The Modular Avionics Controller (MAC) is GE Intelligent Platforms’ 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 GE’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, Microsoft Windows 7, Vista, XP and 2000 is provided for PC-based hosts across the GE Intelligent Platforms 810 and National Instruments PCI-MXI-2 interface. Linux support is provided with select GE Intelligent Platforms x86-based VME SBCs. High level ARINC 429 support is optionally available for LabVIEW. 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 68-pin SCSI 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 48 receive and 16 transmit channels or 32 receivers and 32 transmitters, front I/O 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.
MAC-VME – VME/VXIbus MAC (Modular Avionics Controller)

Specifications

ARINC 429 Receive Channels
- Number of channels: 2 to 64 (32 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 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

Operating Temperature
- 0° to 60°C

Physical VME (6U board) / VXI (C-size)
- Height: 9.2” (23.34 cm)
- Depth: VME) 6.3”/16.0 cm / VXI) 13 ¼” (33.99 cm)
- Front panel width: 0.8” (1.98 cm)

VME/VXI Interface
- Optional P-2 Rear I/O for single PMC Slot
- A24, A32 addressing
- D16, D32 data transfer
- VME/VXI slave

Power (typical)
- +5 VDC: TBD
- +12 VDC: TBD
- -12 VDC: TBD

Warranty
2 year limited hardware warranty

LABView Support
CEI-LV provides ready-to-use, ARINC 429 LabVIEW application examples in VI source that can be quickly integrated into your custom LabVIEW application. 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.

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 knowledgeable sales team will help you define your customized solution.

Ordering Information

MAC-A13J-A13JM
Modular 6U VME card with 26 RX, 26 TX ARINC 429 channels & 2 RX, 2 TX DUAL-MODE (either HBP or BPRZ) ARINC 717 channels.

MAC-A13JM
Modular 6U VME card with 13 RX, 13 TX ARINC 429 channels & 1 RX, 1 TX DUAL-MODE (either HBP or BPRZ) ARINC 717 channels.

MAC-A16-A16M
Modular 6U VME card with 32 RX and 32 TX ARINC 429 channels.

MAC-A16-A16X
Modular, 6U VXI card with 32 RX and 32 TX ARINC 429 channels.

MAC-A16-D232M
Modular, 6U VME card with 16 RX and 16 TX ARINC 429 channels, 16 PORTS RS-232

MAC-A16M
Modular, 6U VME card with 16 RX and 16 TX ARINC 429 channels.

MAC-A2J-A2JX
Modular, C-SIZE VXI card with 4 RX, 4 TX channels of ARINC 429 and 2 RX, 2 TX channels of dual-mode ARINC 717/573

MAC-A4-C422M
Modular, C-SIZE VME card with 4 RX and 4 TX ARINC 429 channels & 8 PORTS RS422

MAC-A8-C44X
Modular, C-SIZE VXI card with 8 RX and 8 TX ARINC 429 channels, 4 PORTS RS-232 and 4 ports of RS422.

MAC-A8M
Modular, 6U VME card with 8 RX and 8 TX ARINC 429 channels.

MAC-A8X
Modular, C-SIZE VXI card with 8 RX and 8 TX ARINC 429 channels.

MAC-AIC-A3216Q1
Modular, 6U VME card with AIC adaptor, 32 RX and 16 TX ARINC 429 channels, PMC'S on VME carrier

MAC-H2X
Modular, C-SIZE VXI card with 1 RX, 1 TX 708 channel

MAC-W16-W16M
Modular, 6U VME card with 32 RX AND 32 TX ARINC 429 channels, WITH IRIG

MAC-W4M
Modular, 6U VME card with 4 RX, 4 TX ARINC 429 channels, with IRIG-B

About GE Intelligent Platforms
GE Intelligent Platforms is a division of GE that offers software, control systems, services, and expertise in automation and embedded computing. We offer a unique foundation of agile and reliable technology providing customers a sustainable competitive advantage in the industries they serve, including energy, water, consumer packaged goods, oil and gas, government and defense, and telecommunications. GE Intelligent Platforms is headquartered in Charlottesville, VA. For more information, visit www.ge-ip.com.

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