



Your CONDUIT to Performance.™

400 HZ DISTRIBUTION AND CONTROL

PAGE GSE

400 HZ GATE BOX ASSEMBLY



Dual Output Gate Box, with optional On/Off controls

Introduction

Today's aircraft make the most extensive use of electronics imaginable. The electronics, combined with other heavy electrical loads aboard, place very high demands on the ground power source. In addition to heavy ground power loading, the newer aircraft are able to produce high level power transients as a part of their normal operation.

The Gate Box designed and built by PAGE Industries, Inc. addresses all of the latest aircraft ground power requirements. The digital circuitry within the Gate Box **will not** permit the aircraft to be connected to power that is out of limits. If ground power limits are exceeded while the aircraft is on line, power to the aircraft will be interrupted by the Gate Box. **Without compromising safety, nuisance tripping is positively eliminated.**

This equipment is user friendly and does not normally require routine maintenance.

Long Term Advantage

This product assists in minimizing the risk of power system fault damage to both the aircraft and the ground support facilities. This serves to enhance the reliability of the ground power system, thus encouraging more use of ground power and less use of the expensive APU aboard the aircraft. The elimination of nuisance fault trip has minimized the chance of gate delays caused by ground power or the aircraft.

The Benefits:

- Protects aircraft 400 Hz systems
- Protects the 400 Hz ground power system
- Minimized use of expensive aircraft APU
- Reduces gate delays caused by ground power
- Meet local APU exhaust & noise regulations
- Encourages the use of reliable ground power
- **COST EFFECTIVE**

Physical Characteristics

- Gasketed, steel, all weather enclosure, modified NEMA 12 style
- Durable polyurethane finish
- Lockable door, 3 point latch, safety interlocked
- Positive cooling
- Flange mounted disconnect operator, lockable off
- NEMA 4X door mounted status indicators on door exterior
- Adjustable door restraint
- Robust mounting channels on base of enclosure
- No PVC insulating materials
- Bottom fed disconnect switch
- High voltage wiring kept separate
- Ready access to all components



Dual Output Gate Box

Control Circuitry

The control circuitry monitors each output phase **independently** for overvoltage, undervoltage and overload. Combinations of conditions on phases will not mask an out of limit condition on another phase, whether caused by the ground power or the aircraft.

The digital protection circuits log each fault as a unique incident. Rapidly repeating faults will not cause a “pump-up” in the detection circuitry. This **positively prevents** false tripping and only faults meeting the established timing and level criteria will cause a fault trip.

A fault condition will be displayed by a lighted indicator on the door exterior. More than one type of fault will be displayed if there are different types of faults present. The status of the faults is also indicated within the Gate Box on the Mother Circuit Board. The fault indicators will remain lighted until the fault is cleared and the Gate Box is reset. That the fault indicators remain lighted is critical for promptly resolving ground/aircraft power problems.

This equipment may be reset by operating an “Output Off” button at ground level or the Reset button on the outside of the Gate Box Door.

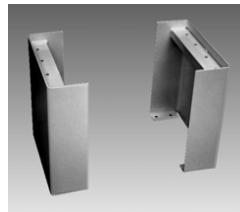
Standards Compliance

- All of the equipment output ratings are in compliance with MIL-STD-704 (latest revision).

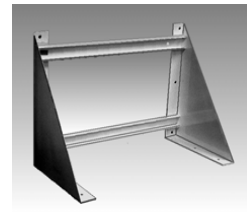
Cooling

High outdoor temperatures and increased loads create high temperature inside a gate box cooled only by convection. This imposes thermal stress on gate box components and reduces reliability.

The PAGE Gate Box is equipped with two, independently controlled fans (one being redundant) to assure cooling under any ambient or load condition. The fans do not operate during average conditions. One fan will provide all cooling under worst conditions.



Floor Stand



Wall Bracket

Functional Characteristics

• Overall

- Input: 115/200 volts wye, 575 volts or 960 volts delta, 3Ø, 400 Hz (see table)
- Output: 115/200 volts wye, up to 260.5 amps maximum per output, not exceeding kVA rating of Gate Box (see table)
- Transformer secondary: 118/204 at no load

• Protection

- Voltage and current values are independently determined for each output phase. Sensing is at the transformer secondary, ahead of the contactor(s).
- Overvoltage sensing per output phase
- Undervoltage sensing per output phase
- Overload sensing per output phase
- Trip Reset: May be reset from ground level by operating a ground level “Off Button”
- Control Circuit Protection: The E/F and ON/OFF circuits cannot be damaged by inadvertent contact with phase power.
- Thermal control: Redundant, independently controlled fans. A cooling failure for any reason will operate a self-resetting, high limit, thermal switch at 160°F/70°C and power down the Gate Box.

• Operating Indicators

- Fault: Individual indicators for Overvoltage, Undervoltage and Overload (2 Overload on dual output units)
- Power Available
- Optional: Telemetry to remotely indicate voltage and current for each output

• Operating Environment

- Ambient Temperature: -40°C to +56°C
- Humidity: 0% to 99%, non-condensing
- Snow and Ice: Keep openings clear
- Blowing Rain: No restriction
- Blowing Sand & Dust: No restriction

• Controls

- Output ON/OFF terminals
- E & F
- Signalling relays for Contactor Closed, Power Available and Summary Fault. Each has two “form C,” 5 amp contacts. Separately fused 24 volts DC signalling voltage is provided.

• Maintenance and Safety

- Test Access: Testing of all Gate Box operating characteristics may be done without requiring a separate test power source. Trip points, ON/OFF and E/F circuits may be fully tested with the optional PAGE Gate Box Test Set.
- Spares: Two lamps, a lamp extractor and one of each type of fuse are stored inside the Gate Box.
- Repairability: All components may be removed and replaced without disturbing adjacent components.
- ***Underwriters Laboratories*** listing is provided for most equipment distributed in the U.S.
- Wiring: All wiring within the assembly is rated at least 125°C. Polyvinyl chloride insulation is not used.
- Door interlock: Standard door safety interlock discourages entry with power on.
- Door restraint: An adjustable door restraint is provided so that the door may be secured in any open position.
- Safety shields: Safety shields cover all points with greater than 28 volt potential. Risk of inadvertent contact with live parts is minimized. The safety shields are clear, flame retardant polycarbonate material.
- The finish is two part, polyurethane paint or fused, polyester, powder coating.

PAGE GSE has been designing and manufacturing high reliability aerospace, military and telecommunications equipment for many years. The aircraft ground support equipment that we offer is the end result of extensive studies on the needs of the marketplace, new aircraft requirements and existing equipment characteristics.

This equipment offers levels of safety, reliability and performance unavailable in any competing equipment, without exception.

STANDARD GATE BOX CONFIGURATIONS

(GATE BOX BASIC PART NUMBER IS 900-30003-XX)

-XX	KVA	OUTPUT	INPUT VOLTS	HEIGHT IN. / (MM)	WIDTH IN. / (MM)	DEPTH IN. / (MM)	WEIGHT LBS / (KG)	UL ®
93	60-90	1	115	43.5 (1105)	30 (762)	19 (533)	150 (68)	√
76	45	1	575	43.5 (1105)	30 (762)	19 (483)	550 (249)	√
83	60	1	575	43.5 (1105)	30 (762)	19 (483)	600 (272)	√
84	75	1	575	43.5 (1105)	30 (762)	19 (533)	635 (288)	√
81	90	1	575	43.5 (1105)	30 (762)	19 (533)	675 (306)	√
98	90	1	960	43.5 (1105)	30 (762)	19 (533)	675 (306)	
79	90	2	575	46.5 (1181)	36.75 (933)	21 (533)	725 (329)	√
78	125	2	575	46.5 (1181)	36.75 (933)	21 (533)	975 (442)	√
82	140	2	575	46.5 (1181)	36.75 (933)	21 (533)	1050 (475)	√
99	140	2	960	46.5 (1181)	36.75 (933)	21 (533)	1050 (475)	

Contact your distributor or the factory for models not listed

GATE BOX ACCESSORIES

PART NO.	ITEM	DESCRIPTION
120-30003-62	FLOOR STAND (2)	MOUNTS SINGLE OUTPUT GATE BOX 18" (457) ABOVE FLOOR
120-30003-63	FLOOR STAND (2)	MOUNTS DUAL OUTPUT GATE BOX 18" (457) ABOVE FLOOR
120-30003-60	WALL BRACKET	MOUNTS SINGLE OUTPUT GATE BOX TO A VERTICAL SURFACE
120-30003-61	WALL BRACKET	MOUNTS DUAL OUTPUT GATE BOX TO A VERTICAL SURFACE
087-30003-88	TELEMETRY CARD ¹	PROVIDES VOLTS & AMPS TELEMETRY FOR 1 OUTPUT
DESCRIPTION	ON/OFF CONTROLS	SWITCHES & ON INDICATOR FOR 1 OUTPUT (FACTORY INST.)
DESCRIPTION	ON/OFF CONTROLS	SWITCHES & ON INDICATOR FOR 2 OUTPUT (FACTORY INST.)

¹: The telemetry circuit card(s) must have the type of output specified when ordered (0-5 v, 0-10 v, 0-20 ma, 4-20 ma).
Two circuit cards would be used to fully equip a Dual Output Gate Box.

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