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## **EMI & EMC**

Electromagnetic Interference, by definition, is any electrical imposition that may interfere with the normal operation of equipment. These impositions can be differentiated within two broad areas.

Conducted Interference: Any undesired signal conducted over the power lines and interconnecting control and signal cables that may interfere with the normal operation of equipment  
Radiated Interference: Any undesired signal that radiates from a source that may enter equipment and interfere with its normal operation.  
Levels of interference are measured in accordance with the following industry and military standards:

**RTCA/DO-160**

**MIL-STD-461**

**EG-13 (France)**

Sources of EMI from air moving devices relate to the style of motor used.

Typically AC induction motors running from sine wave voltages do not present EMI concerns. There may be, however, small magnetic fields (at the operating line frequency) present in close proximity to the motor and its input leads.

DC motors, either mechanically or electronically commutated, and AC motors powered by electronic controllers do have EMI signatures. The EMI is produced by switching of the DC voltage, which is necessary to produce rotation of the magnetic fields in the motor.

To attenuate the EMI signature, electrical and mechanical design techniques are employed. The use of line filtering and/or shielding can further reduce offending signals. It should be noted that interference is never totally eliminated, but reduced to non-objectionable levels by proper control techniques.