

3 Major Parameters for Integrating an Inverter

Getting inverter specs right isn't optional—it's essential to performance, safety, and system integrity.

Before integrating an inverter into any electrified system, three parameters must be locked in: number of phases, system voltage, and motor phase currents. These factors drive everything from design compatibility to thermal load. Overlooking them can risk performance, compliance, and reputation.



1 Number of Phases

The number of phases dictates overall inverter design. If wrong, the inverter will not be able to correctly operate the motor. Alternating-current motors for modern mobility applications are generally three-phase.



2 DC System Voltage

Inverters are designed with certain components to cope with specific direct-current (DC) voltages. Higher voltages mean more expensive components. If the application voltage range is outside that of the inverter, system performance will be limited, component damage may occur, or the system may not function.

3 Motor Phase Currents

Higher phase currents require larger components to handle the increased electrical and thermal load. To mitigate this, inverters are designed with specific current capabilities. If the current required to produce the desired torque exceeds the inverter's capability, the system's performance will be limited. This parameter is generally used up-front to select the manufacturer and model range.

