NET	Cellular Network Connection LED
Programmable 1	RS-232 TX/RX Status
Programmable 2	RS-485 TX/RX Status
Programmable 3	CAN Bus TX/RX Status
Programmable 4	Future Use
USER Button	Button to enable diagnostic features
USB	USB Port
ETH1	Ethernet Connection vis Static IP
EHT2	Ethernet Connection via DHCP
SD Card	Unused
Reset	Tech Support use only

Left Panel



Interface	Description
DC9-48V +	DC Power Positive
DC9-48V -	DC Power Negative
Ant2	4G/5G Diversity Antenna
Ant1	4G/5G Primary Antenna
A1	Unused
B1	Unused
RX1	Serial RS-232 Receive
TX1	Serial RS-232 Transmit
GND	Serial RS-232 Ground
A2	Serial RS-485+
B2	Serial RS-48 -
GND	Serial RS-485 Ground
SIM 1/2	SIM Card slot (x2)

Right Panel

Extended Module Pins are only available on the -Extended model of the Advanced Gateway.

Interface	Description
GPS	GPS Antenna
Wi-Fi	Wi-Fi Antenna
LoRa	Unused
Pin 1	AIN1+
Pin 2	Unused
Pin 3	AIN-
Pin 4	GND
Pin 5	CAN_H
Pin 6	CAN_L
Pin 7	Unused
Pin 8	GND
Pin 9	Unused
Pin 10	Unused
Pin 11	DO 0
Pin 12	D0 1
Pin 13	DO 2
Pin 14	DO 3
Pin 15	DI 0
Pin 16	DI 1
Pin 17	DI 2
Pin 18	DI 3
Pin 19	DI_COM
Pin 20	GND

Advanced Gateway
BP-ADVGW-V1

GENERAC | INDUSTRIAL POWER

HARDWARE SPECIFICATIONS

HARDWARE PLATFORM

CPU	ARM Cortex-A5@1.4GHz
RAM	1GB DDR4
FLASH	8GB eMMC

INTERFACES

Ethernet Port	2*10/100/1000Mbps fast Ethernet ports
Industrial Serial Port	1*RS-232, 1*RS-485
	Expandable up to 4 serial ports, isolation
I/O	4-20mA/CAN FD, isolation
	Up to 4 x DI+4 x DO, isolation
Console Port	1*RS-232, RJ-45 interface
USB	1*USB 2.0 port
SIM Card Slot	Nano Sim x2
GPS	Satellite location GPS, 1*SMA
Reset Button	Pinhole button
MicroSD Expansion	Up to 32GB
User Button	Programmable button used for device diagnostics

MECHANICAL FEATURES

Installation	Panel, rail
Housing	Metal + Plastic
Protection Rating	IP30
Cooling	Fan-less cooling
Dimensions	145x106x33mm
Weight	399g

POWER SUPPLY

Power Input	9-48V DC
Power Terminal	Unpluggable industrial terminal connection
Polarity Reverse and Overcurrent Protection	Supported

AMBIENT TEMPERATURE AND HUMIDITY

Storage Temperature	-40~85 °C
Ambient Humidity	5~95% (non-condensing)
Working Temperature	-25~70 °C

OTHER

Real-time Clock (Optional)	Embedded real-time clock (RTC), button battery backup

INDICATORS

LED	POWER, STATUS, WARN, NET, USER * 4

EMC INDEX

Static	EN61000-4-2, level 3
Radiation Electric Field	EN61000-4-3, level 3
Pulse Electric Field	EN61000-4-4, level 3
Surge	EN61000-4-5, level 3
Conducted Disturbance	EN61000-4-6, level 3
Power Frequency Magnetic Field	EN61000-4-8, horizontal/vertical 400A/m (>level 2)
Shock Wave Resistance	EN6100-4-12, level 3

PHYSICAL FEATURES

Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC600-68-2-6

Advanced Gateway
BP-ADVGW-V1

GENERAC | INDUSTRIAL POWER

SOFTWARE SPECIFICATIONS

NETWORK INTERCONNECTION

Network Type	5G SA/NSA, LTECat1
LAN Protocol	APR, EtherNet
WAN Protocol	Static IP, DHCP

NETWORK PROTOCOLS

IP Application	ICMP, DNS, TCP/ UDP, TCPServer, DHCP
IP Routing	Static Routing

NETWORK SECURITY

Firewalls	Stateful packet inspection (SPI), anti-DoS attack Multi-cast/Ping filter, Access Control List (ACL) NAT, PAT, DMZ, port mapping, virtual server
User Levels	Multi-level user authorization
AAA	Local authentication, Radius, Tacacas+, LDAP
Data Security	Firewall
	Secure Boot, TrustZone

RELIABILITY

Backup	VRRP, interface backup
Link Detection	Heartbeat packet detection, auto-recovery of disconnection
Embedded Watchdog	Device self-diagnosis, auto-recovery from operation faults

INDUSTRIAL PROTOCOLS

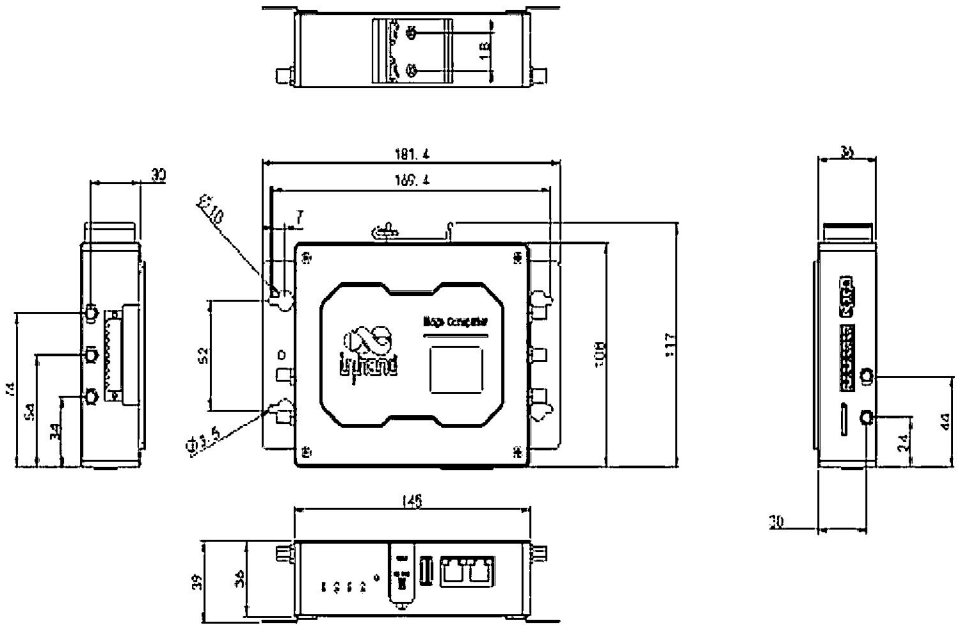
Protocols	ModbusRTU Master, ModbusTCP Master

Advanced Gateway

BP-ADVGW-V1

GENERAC | INDUSTRIAL

DIMENSIONS*



* All measurements are approximate and for estimation purposes only.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

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SPEC SHEET