Data Sheet

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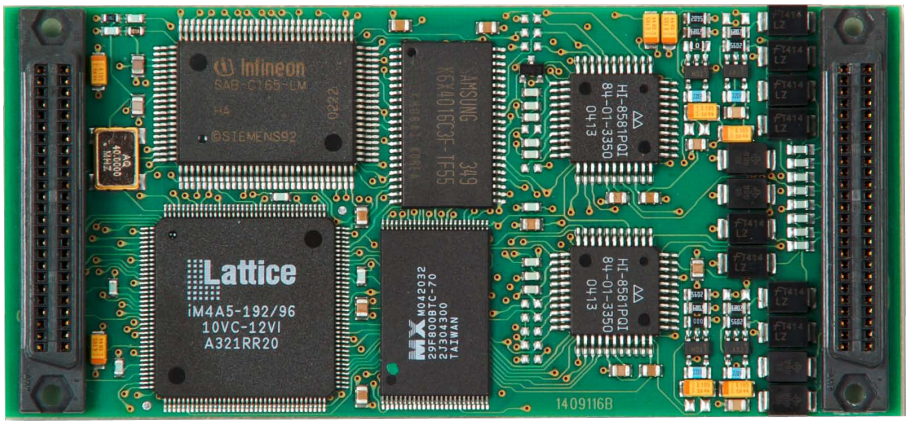
A429-IPM
Intelligent ARINC 429 Industry Pack®
IP Module - 2nd Generation



- 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 A429-IPM

TechSAT’s intelligent A429-IPM 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 A429-IPM 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 A429-IPM even on dumb, non-intelligent low-cost carrier boards for any kind of backplane, including PC/104, ISA, PCI, VME and even VXI. The A429-IPM 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.

A429-IPM Firmware / Software

The A429-IPM 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 A429-IPM firmware can be customized for specific applications. Easy field upgrade of the A429-IPM 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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