Data Sheet

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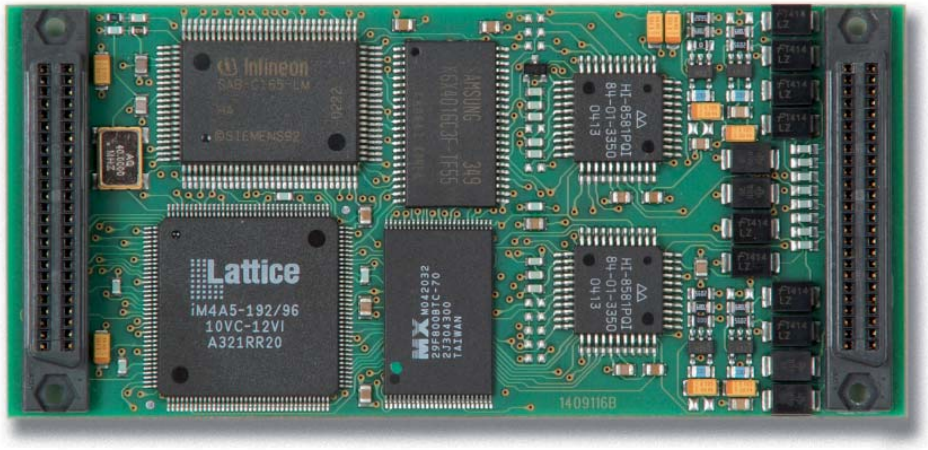
A429IPM-2G

Intelligent ARINC 429 Industry Pack® IP Module - 2nd Generation



- 2 Tx and 4 Rx channels
- On-module computing resources (20 MHz CPU, 1MB RAM | EPROM) for maximum performance
- Modular IP concept – common user interface for PC104, ISA, PCI, cPCI, VME, VXI or PXI platforms
- Already used in airborne controllers (Internet server)
- Extensive firmware functions for any kind of ARINC 429 application

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Application Area

Avionics maintenance, lab testing, integration and troubleshooting require multi-I/O equipment which offers highest performance as well as large-scale flexibility. Modern avionics equipment uses different types of analog and discrete I/O in combination with a variety of serial bus communication protocols like RS-232/422/485, ARINC 429 or MIL-STD-1553. In order to integrate various I/O types on a single interface card (e.g. VME, VXI, PCI or PC/104 AT-bus card) the so-called IP standard (IndustryPack®) provides the perfect solution. The entire range starting from low-cost PC-based ATEs (Automated Test Equipment) or STTE (Special-to-Type Test Equipment) up to high-end VME or VXI Simulation Systems benefit from the IP Module concept since it allows combining different interface types on a single carrier board.

IndustryPack® Standard

Different from the numerous proprietary “daughter module” concepts, the IP standard formally defines the mechanical, host bus electrical, and logical definition of I/O space, memory space, identification space, interrupts and reset functions. Standard IndustryPack® carrier boards typically have 2 or 4 single-size IP slots (up to 6 possible).

Intelligent A429IPM

TechSAT’s intelligent A429IPM ARINC 429 IP Module features 2 non-multiplexed Tx and 4 Rx channels. Standard ARINC 429 industry chip sets are used. The heart of the A429IPM is its 20 MHz SAB C165 Microcontroller. Together with the 1 Mbyte on-module SRAM and the 1 MByte Flash EEPROM the microcontroller takes care of all real-time bus-handling tasks such as maintaining refresh rates, updating dynamic data, filtering and buffering receive data. The host carrier is relieved from any of these bus-related tasks and thus can focus on the application itself. The on-module intelligence allows employing the A429IPM even on dumb, non-intelligent low-cost carrier boards for any kind of backplane, including PC/104, ISA, PCI, VME and even VXI. The A429IPM can operate together with other IndustryPack® modules on the same carrier board. In addition to the ARINC 429 channels a total of 2 configurable I/O signals (timers, interrupts, discrete IN/OUT) are integrated. They can be accessed via the 50-pin I/O signal connector. A 1 Hz synchronization I/O signal is provided, either as master or slave.

A429IPM Firmware / Software

The A429IPM firmware can be either downloaded into the RAM or stored in the Flash EEPROM. It features more than 50 functional interface modules. Starting from simple functions such as a configuration command up to enhanced dynamic data update functions such as the autonomous sine/ramp/list functions, any functional entity is represented by an individual interface function. The software interface is available for Windows XP, 2000, NT, ME, 98 / 95 (driver and/or DLL), and DOS (static libraries) and for numerous carriers. General functions to access IP resources (I/O space, ID space and memory spare) for any type of IP module are part of the interface software. On request the A429IPM firmware can be customized for specific applications. Easy field upgrade of the A429IPM firmware is provided.

Technical Data

ARINC 429, Interface

- 2 Tx (non-multiplexed) and 4 Rx channels
- Speed (HS/LS) individually programmable
- Standard ARINC 429 transceivers and line drivers (socketed)
- 50-pin IP I/O interface connector
- Receive data time stamping resolution 10 µs, 100 µs, 1 ms
- Dynamic update of Tx data (Tx functions Sine, Ramp, Step)
- Data Replay and Data Manipulation
- On-board buffer for 2016 ARINC 429 words + time stamp per receiver (!)
- 256 definable ARINC 429 transmit labels per transmitter each with independent update rate support
- Autonomous cyclic transmit scheduling, combinable with block transfer
- Label data update sustains transmit schedule
- Triggered I/O facility

Resources

- 20 MHz 16-bit controller Siemens SAB 165
- 1 Mbyte SRAM
- 1 MByte flash EPROM for firmware code
- 2 interrupts module to carrier
- 2 interrupts carrier to module
- 2 configurable TTL I/O lines
- 1 Hz synchronization I/O

IP Characteristics

- 8/16-bit access
- Bus clock: 8 MHz with 2 wait states
- 128 Bytes I/O space
- 128 Bytes ID space
- 2 interrupts with 16-bit vector

Software

- Standard firmware (ca. 50 functions)
- Software interface compatible with TechSAT’s PCC libraries
- Customized firmware on request

Physical Dimensions

- Single-size IP module: 3.89 ,‘ (98,8 mm) x 1.81“ (45,97 mm)
- Weight: 38 g

Operating Environment

- Temp. operating: 0..55 degC
- Temp. storage: -10..85 degC
- Humidity: <95% not-condensing

Power Consumption

- +5V: max. 250 mA
- +12V/-12V: 100 mA each

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