

ANTARES™ NTDS 4002 I/O BOARD

High Performance Naval Tactical Data System (NTDS)

L3Harris' Antares NTDS 4002 I/O board provides a direct interface between military computers and the industry standard VMEbus. These high performance boards offer many features that make them easy to install, easy to program and easy to operate.

PRODUCT DESCRIPTION

BIT-SLICE TECHNOLOGY PROVIDES ON-BOARD INTELLIGENCE

Where high-speed, specialized NTDS sequence control is required, L3Harris' Antares NTDS bit-slice design is the proven solution. The bit-slice architecture is tailored for intelligent NTDS I/O protocol control. Users can construct I/O instruction sequences that execute rapidly without requiring host processor intervention. Users can access Antares NTDS versatile instructions to transfer and manipulate I/O data, test and set host processor semaphores, and service VMEbus interrupts in response to I/O events. On-board intelligence allows users to carry out complex NTDS protocols without assistance from the host processors. Multiple Antares NTDS boards can easily operate in a single VME chassis with a single processor or multiple processors.

FULL DMA OPERATION OF BOTH NTDS DATA TRANSFERS AND INSTRUCTION EXECUTION

System designers must account for various minimum and maximum NTDS sequence latency requirements, as well as accommodate NTDS DMA transfer speeds. Some military equipment, particularly peripheral devices such as single data converters, display consoles and communication links, have specialized timing requirements that can burden host processors or slower NTDS I/O boards. Antares NTDS I/O boards allow users to transfer data on all four NTDS I/O paths (Input [IB], Output [OB], External Function

[EF] and External Interrupt [EI]) at the same time. To meet the full duplex demands of modern MIL-STD-1397 interfaces, a parallel NTDS I/O board must have the ability to transfer DMA External Function (EF) data while the Output Data (OD) DMA transfer is active. Antares products can activate and transfer an EF word on an inter-computer channel (Category II) while an OD transfer is also active.

EASY TO PROGRAM

The software interface is functionally similar to the AN/UYK-43 military computer. I/O chains written for the AN/UYK-43, -7, -44 or -20 can be easily ported to execute on the Antares NTDS board, providing a path to transition legacy systems to modern, open systems. Antares NTDS boards execute sequences of instructions directly from VMEbus memory. The on-board program counters (total of five) are used to access memory, read an instruction and execute it. The command program counter is "loaded" by the CPU via a single 32-bit "store" to the VMENIO board. At that point, the Antares NTDS 4002 board begins to execute its instructions directly from memory, without any further CPU intervention. The I/O chains will normally have been generated at compile time within the user program with common data structures, records or arrays. The address supplied to the board command program counter is a pointer to the start of the I/O chain to be executed. All I/O operations are controllable from a high-level language.

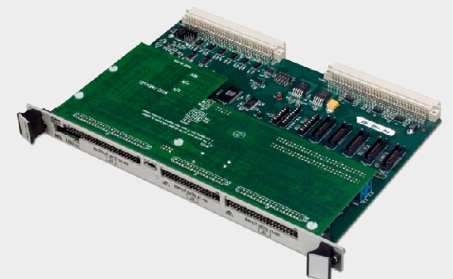


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Reliable, Easy-to-Program,
Easy-to-Operate
Communication Device

KEY FEATURES

- > **32-bit 100 KHZ real-time clock**
The Antares NTDS 4002 includes a 32-bit clock value with 10 microsecond granularity for close timing control of I/O sequences for simulation and debug.
- > **On-the-fly data processing of I/O data**
 - Users may apply a data processing operation on each NTDS word transferred to or from the Antares 4002 board. The operations include:
 - Swap 16-bit integers in a 32-bit word
 - Logical AND, Logical OR
 - or Logical XOR with a mask
 - Arithmetic operations
- > **No additional memory references or host processor overhead are encountered when using data processing operations.**



SPECIFICATIONS

The Antares NTDS 4002 is easily installed and integrated into the user environment through switches/jumpers. The board operates automatically in both MASTER and SLAVE modes as required. VME Interrupt Request Levels and VMEbus Master Timeout are software selectable.

Users may select, via a set of hardware switches, the following:

- > Privileged or non-privileged data access mode;
- > 24- or 32-bit addressing;
- > VME memory base address; and
- > BUS REQUEST and BUS GRANT levels.

SOFTWARE DRIVERS AVAILABLE

- > AT&T UNIX
- > HP-UX
- > HP-RT
- > IRIX
- > SunOS (Series 3 and 4)

VMEBUS

- > DTB Master: A32/24:D32, switch selectable
- > Requester: R(0-3) RWD, switch selectable fairness mode
- > Bus Timer: BTO (102/408/816/1224 microseconds)
- > DTB Slave: A32/24/16:D32/16
- > Interrupter: I(1-7), ROAK, software selectable
- > Weight: Under 2 lbs
- > Size: 6U, 160 mm x 233 mm, single slot
- > Humidity: 0 to 95% non-condensing
- > Temperature: (forced-air cooling required)
 - Storage -25° to 85° C
 - Operating 0° to 50° C

NTDS

NTDS Types A, B, C and E are available.

- > Word Size:
 - 32- or 16-bit transfers for Types A, B, and C
 - 32-bit transfers for Type E
- > NTDS Mode (A, B, and C only):
 - Category I, acting as a computer (CAT 1)
 - Category I, acting as a peripheral (CAT 3)
 - Category II (inter-computer)

MIL-STD-1397 VERSATILITY

L3Harris' Antares NTDS 4002 board provide a comprehensive range of compatible interface types on the VMEbus, including standard parallel and serial NTDS types. The open architecture of the VMEbus provides an excellent path for migrating legacy systems hosted in military equipment to high performance microcomputer systems.

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