



# Simple Pulse-width Modulated Controller for Matrix Converters

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## Matrix Converters for AC-AC Conversion Control Pulse-Width Modulated Controller for Simpler Switching

Matrix converters are used to convert an AC signal to an AC signal with a different voltage and phase. Matrix converters do not require capacitor and inductors and offer an all-silicon solution for AC-AC power conversion, which is fundamental in motor drive and other applications.

Typically, a matrix converter consists of multiple switches that are controlled using complicated space vectors and vector-based calculations.

A much simpler method to control the matrix converter switches uses pulse-width modulated (PWM) switching for three-phase AC to three-phase AC conversion. This greatly simplifies the complexity of the matrix converter and thereby increases the reliability of the converter. Matrix converters have applications in the adjustable speed motors found in wind turbines, generators and electric engines.

### FEATURES AND BENEFITS OF PULSE-WIDTH MODULATED MATRIX CONVERTER

- Allows matrix converter control without the use of complicated space vectors and vector-based calculations
- Pulse-width modulation (PWM) provides much simpler control and is less expensive to implement
- Matrix converters do not require large electrolytic capacitors or inductors that are required in other AC-AC conversion methods. Eliminating these elements decreases size and increases reliability
- Applications in the adjustable speed motors found in wind turbines and electric engines

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**Technology ID**

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