

Subject: Clean Room Fan Overview	Product: Z1000 and P7 Drives	Doc#: AO.AFD.61
Title: Clean Room Fan		

Clean Room Fan

Application Overview

A clean room is virtually dust and/or bacteria free. Clean rooms are used in laboratory work and in assembly or repair of precision equipment. A clean room fan supplies clean air through ventilation systems. This fan runs a system that filters exterior air, maintains temperature and humidity at constant levels, and circulates the interior air through a high-performance air filter while expelling a part of the interior air.

Application Challenges:

- Maintain positive pressure in the clean room.
- Maintain a high quality filtering system at all times.
- Avoid mechanical resonance in the surrounding equipment.
- Detect clogged fans or air ducts automatically.

Yaskawa Products:

Product	Feature	Benefit
Z1000 Drive Family or P7 Drive	Built-in 4-20 mA inputs	Maintain constant pressure using PID control
	Auto/Manual speed function	Easily switch between Auto and Manual modes (possible with a single switch)
	Energy saving control	V/f pattern selection saves energy while operating with light load and low speeds.
	Restart after momentary power loss.	The motor continues running even after a (2 s) momentary power loss.
	Continue to run when external frequency reference is lost.	The drive enables different responses to momentary power losses.
	Avoid mechanical resonance	The drive skips over the frequency at which resonance occurs.
	Detect a clogged fan or air duct.	The Undertorque Detection function can detect pressure loss in the system.

Application Details:

Clean rooms are used extensively in semiconductor manufacturing, biotechnology, the life sciences and other fields that are very sensitive to environmental contamination. The Yaskawa variable frequency drives provide an excellent solution to clean room ventilation.

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The built-in 4-20 mA analog inputs allow the drive to maintain constant pressure with PID control. The application may be easily switched between automatic and manual modes and the motor will continue to run even after a momentary power loss. The drive can skip over a frequency at which resonance occurs, thus protecting expensive laboratory equipment. The Undertorque Detection function allows the drive to detect a clogged fan or air duct.