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# MIL-1760 Training

**Course Number:** 1760

**Length:** 2 Days

**MIL-1760 Training by Tonex**



MIL-1760 has been around awhile now, but is no less important than when the military standard was originally released.

MIL 1760, a [Department of Defense](#) Interface Standard, was developed to reduce the proliferation of interfaces between aircraft and their stores, and instead to promote interoperability between weapons and aircraft platforms.

In 2007, the latest version of MIL-1760 was released, MIL -1760E. This version of MIL-1760 has been instrumental in employing the previously unused High Bandwidth 2 and High Bandwidth 4 pins of the standardized MIL-1760 connector.

These pins are utilized to carry a Fibre Channel based high speed digital databus, FC-AE-1553 which is an adaptation of MIL-STD-1553 for Fibre Channel.

The original version of the MIL-1760 defined a standardized electrical interface and connector that included both digital and analog databuses, a standardized message protocol (MIL-1553), power, and discrete signals.

MIL-1760 nominates certain signals as safety critical signal interfaces.

Today there are several different groups of MIL1760 signals:

- MIL-STD-704 power connections
- MIL-STD-1553 data communications interface
- High and low bandwidth analog signals
- Discrete signals
- Fiber optics

The MIL-STD-1760 protocol also offsets, to some degree, the disadvantages of using an event-triggered protocol for a safety critical application. While detecting errors and building fault-tolerant mechanisms for time triggered communication protocols is easier because more 'a priori' knowledge exists as to their behavior, the master/slave protocol does provide a more predictable communication protocol than other event triggered protocols such as bus contention or token passing.

This standard defines the connector, signal set definitions, topologies, types of interfaces, signal path requirements, and power along with special requirements for MIL-STD-1553 bus interfaces. This includes a command set with detailed message formats, along with a defined protocol for mass data transfer.

### **MIL-1760 Training Course by Tonex**

MIL-1760 training course covers MIL-STD-1760 Aircraft/Store Electrical Interconnection System The course covers technical aspects of the electrical interface between a military aircraft and its carriage stores.

This course has been developed to provide a general overview of MIL-STD-1760 and its specifications and applications. The course is designed for software and hardware engineers, security analysts, platform testing engineers and technicians, and program/projects managers who work with MIL-STD-1760 interface/systems on and aircrafts and other platforms.

The course includes description of MIL-STD-1760 signals:

- MIL-STD-704 power connections
- MIL-STD-1553 data communications interface
- high and low bandwidth analog signals
- discrete signals
- fiber optics

MIL-STD-1760 defines the electrical characteristics of the signals at the interface, as well as the connector and pin assignments of all of the signals used in the interface. Upon completion of this course, the attendees are able to:

- Describe what MIL-STD-1760 is and how it is applied to military aircraft and systems.
- Learn the basics of MIL-STD-1760 characteristics, protocols and signals
- Describe MIL-STD-1760 protocols and digital communication architecture
- Explain requirements, design and testing aspects of MIL-STD-1760
- Discover how to implement the standard in practice on operational aircraft.

### Course Modules

- Introduction to MIL-STD-1760
- MIL-STD-1760 Requirements
- MIL-STD-1760 Protocols and Standards
- MIL-STD-1760 and MIL-STD-1553 Integration
- MIL-STD-1760 and MIL-STD-1773 Integration
- Aircraft/store interfaces and configurations
- Aircraft requirements
- Mission store requirements
- Carriage store requirements
- Cabling and connectors requirements
- MIL-STD-1760 stores and station examples
- Umbilical cable requirements
- Power interface interrupts
- MIL-STD-1760 systems engineering: requirements, design, implementation and testing
- MIL-STD-1760 cybersecurity considerations
- MIL-STD-1760 cybersecurity risks, vulnerabilities, attacks and mitigation
- Applying RMF framework to MIL-STD-1760 systems

MIL-STD-1553 Workshop, MIL-STD-1553, MIL-STD-1773 and MIL-STD-1760 Combo Workshop is a 4-day intensive workshop covering MIL-STD-1553 data bus.

MIL-STD-1760E, DEPARTMENT OF DEFENSE INTERFACE STANDARD: AIRCRAFT/STORE ELECTRICAL INTERCONNECTION SYSTEM defines implementation requirements for the Aircraft/Store Electrical (and fiber optic) Interconnection System (AEIS) in aircraft and stores.

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