

Minimum Load – Why is it required and What Happens if I Don't Have Enough?

At very low load, the switching power supply delivers power in very small pulses. Because of propagation delay thru the PWM controller, these pulses can only go down to a minimum energy level which is more than the external load can consume. The feedback voltage regulation then causes these small pulses to start skipping intermittently. The PWM IC bias voltage is bootstrapped by these same pulses. If there is not enough pulse energy to keep it going then the PWM IC shuts down. This is kind of like a car engine that is misfiring and running at a very low RPM. It may eventually stall because there was not enough flywheel momentum to carry it thru to the next burst of pulses. But the power supply will automatically try to restart about a half second later. So what you may see at the output is the DC voltage will hiccup, run for a fraction of a second then shutdown and restart in a repeated hiccup cycle.

Some units will run OK (no hiccup) at no load or significantly less than our specified minimum load. The minimum load spec is margin to ensure that there is always enough load to run without hiccup.

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