

# **Protector® Series**



## **Protector® Series Standby Generators Liquid-Cooled Gaseous Engine**

#### STANDARD FEATURES

- Power Zone® 410 Controller, NFPA 110 System Control Capable
- Padlockable Control Panel Cover with UV Protection
- Cellular Connectivity for Mobile Link and Fleet<sub>1</sub>
- Quiet Operation
- Corrosion Resistant Aluminum Enclosure, Electro-Galvanized Baseframe Components, and Stainless Steel Exhaust System
- 5 Year/2,000 Hour Limited Warranty
- High Motor-Starting & Surge Capacity
- ±1% Digital Voltage Regulation
- <5% Total Harmonic Distortion Power Quality
- Fuel Efficiency
- Controller-Selectable Fuel Type Propane or Natural Gas
- 1-Phase or Configurable 3-Phase Voltage Output Models Single-Side Regular Maintenance Access
- **EPA** Emissions Certified
- CA & MA Emissions Compliant 40 & 48 kW Models
- UL 2200 Listed
- 145 mph (233 km/h) Wind Speed Rating<sub>2</sub>
- 1 Cellular service for the US, Canada, and other supported countries using the Generac Generator Connectivity Accessory, Cellular (GGCAC)
- 2 Requires correctly prepared concrete pad and anchoring system.

#### **OPTIONAL FIELD-INSTALLABLE FEATURES**

Available as field-installable kits

- 3-Phase Voltage Configuration Cartridge (VCC)
- 3-Phase Circuit Breakers (1-Phase Generators Include the Circuit Breaker)
- Generator Ready-Status Indicator
- Push-Button Emergency Stop
- NFPA 110 System Control & Remote Annunciation
- Cold Weather Operation Heaters
- Level 2 Sound Reduction
- Extreme High Wind Resistance<sub>2</sub>
- Provisions for Rooftop and Elevated Mounting
- Baseframe Block-off
- Engine Fluid Containment
- Seismic Anchoring

#### STANDBY POWER RATING

Model XG03245 - 32 kW, 60 Hz Emergency Standby Power Generator Model XG04045 – 40 kW, 60 Hz Emergency Standby Power Generator Model XG04845 – 48 kW, 60 Hz Emergency Standby Power Generator



Product may vary from above image depending on model.



**EPA Emissions Certified** 

CA & MA Emissions Compliant 40 & 48 kW Models

### **FEATURES**

- INNOVATIVE DESIGN & PROTOTYPE TESTING are key components of GENERAC'S success in "IMPROVING POWER BY DESIGN." But it doesn't stop there. Total commitment to component testing, reliability testing, environmental testing, destruction and life testing, plus testing to applicable CSA, NEMA, EGSA, and other standards, allows you to choose GENERAC POWER SYSTEMS with the confidence that these systems will provide superior performance.
- MOBILE LINK® CONNECTIVITY: Standard cellular connectivity included with every XG generator, Mobile Link allows users to monitor generator status from anywhere in the world using a smartphone, tablet, or PC. Easily access information such as the current operating status and maintenance alerts. Users can connect an account to an authorized service dealer for fast, friendly, and proactive service. With Mobile Link, users are taken care of before the next power outage.
- TRUE POWER<sup>TM</sup> ELECTRICAL TECHNOLOGY: Superior harmonics and sine wave form produce less than 5% Total Harmonic Distortion for utility quality power. This allows confident operation of sensitive electronic equipment and micro-chip based appliances, such as variable speed HVAC systems.

- SOLID-STATE, FREQUENCY COMPENSATED VOLTAGE REGULATION. This state-of-the-art power maximizing regulation system is standard on all Generac models. It provides optimized FAST RESPONSE to changing load conditions and MAXIMUM MOTOR STARTING CAPABILITY by electronically torquematching the surge loads to the engine. Digital voltage regulation at  $\pm 1\%$ .
- SINGLE SOURCE SERVICE RESPONSE from Generac's extensive service network provides parts and service know-how for the entire unit, from the engine to the smallest electronic component.
- GENERAC TRANSFER SWITCHES: Long life and reliability are synonymous with GENERAC POWER SYSTEMS. One reason for this confidence is the GENERAC product line is offered with its own transfer systems and controls for total system compatibility.



#### **GENERATOR OUTPUT**

#### **PROPANE**

Voltage	XG03245		XG04045		XG04845	
Voltage	Power (kW)	Current (A)	Power (kW)	Current (A)	Power (kW)	Current (A)
120/240 V 1–Phase	32	133	40	167	48	200
208/120 V 3-Phase	32	111	40	139	48	167
240/120 V 3-Phase	32	96	40	120	48	144
480/277 V 3-Phase	32	48	40	60	48	72

#### NATURAL GAS

Voltago	XG03245		XG0-	4045	XG04845	
Voltage	Power (kW)	Current (A)	Power (kW)	Current (A)	Power (kW)	Current (A)
120/240 V 1-Phase	32	133	40	167	48	200
208/120 V 3-Phase	32	111	40	139	48	167
240/120 V 3-Phase	32	96	40	120	48	144
480/277 V 3-Phase	32	48	40	60	48	72

Emergency Standby Power (ESP) Rating: Standby ratings apply to installations served by a reliable utility source. The ESP rating is applicable to varying loads for the duration of a power outage. The average power output over 24 hours shall not exceed 70% of the ESP rating.

#### **ALTERNATOR SYSTEM**

		XG03245	XG04045	XG04845			
Voltage Output 3-Phase		120/240 V Only	120/240 V Only 120/240 V Only				
		208/120 V; Configurable for 240/ 120 or 480/277 V with Optional VCC 208/120 V; Configurable for 240/120 or 480/277 V with Optional VCC		208/120 V; Configurable for 240/ 120 or 480/277 V with Optional VCC			
Circuit Progler (CP)	1-Phase	150 200		200			
Circuit Breaker (CB) Size (A)	3-Phase	Not Included; Optional, Field- Installable Kit	Not Included; Optional, Field- Installable Kit	Not Included; Optional, Field- Installable Kit			
Alternator Type			Synchronous				
Rotor Insul	ation Class	F					
Stator Insul	ation Class	Н					
Telephone Interfe	rence Factor (TIF)		<50				
Bear	ings	Sealed Ball					
Coupling		Flexible Disc					
Excitation	n System	Direct					
Total Harmor	nic Distortion	<5%					

#### **VOLTAGE REGULATION**

Туре	Digital
Sensing	All Phases
Regulation	±1%



#### **SURGE CAPACITY**

Surge Amps at < 0.4	XG03245		XG04045		XG04845	
Power Factor	15% Voltage Dip (A)	30% Voltage Dip (A)	15% Voltage Dip (A)	30% Voltage Dip (A)	15% Voltage Dip (A)	30% Voltage Dip (A)
120/240 V 1-Phase	107	204	117	267	_	_
208/120 V 3-Phase	111	167	139	215		_
240/120 V 3-Phase	91	140	114	150	_	_
480/277 V 3-Phase	55	87	63	102	_	_

#### **ENGINE SYSTEM**

UNIL OTOTEM					
	XG03245	XG04045	XG04845		
Make		Generac			
Model	4.5	L, Inline 4-Cylinder, Naturally Aspirated	ı		
Compression Ratio		9.9:1			
Lifter Type		Hydraulic			
Oil Pump Type	Gear				
Oil Filter Type	Full Flow Spin-on Cartridge				
Crackcase Capacity (qt (L))		12 (11)			
Temperature Derate	1.7% per	10 °F above 77 °F (1.5% per 5 °C above	25 °C)		
Altitude Derate	3% per 1,0	00 ft above 600 ft (1% per 100 m above	: 183 m)		
Exercise Speed (rpm)	1,200				
Operating Speed (rpm)	1,800				
Exhaust Flow at Rated Output (CFM (m <sup>3</sup> /min))	187 (8.3)	235 (6.7)	280 (7.9)		

### **GOVERNOR**

Туре	Electronic
Frequency Regulation	Isochronous

#### **COOLING SYSTEM**

	XG03245	XG04045	XG04845	
Coolant	50/50 (50% Ethylene Glycol)			
Coolant System Capacity (US gal (L))	2.9 (11)			
Water Pump Type	Belt Driven			
Fan Type	Belt Driven Elect		Electric	
Fan Quantity	1 3			
Maximum Ambient Air Temperature (°F (°C))	122 (50)			



### **FUEL SYSTEM**

Fuel Types	Liquid Propane (LP) Vapor or Natural Gas (NG)
Fuel Type Configuration	Controller-Selected Only
LP Vapor Pressure (in H <sup>2</sup> O (kPa))	7-14 (1.74-3.48)
NG Pressure (in H <sup>2</sup> O (kPa))	3.5-14 (0.87-3.48)
Fuel Shutoff Solenoid	Standard, Dual

#### **FUEL CONSUMPTION**

#### LIQUID PROPANE

		3245 XG04		1045	XG04845	
Rated Load	(US gph)	(L/h)	(US gph)	(L/h)	(US gph)	(L/h)
25%	2.2	8.3	2.6	10.0	2.9	10.9
50%	3.4	12.9	3.8	14.5	4.2	15.7
75%	4.2	15.8	4.7	17.7	5.3	20.0
100%	4.9	18.5	5.7	21.7	6.6	25.0

Propane – 91,452 BTU/US gal (25.5 MJ/L); 36 ft<sup>3</sup>/US gal (0.27 m<sup>3</sup>/L); 2,516 BTU/ft<sup>3</sup> (93.7 MJ/m<sup>3</sup>); 4.24 lb/US gal (0.508 kg/L)

#### **NATURAL GAS**

XG03245		XG04045		XG04845		
Rated Load	(CFH)	(m <sup>3</sup> /h)	(CFH)	(m <sup>3</sup> /h)	(CFH)	(m <sup>3</sup> /h)
25%	169	4.8	184	5.2	201	5.7
50%	240	6.8	289	8.2	336	9.5
75%	335	9.5	392	11.1	447	12.7
100%	406	11.5	494	14.0	604	17.1

Natural Gas - 1,036 BTU/ft<sup>3</sup> (37.3 MJ/m<sup>3</sup>) See Emissions Data Sheets for maximum fuel flow for EPA and SCAQMD permitting purposes.

#### **ELECTRICAL SYSTEM**

	XG03245	XG04045	XG04845	
System Voltage (V)	12			
Charge Alternator (A)	37 145			
Battery Charger (A)	5			
Recommended Battery (not included)	Flooded Lead Acid, Group 27, 600 CCA Minimum			
Maximum Allowable Battery	Flooded Lead Acid, Group 31, 750 CCA Minimum			

#### **ENCLOSURE**

	XG03245	XG04045	XG04845
Sound Level at Exercise Speed (dB(A) @ 23 ft (7m))	60	60	_
Sound Level at Operating Speed & No Load (dB(A) @ 23 ft (7m))	67	67	_
Wind Speed Rating (mph (km/h)) <sub>4</sub>	145 (233)		
Color	Metro Gray		

<sup>4 -</sup> ASCE 7-16 exposure B wind speed rating



#### **POWER ZONE 410 CONTROLLER**



016030

#### Standard Features

- 128 x 64 Pixel Graphical Display with Heater
- Multilingual
  - English
  - French
  - Spanish
  - Portuguese
- 3-Phase Sensing Digital Voltage Regulator
- Full Range Standby Operation
- Full System Status
  - 3-Phase AC Voltage
  - · 3-Phase Current
  - Power
  - · Power Factor
  - · Oil Pressure
  - · Engine Coolant Temperature
  - · Oil Temperature (check for oil temp sensor)
  - Fuel Pressure
  - · Engine Speed
  - Battery Voltage
  - Output Frequency
  - Time
  - Date
  - · Load On Line Power and Gen Power
  - Hourmeter
  - · Service Reminders
  - · Fault History (Alarm Log)
- Remote Communications
- Programmable Auto Crank
- Emergency Stop
- Not in Auto Flashing Light
- Selectable Low Speed Exercise
- NFPA 110 System Control Capable
- 5A Integrated Battery Charger

#### Standard Protections

- Low Oil Pressure
- Low Coolant Level
- High/Low Coolant Temperature
- Oil Temperature
- Over/Under Speed
- Over/Under Voltage
- Over/Under Frequency
- Over/Under Current

- Overload
- Battery Voltage
- Battery Charger Current
- Phase-to-Phase and Phase-to-Neutral Short Circuits (I<sup>2</sup>T Algorithm)
- Ground Fault

#### Display

- Éasy Menu Structure
- Multilingual (English, Spanish, French, and Portuguese)
- On Screen Editable Parameters
- Key Function Monitoring
  - 3-Phase Voltage, Amperage, Power, Apparent Power, Reactive Power
  - · Selectable Average or Line-to-Neutral Voltage Measurements
  - Frequency
  - Engine Speed
  - Engine Coolant Temperature
  - Oil Pressure
  - · Battery Voltage
  - Warning and Alarm Indication
  - Diagnostics
  - · Maintenance Events/Information
  - Hourmeter

#### Control Panel

- AUTO/OFF/MANUAL
  - · Operation Through Onboard Buttons or Optional Key Switch
  - · Indication Through Display Screen and LEDs
- Audible Alarm and Silence
- Auxiliary Shutdown Rocker Switch (on controller)
- Not-in-Auto Indication

#### Voltage Regulation

- Digital Control
- 3-Phase Sensing
- Variable V/F Slope Settings
- Negative Power Limit
- Loss of Sensing Protection
- Fault Protection (I<sup>2</sup>T Function)
- High Voltage Limit
- Low Voltage Limit
- Maximum Power Limit

#### Governor Functionality

Speed Control through ECM Integration

#### Communications Ports

- 1 CANbus Port
- 1 USB Port (for Configuration Transfer and Firmware Upgrades)
- 1 RS-485 Modbus Master Port (for External RAP/RRP/External I/O Modules)
- 1 RS-485 Modbus Slave Port (for other uses, e.g. Building Management System)
- 2 RS-232 Communication Ports (for GGCAC or other uses)

#### Codes And Standards

- UL 6200
- CE
- NFPA 110



## **ACCESSORIES**

PRODUCT	PART NUMBER	DESCRIPTION		
Three-Phase XG Generator Model Kits				
XG032/40/48 'G' 208/120 V 3-Phase Voltage Configuration Cartridge	G0099010	Voltage Configuration Cartridge (VCC) for 208/120 V 3-Phase output; INSTALLED in every 3-phase XG03245, XG04045, and XG04845 model.		
XG032/40/48 'J' 240/120 V 3-Phase Voltage Configuration Cartridge	G0099020	Voltage Configuration Cartridge (VCC) for 240/120 V 3-Phase output; NOT included with any XG03245, XG04045, or XG04845 model.		
XG032/40/48 'K' 480/277 V 3-Phase Voltage Configuration Cartridge	G0099030	Voltage Configuration Cartridge (VCC) for 480/277 V 3-Phase output; NOT included with any XG03245, XG04045, or XG04845 model.		
60 A 3–Pole Circuit Breaker (CB) Kit	G0099040	3-pole, 60 A CB and mounting hardware (typical for 32 kW, 480/277 V 3-phase generator).		
70 A 3–Pole Circuit Breaker (CB) Kit	G0099190	3-pole, 70 A CB and mounting hardware (typical for 40 kW, 480/277 V 3-phase generator).		
80 A 3–Pole Circuit Breaker (CB) Kit	G0099050	3-pole, 80 A CB and mounting hardware (typical for 48 kW, 480/277 V 3-phase generator).		
100 A 3-Pole Circuit Breaker (CB) Kit	G0099060	3-pole, 100 A CB and mounting hardware (typical for 32 kW, 240/120 V 3-phase generator).		
125 A 3-Pole Circuit Breaker (CB) Kit	G0099070	3-pole, 125 A CB and mounting hardware (typical for 32 kW, 208/120 V; and 40 kW, 240/120 V 3-phase generators).		
150 A 3-Pole Circuit Breaker (CB) Kit	G0099080	3-pole, 150 A CB and mounting hardware (typical for 40 kW, 208/120 V and 48 kW, 240/120 V 3-phase generators).		
175 A 3-Pole Circuit Breaker (CB) Kit	G0099090	3-pole, 175 A CB and mounting hardware (typical for 48 kW, 208/120 V 3-phase generator).		
Control System Kits				
Generator Ready-Status Indicator Kit	G0099100	3-color LED providing at-a-glance indication of generator ready-to-run status; mounts to front of generator.		
Enclosure Mounted Emergency Stop Kit	G0079930	Emergency Stop consists of a red push button switch; mounts to the exterior of the generator enclosure; replaces the Generator Emergency Shutdown rocker switch in the same location.		
Remote Emergency Stop Kit, Surface Mount	G0099250	Emergency Stop consists of a red push button switch with twist release; switch has an aluminum enclosure which can be mounted extending out from a surface; mounts remote from generator such as near an electrical panel.		
Remote Emergency Stop Kit, Flush Mount	G0099260	Emergency Stop consists of a red push button switch with twist release; switch has an aluminum enclosure which can be mounted flush; mounts remote from generator such as near an electrical panel.		
Remote Emergency Stop Kit, Break Glass	G0099270	Emergency Stop consists of a spring-loaded switch; switch is behind breakable glass in an aluminum enclosure; glass can be broken with tethered hammer; mounts remote from generator such as near an electrical panel.		
Generac Load Manager, 50 A	G0070001	50 A Load Manager helps optimize the performance of the standby generator by managing large electrical loads upon startup and shed them to aid in recovery when overloaded.		
Generac Load Manager, 100 A	G0070061	100 A Load Manager helps optimize the performance of the standby generator by managing large electrical loads upon startup and shed them to aid in recovery when overloaded.		
Generac LTE Propane Tank Fuel Level Monitor	G0070090	The Propane Tank Fuel Level Monitor connects to 4G LTE cellular service to measure and report the amount of LP fuel remaining in the tank. The app alerts the user of both remaining LP fuel and usage reports.		



## **ACCESSORIES**

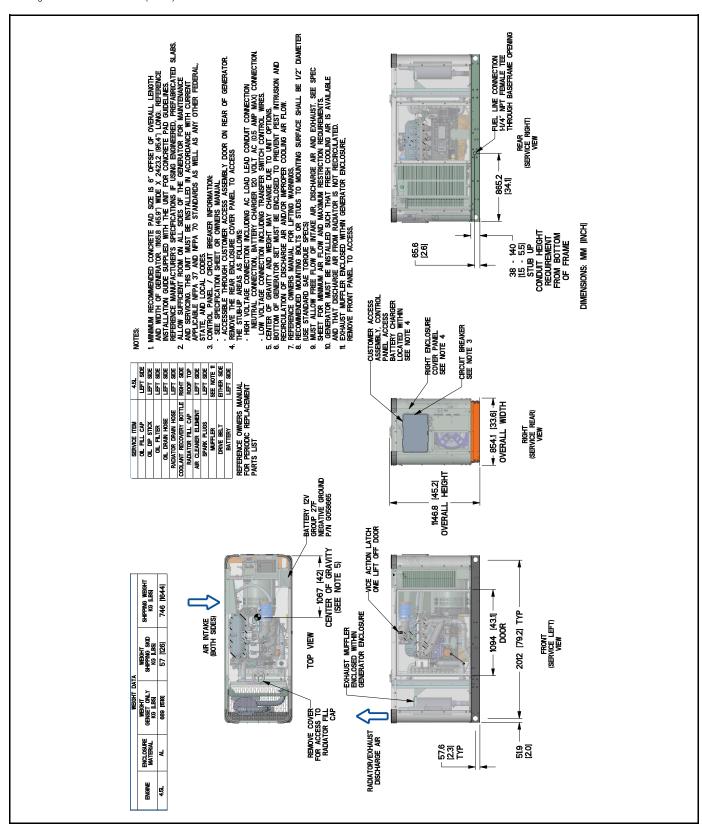
Power Zone Kits				
NFPA 110 Controller Kit	G0099120	Includes controller module with Key Switch, Alarm Horn, and Emergency Stop Switch which connects to Power Zone 410 controller; mounts below controller and is visible through the control panel cover; requires G0098511, G0098521, or G0098531 Panel and a capable transfer switch to be considered for NFPA 110 system control and remote annunciation.		
Remote Annunciator Panel with 8 Relays	G0098511	Remote annunciator panel with relays; mounts in the structure that is connected to backup power.		
Remote Relay Panel	G0098521	Remote relay panel without LEDs or keypad; mounts in the structure that is connected to backup power.		
Remote Annunciator Panel without Relays	G0098531	Remote annunciator panel without relays; mounts in the structure that is connected to backup power.		
Power Zone 410 I/O Extender Kit	G0089370	Expands I/O for the Power Zone 410 controller to provide connections for additional accessories; connects to controller with a 3-wire RS-485 interface.		
Power Zone Gateway Kit	G0089360	Provides an Ethernet connection port for the generator for a Building Management System (BMS); NOT intended for or able to be used with Mobile Link or Fleet.		
Operating Environment Kits				
Battery Heater Kit	G0079920	Recommended for operating environments where the temperature drops below 32 $^{\circ}$ F (0 $^{\circ}$ C); externally powered by 120 VAC, 60 Hz.		
Engine Block Heater Kit	G0099230	Recommended for operating environments where the temperature drops below 0 $^{\circ}$ F (-18 $^{\circ}$ C); externally powered by 120 VAC, 60 Hz.		
Level 2 Sound Reduction Kit	G0099110	Further reduces sound level of generator directing exhaust to the side; assembles to top of generator enclosure exhaust discharge area.		
Extreme High Wind Kit	G0099130	Increases wind speed rating of generator to 186 mph (300 km/h); assembles to exterior of generator enclosure and frame.		
Installation Kits				
Rooftop & Elevated Mounting Sub-Baseframe Structure Kit	G0099140	Support structure for mounting a generator on a rooftop or elevated frame; does NOT include the frame itself.		
Baseframe Block-off Kit	G0099150	Aluminum panel to close off the bottom of the generator; provides sufficient airflow through the generator while keeping objects out; required whenever the generator is elevated.		
Engine Fluid Containment Kit	G0099160	Containment pan to capture all engine oil and coolant; includes a sensor to detect the presence of fluid in the pan and then displays a warning on the controller screen; requires G0089370 Power Zone 410 I/O Extender Kit for sensor installation.		
Seismic Anchoring Kit	G0099170	Anchor bolts for securing the generator in a defined, seismically active area with recommended mounting surface recommendations; does not supersede local codes or requirements; always follow local codes and regulations for seismic requirements.		
Base Plug Kit	G0056510	Base plugs to fit in the lifting holes of the baseframe to keep debris out.		
Maintenance Kits				
4.5 L Gaseous Engine Regular Maintenance Kit	G0079910	Regular maintenance kit includes oil filter, oil funnel, air filter, and spark plugs.		
Metro Gray Paint Kit	G0099180	If the generator enclosure is scratched or damaged, it is important to touch-up the paint to protect against corrosion. The paint kit includes the necessary paint to correctly maintain or touch-up a generator enclosure.		
Transfer Switch Kits				
3-Phase Voltage Sensing Kit for 208/120 & 240/120 V RTS Transfer Switch	G0074110	3-Phase Voltage Sensing Kit <u>required</u> for RTS Transfer Switches <u>when used with</u> the Power Zone 410 controller for 'G' 208/120 or 'J' 240/120 V 3-phase voltage; applies to 3-phase XG03245, XG04045, and XG04845 models configured for 'G' or 'J' voltage.		
3-Phase Voltage Sensing Kit for 480/277 V RTS Transfer Switch	G0074120	3-Phase Voltage Sensing Kit <u>required</u> for RTS Transfer Switches <u>when used with</u> the Power Zone 410 controller for 'K' 480/277 V 3-phase voltage; applies to 3-phase XG03245, XG04045, and XG04845 models configured for 'K' voltage.		



## **INSTALLATION DRAWING**

#### 32-40-48 KW

Drawing # A0005421459 Rev D (1 of 2)



Drawing # A0005421459 Rev D (2 of 2)

