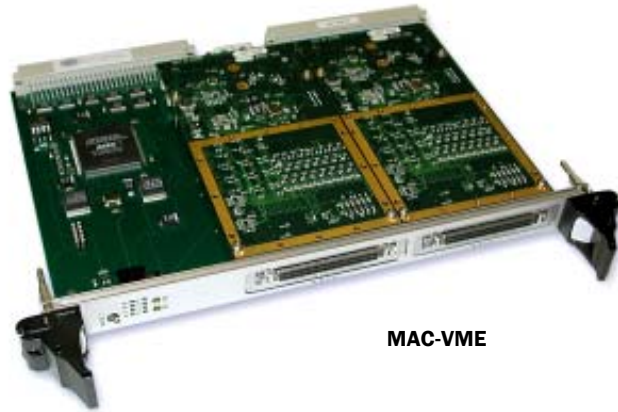


FEATURES

- > Up to 64 ARINC 429 channels
- > ARINC 429, 419, 453, 573, 575, 708, 717, RS-232, and RS-422 support
- > Powerful, on-board processing
- > Modular, multi-protocol support
- > Fully independent channel operation
- > Powerful, easy-to-use functionality
- > Multiple data buffering mechanisms
- > On-board message scheduling
- > 32-bit time-tagging
- > Error injection/detection
- > VxWorks support for ARINC 429 and RS-serial interfaces included
- > PCI-MXI-2 support for Windows XP, 2000, Me, NT, 98 and 95 included
- > LabVIEW support available



MAC-VME

The Modular Avionics Controller (MAC) is Condor Engineering's new family of intelligent, high performance 6U VME and C-size VXI interface solutions for ARINC 429, serial communications and other avionics protocols. As an evolutionary follow-on product from Condor's successful VME/VXI-AIC product line, the MAC family provides a single integrated interface to multiple avionics protocols on VMEbus or VXibus platforms.

Software

An integrated Application Programming Interface (API) is provided for high-level access to all MAC-based protocol functions. The efficient and easy-to-use MAC-API provides high performance access to all protocol, control and data functions. A comprehensive transition library is also provided to seamlessly migrate applications from the AIC to the MAC. API support for VxWorks, Windows XP, 2000, Me, NT, 98, and 95 is provided for PC-based hosts across a National Instruments PCI-MXI-2 interface. High-level ARINC 429 support is optionally available for LabVIEW across the PCI-MXI-2 interface. For VME and VXI hosts, the API is also supplied in source code.

Hardware Architecture

Architecturally, the MAC has two PMC slots which can be populated with one or two powerful PMC Modules. All user I/O is via front panel connectors. Transition cabling to 50-pin or 60-pin SCSI II or III connectors are provided with every module.

ARINC 429 product configurations have a minimum of 2 receive and 2 transmit channels, up to a maximum configuration of 32 receive and 32 transmit channels on a single board populated with two PMC modules. Data rates, parity, filtering, message scheduling, error injection, self-test operation and protocol features are controlled on-board. All ARINC 429 channels operate independently and simultaneously at full data throughput.

In addition to ARINC 429, MAC configuration options offer concurrent, integrated support for numerous other 2-wire ARINC interfaces including ARINC 419, 453, 571, 573, 575, 582, 585, 708 and 717. Serial interfaces, including RS-232 and RS-422 are also supported.



ARINC 429 Receive Channels

Data buffering, filtering and time-tagging of received ARINC 429 messages are software selectable and executed on-board. Messages are easily filtered by Channel/Label/SDI, and are accessed via circular buffers. Received messages from up to 32 simultaneous receive channels are time-sequenced (16 per PMC module), and are stored either in individual FIFO buffers for each channel or merged into a single, large buffer for all channels. In addition, a Snapshot Data Buffer is allocated for each channel that contains the most recently received data for every Label/SDI combination. Buffers hold 2048 messages per channel on the board. A time-tag with programmable resolution (1 μ sec to 1 sec) is provided for each received message.

ARINC 429 Transmit Channels

Powerful, on-board functionality and programmable features give the user total control over periodic message scheduling and data formatting. Up to 32 completely independent transmit channels are supported on a single board (16 per PMC module). Data rates are variable from 3 KHz to 150 KHz. Slew rate is automatically adjusted to match transmit speed. Up to 1024 messages (per 16 transmit channels) can be scheduled, with an 8192 message buffer available for each transmit channel. Each message can be "one-shot," or have an individually programmable update rate that is selectable from 1 msec to 32 seconds. The host can modify message data or update rate on any channel at any time.

ARINC 717 / ARINC 573 Channels

One or two channels of Dual Mode ARINC 717/573 are available on each MAC board (one per PMC module). Dual Mode means that each ARINC 717/573 channel is software selectable to support either Harvard Bi-Phase or BPRZ (Bi-Polar Return



MAC-VXI

to Zero) configurations of the ARINC 717 and 573 databus protocols. Each channel is independent, provides auto-sync operation and supports a wide range of bus speeds and sub-frame sizes for simplified interfacing. Large frame buffers of 8192 words per transmit channel and 2048 words per receive channel are provided.

ARINC 708 Channels

The MAC will support up to 4 simultaneous, independent ARINC 708 Weather Radar Display channels (2 per PMC module). Each channel is software selectable to be either receive or transmit. Very large data buffers simplify protocol support with storage for 2600 received ARINC 708 frames per channel. Dedicated frame sweep buffers of up to 2600 ARINC 708 frames are available on all transmit channels, supporting scheduled transmission. Selectable transmit message interval gap times, I/O triggering, time-tagging and error injection are standard features of ARINC 708 support on the MAC.

RS-232/RS-422 Serial Data Interfaces

A variety of solutions are available for interfacing to asynchronous or synchronous

serial data. RS-232 and RS-422 interfaces are supported (8 or 16 ports per PMC module). These programmable modules have individual FIFO circular buffers for each Rx or Tx channel and allow individual port selection of bit rate, parity, stop bits, control signals and loopback features.

API Support

Condor's easy-to-use Application Programming Interface (API) speeds your application development by providing simplified access to all configuration, initialization, transmit and receive functionality. This high-level API is included for access and control of the MAC from VxWorks, Windows XP, 2000, Me, NT, 98, and 95, along with C source code for integration into other operating environments. LabVIEW support is available for ARINC 429 and RS- serial data interfaces. Contact Condor Sales for a copy of the MAC User Manual to see how this robust and flexible programming interface helps reduce development, integration and life cycle maintenance efforts.



LABVIEW SUPPORT

CE-LV provides ready-to-use, ARINC 429 LabVIEW application examples in VI source that can be quickly integrated into your custom LabVIEW application. The MAC and the AIC products use exactly the same LabVIEW VI interfaces. Rapidly build applications to simulate or monitor multiple ARINC 429 channels in real-time, filter and time-tag data and create custom displays. VIs are provided for initialization, channel configuration, error handling, transmitting or receiving multiple messages, and engineering unit conversion. LabVIEW support for RS-232 and RS-422 is also included.

SPECIFICATIONS

ARINC 429 Receive Channels

- Number of channels: 2 to 32 (16 max per module)
- Data rates: 12.5 KHz, 100 KHz or 3 KHz to 150 KHz programmable
- Standard Input levels: ± 6.5 to ± 13 VDC (A to B)
- Filtering: channel, label and/or SDI
- Parity: odd, even or none
- Error reporting: parity
- Buffer up to 2,048 labels per channel

ARINC 429 Transmit Channels

- Number of channels: 2 to 32 (16 max per module)
- Data rates: 12.5 KHz, 100 KHz or 3 KHz to 150 KHz programmable
- Automatic slew rate adjustment
- Standard Output level: ± 10 VDC (A to B)
- Parity: odd, even or none
- Error injection: parity, gap, high or low bit count
- Buffer up to 8192 labels per channel

ARINC 717 / 573 Dual Mode Channels

- Number of channels: up to 4 (1 transmit and 1 receive per module)
- Selectable encoding: Harvard Bi-Phase or BiPolar Return-to-Zero Operation
- Data rate / frame size: 384 bps/ 32 words to 48 Kbps/ 4K words
- Buffer up to 2048 words per receive channel
- Buffer up to 8192 words per transmit channel

ARINC 708 Channels

- Number of channels: up to 4 (2 per module)
- Selectable: each channel either Rx or Tx
- Data rate: 1 MHz
- Bits per frame: 64 bits control, 1536 bits data (1600 total)
- Scheduled sweep transmit buffers: up to 2600 frames per channel
- Received frame buffers: 2600 frames
- Error injection: short/long frames, sync

CONFIGURATION ASSISTANCE

The inherent flexibility of MAC family products for VME and VXI platforms offers a large number of possible configurations, and we are adding new options. Our online Configuration Guide and our knowledgeable sales team will help you define your customized solution.

RS-232 and RS-422 Serial Data Interfaces

- [8 or 16 port RS-232] or [8 or 16 port RS-422] or [4 port RS-232/4 port RS-422] modules:
- RS-232 baud rates: programmable up to 921.6 kbps
 - RS-422 baud rates: programmable up to 5.5296 Mbps
 - Rx & Tx buffers: 64 byte FIFOs
 - UART: Exar XR17D158
 - Full duplex support

VME/VXI Interface

- A24, A32 addressing
- D16, D32 data transfer
- VME/VXI slave

Operating Temperature

- 0° to 60°C

MTBF

- Contact factory

Physical VME (6U board) / VXI (C-size)

- Height: 9.2" (23.34 cm)
- Depth: [VME] 6.3" (16.0 cm) / [VXI] 13.4" (33.99 cm)
- Front panel width: 0.8" (1.98 cm)

Weight

- VME (TBD oz max); VXI (TBD oz max)

Power (typical)

- +5 VDC: TBD
- +12 VDC: TBD
- -12 VDC: TBD

Warranty: 3 year limited hardware warranty

See our on-line Commercial Products Configuration Guide for available configurations.
<http://www.condoreng.com>

