

20 kW LPG Generator in Vertical Enclosure POLAR Model Number: V020PFB360TEB

All APUs include:

- Powder coated aluminum enclosure
- 8-alarm relay board
- Jump Start Kit
- IOT device for remote monitoring

Options available:

- Oil refining kit
- Coastal Coating

Standards:

- UL STD 2200
- EPA Compliant

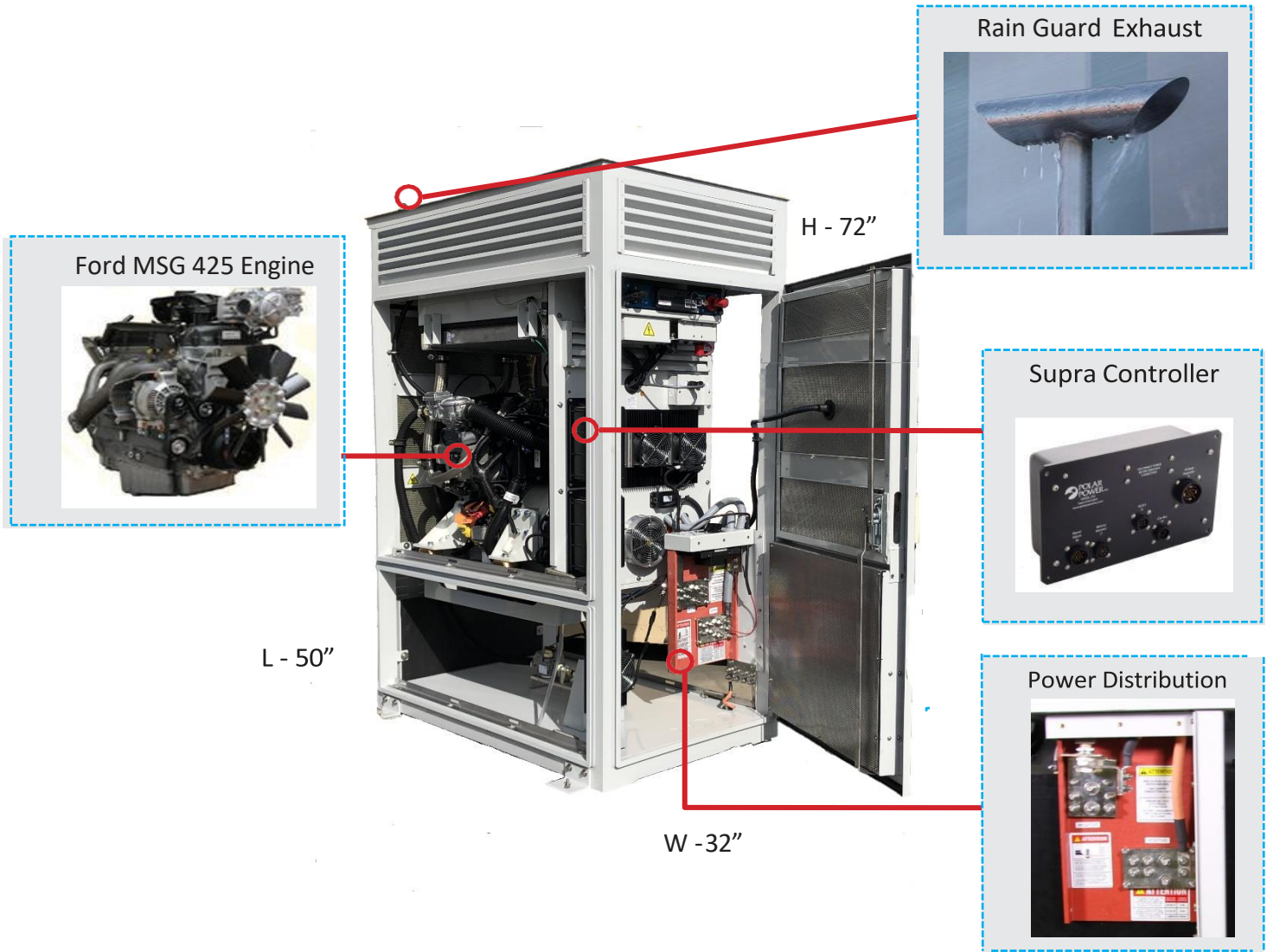


Founded in 1979 Polar Power specialized in solar photovoltaic systems, solar air conditioning and refrigeration. We developed and provided photovoltaic charging controls for telecommunications in the 1980s along with DC generators for the military. In 1994 we were first to provide DC generators with remote control and monitoring to the telecommunications industry.

Polar's success is based on engineering generators to meet the very specific needs of each application. Telecom site optimization is best met with the DC generator technology as the loads and batteries are DC. It makes no sense to install an AC generator and convert the output to DC. The AC generators are designed for a wide range of applications and they are not specifically produced for telecom applications so there are issues with reliability, space, and fuel efficiency.

Polar can save you considerable time and cost in permitting, installing, purchasing, and maintaining a backup generator. We reduce CAPEX and OPEX costs while improving backup reliability.

MAIN FEATURES: V020PFB360TEB



Ford MSG 425 Engine



Rain Guard Exhaust



H - 72"

Supra Controller



L - 50"

Power Distribution



W - 32"

SMALL FOOTPRINT, LIGHT WEIGHT. Polar's vertical 500amp -48V DC generator is the lightest weight, most compact power source on the market for either prime or backup power applications. This 27kw model is sized to support growing telecom power needs associated with 5G or sites with multiple tenants. It fits where traditional generators won't.

GREATLY REDUCED INSTALLATION COST. This generator is light weight and compact enough to be moved up to the roof in the elevator then up the stairs to the roof, saving the cost of a crane rental and long delays in crane permitting and street closures. The light weight also reduces or eliminates the need for structure or roof reinforcements. The Polar generator requires no ATS, saving on purchase, installation and reliability costs.

LOW ACOUSTIC NOISE. <66.0 dBA @ 7 meters (@ max load), and low vibration so as not to disturb the local residents or building landlords.

LOW MAINTENANCE COST. Serving long utility outages without maintenance breaks.

RODENT RESISTANT. Small animals can quickly destroy a generator set by gnawing on wires, fuel lines, radiator

hoses, etc. Cooling air inlets and outlets have perforated aluminum screens to keep small rodents and large insects out. Stainless steel wire braid is placed over fuel and radiator lines to prevent damage.

LONG LIFE. Controls and wire harnesses are designed to exceed a 20 year life. Higher grade, longer life electrical wire (UL 3173), weather tight connectors, gold plated connector pins on signal circuits. No transfer switches are required.

CORROSION RESISTANT. All-aluminum enclosure with stainless hardware for low maintenance, and long service life.

FUEL EFFICIENT. Up to 85% fuel savings due to smaller engine displacement, high efficiency alternator, and variable speed operation.

ADVANCED MONITORING. Included IoT device that provides secure real time data monitoring and remote diagnostics via CANBUS, RS232, and Edge compute abilities.

SPECIFICATIONS: V020PFB360TEB

Engine

Engine Model	Ford MSG 425
Cylinders	Inline Type 4-Cylinder
Displacement (liters)	2.5
Bore (in./mm)	3.5/89
Stroke (in./mm)	3.94/100
Intake Air System	Naturally Aspirated
Engine HP	60 at 2500RPM
Emissions	U.S. EPA Tier 4 Interim
Emissions Compliance	EPA and CARB Certified
Variable RPM	Up to 2500

Engine lubrication system

Oil Filter Type	Full flow spin-on canister
Oil Capacity (L)	6.6
Oil Pressure Switch (standard)	Yes
Oil Pressure Transducer	Optional

Fuel Flow Requirement

Output (kW)	Flow Rate in Ga/hr
20KW at 2000RPM	3.4

Engine cooling system

Type	Pressurized Aluminum Radiator
Water Pump	Belt Driven, Pre-Lubed, Self-Sealing
Fan Type	Electric Fans
Airflow CFM	2354
Fan Mode	Puller
Temperature Sensor	Yes

Environmental

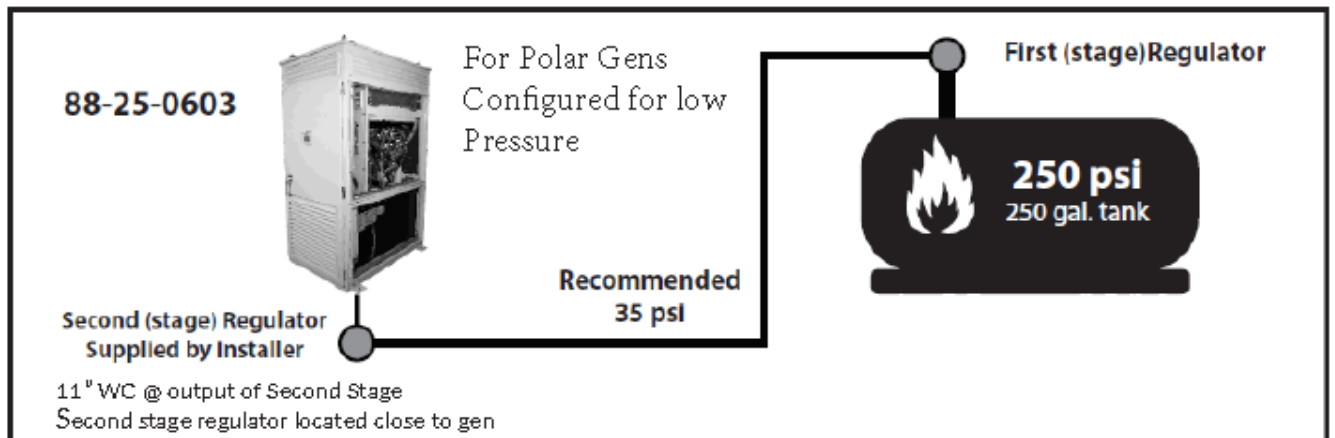
Operating Temperature (°C/°F)	-23 to 50/-10 to 122
Operating Humidity %	100

Power adjustment for conditions

Temperature Deration	2% derate for every 5.6 °C (10 °F) above 25 °C (77 °F)
Altitude Deration	4% derate for every 300 m (1000ft) above 91 m (300 ft)

Fuel system

Type	NG
Fuel Pump Type	Fuel Solenoids
Fuel Tank/Line	Fuel tank N/A/ Line 1 st & 2 nd stage regulator supplied by customer



**POLAR 27kW GENERATOR WITH FORD MODEL MSG-425 ENGINE
VAPOR FUEL ONLY**

INLET PRESSURE REQUIREMENTS FOR NATURAL GAS

Rev 0 020722

Minimum Dynamic Pressure	Recommended Dynamic Pressure	Maximum Static Pressure
2.0 in H2O	4.0 in H2O	11.0 in H2O
.072 PSI	.145 PSI	.397 PSI
4.98 mbar	9.96 mbar	27.40 mbar

Size Regulator and Fuel Lines for 352,000 Btu/hr or 3.4 gal/hr

- **Maximum Static Pressure** is measured just before the Shut off Valve (SOV) with the engine NOT running.
 - The measurement is taken and verified after the Dynamic Pressure measurements. Exceeding this pressure will damage the SOV and the Demand Regulator with the potential of causing fire or explosion.
- **Recommended Dynamic Pressure** is measured with the generator operating at full load.
 - Too small of a regulator on the gas line or too much restriction in the fuel line may prevent the gas pressure from reaching the recommended pressure.
- **Minimum Dynamic Pressure** is measured with the generator operating at full load. Below this value the generator output will begin to drop. Much below this value the generator may not start.
- The Regulator and/or the gas line may be too small if the Maximum Static Pressure is exceeded to reach the Recommended Dynamic Pressure.
- Please read the Installation manual before running the unit.

Engine cooling

System coolant capacity (gal/L)	2.5/9.5
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Alternator

Alternator Model	8342
Type	Permanent Magnets, NdFeB
Weight (lb/kg)	46.5/21
Regulation Type	Variable engine speed
Stator	6 phase/32 poles
Overcurrent Protection (A)	20 kW – 360Amps
Disconnect Means	450Amp Fuse
Voltage Range (VDC)	44 to 60
Alternator Exhaust Flow (cfm/cmm)	130 to 180 / 3.68 to 5.1
MTBF (hr)	100,000+

Enclosure

Model	88-25-0603
Type	Weather Protective
Materials	Powder coated aluminum
Door Hardware	Three Point with Padlock Hasp, and Removable Side Panels
Mounting	Secure Mounting Tabs
Dims.	L 50" x W 32" x H 72"

Weight

Total Weight (lb/kg) Including oil and coolant:	1165/529
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Starter Supercapacitor

Model	20-16-0001
Storage Rating (Ah)	500
Voltage (VDC)	13-14.4
Weight (lb/kg)	12.1/5.5
Operating Temperature (°C/°F)	-40 to 65 / -40 to 149
Service Life (year)	10 to 15

Charger

Model	00-10-0015
Input Voltage (VDC)	37 to 62
Output Voltage (VDC)	14 to 14.4
Recharge time from 0 VDC (min)	10
Recharge time from 8 VDC (min)	2
Weight (lb/kg)	2.2/1

Standards

	Intertek 400376
UL Listing	UL STD 2200
Standards	CSA STD C22.2 No. 100

Controller features

Controller Type	Supra Model 250
4-Line Plain Text OLED Display	Simple user interface for ease of operation
Engine Run Hours Indication	Standard
Programmable Start Delay	Standard
Run/Alarm/Maintenance Logs	Standard
Engine Start Sequence	Cyclic cranking: 5 sec on, 30 sec rest (6 attempts maximum)
Starter Supercapacitor Charger	Standard
Automatic Voltage Regulation with Over and Under Voltage Protection	Standard
Automatic Low Oil Pressure/High Oil Temperature Shutdown	Standard
Overcrank/Overspeed	Standard
Automatic High Engine Temperature Shutdown	Standard
Field Upgradeable Firmware	Standard
Engine Start Delay	Adjustable, Set at 30 sec
Return to Utility Delay	Adjustable, Set at 30 sec
Engine Cool-down	Adjustable, Set at 30 sec
Exerciser	Programmable

Monitoring

Alarm monitoring and remote control through Ethernet.

Contact closure alarm board

Shutdown Alarm	Standard
Warning Alarm	Standard
Engine Run	Standard
E-Stop Depressed	Standard



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