

NOTICE OF CHANGE

NOT MEASUREMENT SENSITIVE

MIL-STD-1773
 NOTICE 1 (USAF)
 2 October 1989

MILITARY STANDARD

FIBER OPTICS MECHANIZATION OF AN AIRCRAFT INTERNAL
 TIME DIVISION COMMAND/RESPONSE MULTIPLEX DATA BUS

TO ALL AIR FORCE HOLDERS OF MIL-STD-1773

1. THE FOLLOWING PAGES OF MIL-STD-1773 HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED, FOR AIR FORCE APPLICATIONS

| NEW PAGE | DATE | SUPERSEDED PAGE | DATE |
|----------|----------------|--------------------------|-------------|
| 1 | 2 October 1989 | 1 | 20 May 1988 |
| 1a/1b | 2 October 1989 | - | - |
| 2 | 20 May 1988 | REPRINTED WITHOUT CHANGE | |

2. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS

3. Holders of MIL-STD-1773 will verify that page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the military standard is completely revised or canceled.

Custodians
 Air Force - 11

Preparing activity.
 Air Force - 11

Review activities
 Air Force - 80, 85, 99

(Project MCCR-F033)

AMSC: N/A

AREA MCCR

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1 SCOPE

1.1 Scope This standard defines requirements for digital, command/response time division multiplexing (data bus) techniques on aircraft. It encompasses the fiber optic data bus transmission line, the electro-optical transmission and reception units, and the associated interface electronics. The concept of operation and information flow on the multiplex data bus and the optical, electrical and functional formats to be employed are also defined.

1.2 Application. When invoked in a specification or statement-of-work, these requirements shall apply to the multiplex data bus and associated equipment which is developed either alone or as a portion of an aircraft weapon system or subsystem development. The contractor is responsible for invoking all of the applicable requirements of this Military Standard on any and all subcontractors he may employ.

* 1.2.1 Air Force Application Potential Air Force users of MIL-STD-1773 should consider the following.

* a. The Air Force is presently using the wire data bus covered by MIL-STD-1553 for 1-MHz transmission.

* b. At this time, Air Force standardization in the use of a fiber optics bus for the same 1-MHz transmission would not reduce cost or increase interoperability, interchangeability, reliability, or the other benefits associated with standardization in general.

* c. The Air Force intends to pursue fiber optics application for a standardized avionics high speed data bus to take advantage of the inherent wide bandwidth characteristics of the fiber.

1.3 Purpose The purpose of this standard is twofold: (a) it seeks to preserve the multiplex bus techniques which have been standardized in MIL-STD-1553, and (b) it provides guidelines for the application of fiber optic transmission techniques to the MIL-STD-1553 interconnect. Use of this standard alone will not ensure total compatibility of transmission characteristics between different systems which employ a fiber optic interconnect, however, it will ensure general compatibility of the optical modulation techniques. The optical power levels, optical wavelength and the means for distributing optical power in any specific implementation must be contained in a specification which references this standard.

2 APPLICABLE DOCUMENTS

2.1 Government documents

2.1.1 Specifications, standards, and handbooks. The following standard forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of this document are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation.

SUPERSEDES PAGE 1 OF MIL-STD-1773

MIL-STD-1773
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STANDARDS

Military

MIL-STD-1553 Aircraft Internal Time Division Command/Response

Multiplex Data Bus

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia PA 19120-5099.)

2.2 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

NEW PAGE

MIL-STD-1773

3 DEFINITIONS

3.1 Bit. Contraction of binary digit. may be either zero or one. In information theory a binary digit is equal to one binary decision or the designation of one of two possible values or states of anything used to store or convey information.

3.2 Bit rate. The number of bits transmitted per second

3.3 Pulse Code Modulation (PCM). The form of modulation in which the modulation signal is sampled, quantized and coded so that each element of information consists of different types or numbers of pulses and spaces.

3.4 Time Division Multiplexing (TDM). The transmission of information from several signal sources through one communication system with different signal samples staggered in time to form a composite pulse train.

3.5 Half duplex. Operation of a data transfer system in either direction over a single line, but not in both directions on that line simultaneously.

3.6 Word. In this document a word is a sequence of 16-bits plus sync and parity. There are three types of words: command, status, and data.

3.7 Message. A single message is the transmission of a command word, status word and data words if they are specified. For the case of a remote terminal to remote terminal (RT to RT) transmission, the message shall include the two command words, the two status words and data words

3.8 Subsystem. The device or functional unit receiving data transfer service from the data bus.

3.9 Data bus. Whenever a data bus or bus is referred to in this document, it shall imply all the hardware in the signal distribution network, including the harness assembly of fiber optic cables, access coupler(s), connectors, etc., required to provide a path between all terminals.

3.10 Terminal. The electronic module necessary to interface the data bus with the subsystem and the subsystem with the data bus. Terminals may exist as separate line replaceable units (LRUs) or be contained within the elements of the subsystem

3.11 Bus controller (BC). The terminal assigned the task of initiating information transfers on the data bus

3.12 Bus monitor (BM). The terminal assigned the task of receiving bus traffic and extracting selected information to be used at a later time.

3.13 Remote Terminal (RT). All terminals not operating as the bus controller or as a bus monitor.

