



Weatherford®

GT-400 Turbo-Electric Generator



Uses the flow of natural gas to generate power where you need it.

GT-400 Turbo-Electric Generator

Reliable Power from Available Gas Flow

The GT-400 uses only the flow of natural gas as well as other gases to generate up to 400 watts of DC power in remote locations. Imagine having a reliable system that provides power for applications such as telecommunications, SCADA, process control, battery charging, cathodic protections and navigational lights. The unit can be used anywhere there is a pressure differential in natural gas pipelines, at the well head, in gas lift systems or with pipelines.

The generator provides power as long as gas is flowing. No longer are you at the mercy of solar panels that can fail to provide the required power because of snow, clouds or theft. The unit is an excellent way to provide practical power for remote areas where power is nonexistent or cost prohibitive. Remote gas and offshore wells benefit greatly from this dependable generator.

Dependable

The generator integrates the turbo-flywheel and alternator into one self-contained unit making it extremely reliable. The GT-400 generator has no power takeoff shaft, no seals to wear out and only one moving part.

A small amount of gas is diverted from a higher pressure gas source into the generator. As the gas enters into the chamber, it expands across the edge of the rotor-flywheel causing it to spin around the stationary stator. The permanent magnets mounted on the inside of the rotor-flywheel excite the windings generating electricity. The expanded gas is then returned to the system on the low pressure side. Without any surface-to-surface contact the turbo-flywheel gives years of dependable, maintenance-free uninterrupted service.

The unit is designed to withstand the harshest conditions. Its distinctive design allows moisture and particulate to pass through without effecting its operation. The entire unit is electroless nickel plated inside and out to withstand 1000 hour salt spray specifications. The alternator is encapsulated in epoxy making it impervious to sulfur contaminated gas. High precision ceramic ball bearings are designed to run in the worst conditions, protected by a channeling system to keep moisture and particulate away from them. Finally the exhaust ports are situated at the bottom of the inside chamber to insure moisture does not build up and can easily pass out of the unit with the exhaust gas.



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Easy to Install

No differential pressure regulation is required. Besides over pressure protection the customer may deem appropriate, the GT-400 unit only requires one gas inlet pipe and shutoff valve and two exhaust pipes.

Real-Time Communications and Control

The generator output electronics come enabled with 4 to 20 mA and RS-485 communications that provide real-time monitoring of the unit and batteries.

- RS-485 communications provide complete system monitoring including battery charging sequence, battery voltage, VAC coming from the GT-400 alternator, VDC to batteries or equipment, rotor-flywheel RPM and more. It also allows for two-way communications so power output can be adjusted or a hot switch-over can be undertaken.
- 4 to 20 mA—provides battery voltage and rotor-flywheel RPM monitoring.

Versatile

The generator can operate at inlet pressure ranging from 40 to 1800 PSI. It features a variety of control and 12 or 24 VDC power output options including:

- Direct power supply
- Direct power supply with backup battery charging
- Battery charging running continuously
- Battery charging with a relay to open or close an inlet gas valve as required for battery charging

Compact

The overall dimensions of the GT-400 are only about 10 inches square and can be mounted using the 10- by 5-inch mounting plate making the unit easy to locate.

Safe

The unit is FM approved and suitable for Class I, Division 2 locations. Its rated operating pressure is 1800 PSI. The control is mounted inside the NEMA 4X rated enclosure made part of the unit. Unlike solar panels the generator is of no value to would-be thieves making it immune to theft.

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Specifications

General

	One year limited warranty
Power Output	Up to 400 Watts
DC Output	12 or 24 VDC
Approximate External Dimensions	10" x 10"
Shipping Weight	145 lbs. (65.8 kg.)
Maximum Inlet Pressure	1800 PSI (124 BAR)
Flow Rate	46 CFM @ 120 PSI (8.27 BAR), compressed air
Minimum Differential Pressure Required	Depends upon inlet gas pressure, gas temperature and power output requirements, typical range 30 to 200 PSI (2.06 to 13.79 BAR)
Normal Operating RPM	9000 to 18000

Power Output Options

Direct power supply to equipment 12 or 24 VDC
Direct power supply to equipment with battery backup charging 12 or 24 VDC
Battery charger 12 or 24 VDC system turbine running continuously
Battery charger 12 or 24 VDC system with relay to control inlet gas valve; open when batteries call for charge and closed when batteries are fully charged

Communications

Three 4 to 20 mA outputs including load voltage, battery voltage or current output and Hz reading to monitor rotor RPM
Modbus® (RS-485 port) that provides two-way communications and 13 output parameters for complete monitoring of the unit

Classification/Approvals

FM Approved
Class I, Division 2, Group A, B, C and D

Applications

- SCADA
- Telecommunications equipment
- Process control equipment
- Cathodic protection
- Battery charging
- Any other application where gas is flowing, there is a differential pressure available and a need for constant reliable DC power



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