# ALPHI
TECHNOLOGY CORPORATION

IP-ARINC-429

IP ARINC 429

Features

- ARINC 429-based IP card using Holt 3282 ARINC controller
- 1 transmitter and 2 receiver channels per ARINC controller
- Total 16 independent receive channels and 8 transmit channels
- Label matching for all receiver channels
- Meets the ARINC 429 specifications for loading, level detection, timing, and protocol
- Software selected data rate of 12.5kbps or 100kbps with automatic slew rate adjustment
- Burst and continuous mode available
- Programmable word length selection, with the parity bit generated automatically
- 64kx16 SRAM buffer for data store
- 8 or 32 MHz clock
- 2 interrupts and 2 slave DMA IP bus lines
- VITA 4 compliant
- 32 bytes of EEPROM are used for board ID
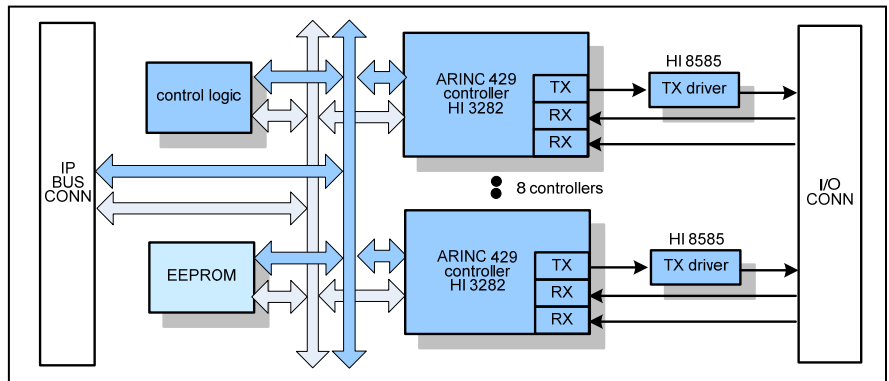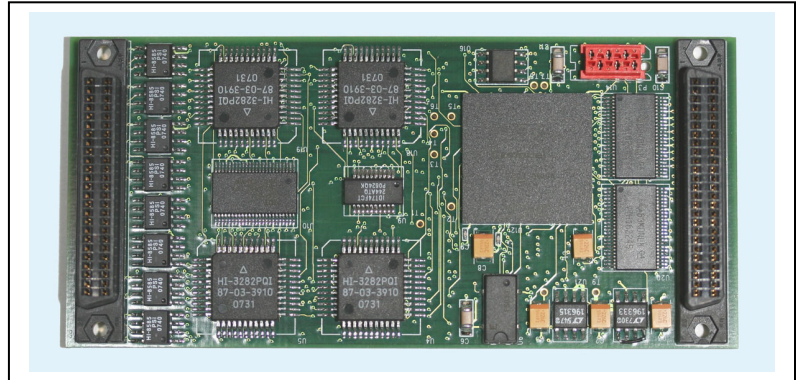
Block Diagram and Operational Overview

The **IP-ARINC-429** IP board has a Holt 3282 ARINC controller that supports the ARINC specifications. ARINC429 (Aeronautical Radio Incorporated) is a specification, which defines how avionics equipment and system should communicate with each other. ARINC 429 employs a unidirectional data bus standard known as Mark 33 Digital Information Transfer System (DITS). Messages are transmitted and received at a bit rate of either 12.5kbps or 100kbps.

The receiver input circuitry and logic are designed to directly meet the ARINC 429 specifications.   The ARINC inputs of

the HI-3282-10 configurations also have internal lightning protection to DO-160D, Level 3.

The transmitter section provides the ARINC 429 communication protocol. An external ARINC 429 Line Driver such as the Holt HI-HI-8585 is required to translate the 5 volt logic outputs to ARINC 429 drive levels.

The 16-bit parallel data bus on the ARINC controller exchanges the 32-bit ARINC data word in two steps when either loading the transmitter or interrogating the receivers. The data bus interfaces with CMOS and TTL.

The SRAM stores received data and transmitted data.

A 32-byte EEPROM is used for the board ID.

Applications:

This is a perfect solution for:
- Avionics equipment, or
- Avionic data communication systems

Software Support:

HI3282 ARINC 429 Device Specifications:

- Meets the ARINC 429 specifications
- Label matching for all receiver channels
- Two receivers and an independent transmitter are provided per device
- Master clock frequency is 1 MHz.
- The receiver input circuitry and logic are designed to meet the ARINC 429 specifications for loading, level detection, timing, and protocol.
- Each independent receiver monitors the data stream with a sampling rate 10 times the data rate.
- The sampling rate is software selectable at either 1MHz or 125KHz.
- The transmitter has a First In, First Out (FIFO) memory to store 8 ARINC words for transmission.
- Programmable word length selection, with the parity bit generated automatically
- Automatic word gap timer
- Internal lightning protection of ARINC receiver inputs per DO-160D, Level 3 in HI3282-10 configurations
- Self test mode
- Parity functions
- Repeater operations supported

HI 8585 ARINC Transmit Driver Specifications

- Designed to directly drive the ARINC 429 bus
- A logic input is provided to control the slope of the differential output signal
- Internal resistor and capacitor for slope control tested to ARINC requirements
- Output has series 37.5 for each line driver output

Industry Pack Specifications:

- Meets ANSI/VITA 4-1995
- 8/32 MHz synchronous operation
- Supports ID, 128 byte I/O, interrupt. & 8 Mbyte memory spaces
- 2 Interrupts per module
- Two passive DMA channels are possible.
- Hardware self timed per IP module
- Triggered via system reset and software control
- Jumper or software time-out function
- 5, +/-12 volt reset-able fuse per IP

Mechanical: Environmental:

- Size – VITA 4 compliant
  1.8" x 3.9" or 46 mm x 99 mm
- Power – 1.0 watt
- Vibration – 0.5G, 20-2000 Hz rand
- Shock – 20G, 11 msec, ½ sine
- Weight – tbd
- MTBF – >250,000 hours

Operating Environment:

- Operating temperature
  Commercial: 0 to +70 ºC
  Optional: -25 ºC to +80 ºC
- Non-operating: -40 ºC to +85 ºC
- Airflow requirement – 5 CFM
- Humidity – 5 to 90% (non-cond)
- Altitude – 0 to 10,000 feet

Ordering Information:

Part number: IP-ARINC-429   ARINC 429 controller on an Industry Pack module

Optional Accessories

Part number: TB-50-HDR   50 pin terminal block and 1 meter flat ribbon cable
CBL-50-HDR   50 pin, 1 meter flat ribbon cable, IDC header connector