



787 Electrical Requirements

There have been many questions from airports and engineering firms requesting the electrical requirements for the 787. The following description of the 787 electrical requirements should answer these questions.

The 787 airplane utilizes two (2) forward ground power receptacles and one (1) mid-aft ground power receptacle. Each receptacle is rated at 90 kVA, as is standard on all Boeing current production widebody airplanes. By design each receptacle can support continuous 90 kVA and a peak power consumption of 112 kVA for up to five (5) minutes regardless of the output capacity of the Ground Power Unit (GPU). For continuous supply, the airplane will draw less than 90 kVA from any receptacle. Although the 787 is designed to perform a normal gate turn with two 90 kVA GPUs, Boeing recommends that a third 90 kVA GPU be available for non-normal engine start due to an inoperative Auxiliary Power Unit (APU).

Solid-state GPUs used for powering the 787 aircraft should meet or exceed the following inrush current levels:

- Worst Case Max Current: 1100 Amps peak
- Average Max Current: 730 Amps peak
- Decay to less than 500 Amps within 10 msec
- Decay to steady-state Amps within 130 msec.

Solid-state GPUs should be adjusted to the above specifications.

OPERATIONAL NOTE:

When external power is supplied to a 787 via a ground power unit, the aircraft electrical system will look for voltage on Pin F of the external power receptacle. If voltage is not detected on Pin F within approximately 2.5 seconds of the connection being made, many common GPUs will cease to provide power to the airplane. GPUs that are equipped with an interlock bypass switch should not rely on the switch to override the Pin F function. Airport operators should work with their GPU suppliers to adjust the Pin F GPU-specific timing parameter. Operators can use GPUs to power the aircraft even if a 2.5 second threshold is not met, provided that another power source is powering the airplane prior to connecting to external power. For GPUs that are not equipped with an interlock bypass switch, electrical power is provided without Pin F voltage for a short duration while the GPU ON button is pressed. In these cases, if the operator holds the "ON" button for 2.5 seconds or longer, an appropriate electrical connection can be made.

Similar to existing airplanes, the 787 utilizes power from the APU for normal engine start. The 787 is different in that it uses electrical power for engine start rather than pneumatic power used on existing airplanes. If the APU is inoperative, an engine start can be performed using a minimum of two 90 kVA external ground power units. Boeing however recommends the use of three 90 kVA ground power sources to minimize the impact on cabin load shedding of ventilation, In Flight Entertainment (IFE) and cabin lighting.

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or US International Traffic in Arms Regulations (ITAR), (22 C.F.R. Parts 120-130).

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