The Rockwell Collins FMC-4000 series of flight and mission computers integrates increasingly sophisticated technological capabilities across a wide range of today’s military aircraft. It also delivers low size, weight, power consumption and cost (SWaP-C), along with easy future upgradability that keeps the system at the cutting edge. All with our proven expertise as one of the largest suppliers of mission computers for Eurofighter.
High flexibility, adaptability and scalability – without high costs.

Keeps you on mission and on budget.

With an increasing sophistication of flight missions combined with tighter budgetary restrictions, today’s military is placing more demand on avionics systems to deliver higher performance, functionality, reliability and efficiency while decreasing SWaP-C.

Most existing aircraft computing platforms can only partially address these requirements. The lack of affordable adaptability and scalability often creates a high modification effort and long turnaround times until first entry to service.

The FMC-4000 computer family from Rockwell Collins meets these demands with a highly flexible and cost-effective design approach that ensures your platform maintains the latest technology throughout its life cycle. Whether that platform is military fixed wing aircraft, rotary wing, fighter aircraft, unmanned aerial systems or ground stations, the FMC-4000 series delivers the capability you need.

Open architecture, open options.

Based on a common core approach using open architecture VPX technology ruggedized for harsh environmental conditions, the FMC-4000 offers avionics subsystems with maximized component re-use and minimized development and integration risk.

This approach provides for considerable synergies in development, production and logistics for implementation speed and cost effectiveness. Its flexibility enables repackaging to various board formats as well as third-party integration capability. And because the FMC-4000 incorporates a variety of real-time operating systems, it will run all your OEM-developed software applications.

The FMC-4000 computer series offers implementations for various enclosure types, including ATR, ARINC-600 and low-profile housings, making use of the same common core building blocks.

Our open architecture also features improved obsolescence robustness to help keep the system at high performance throughout its life cycle.
Typical FMC-4000 applications

- Mission and payload management
- Communication servers
- Gigabit Ethernet Switch
- Datalink processors
- Enhanced video processing solutions
- Data and video recorders
- Data concentrator units

Typical FMC-4000 interfaces

- Gigabit Ethernet
- ARINC 429
- ARINC 743A GPS time mark
- USB
- 10 Gigabit Ethernet XAUI uplink
- 28VDC-, TTL-, optocoupled discrete
- Analog video (STANAG 3350-A/B/C)
- Digital video (3G/HD-SDI, HDMI, DVI, eDP)
- MIL-STD-1553B
- Stereo audio
- RS485/423/422/232
- eSATA

FMC-4000 common core approach

1. Common modules
2. Common computing core
3. Application specific flexible I/O and multiple enclosures
ITAR free.
The FMC-4000 series is an International Traffic in Arms Regulations (ITAR)-free European product that has no restrictions under U.S. ITAR.

Highly flexible and adaptable.
Specify required input/output and we can tailor a solution using the FMC-4000’s flexible customization compartments.
Choose from a variety of enclosures, including ATR, ARINC 600 and low profile.
We offer the highest level of integration and system-on-chip design.

Multi-core processing.
Includes dual-core, quad-core, octal-core and many-core processors, with scalable performance and cost. As technology advances, we can provide you with seamless integration of the latest multi-core processors and third-party COTS processor modules like low-power Intel® Atom™ or x86 Intel Core™ i7.

High-definition (HD) video processing and compression.
HD video/image/signal processing and compression are done through hardware only – no software involved – for the highest level of hardware-accelerated parallelization at lower cost. The system offers scalable HD-serial digital interface video processing as well as H.264 compression and decompression.

Distinctive FMC-4000 features at a glance.

- PowerPC 7448
- PowerPC 750FX
- Dual Core 8572E
- Low Power 8315E
- Quad Core
- Octal Core
- Multi and Many Core

Speed, performance and optimization that will leave you pinned to your seat backs.
Other features include:

- Verified ready-to-use, field-programmable gate array environment using pre-floorplanned netlists
- Low latency intra-frame and inter-frame encoding
- User-specific content in DSP chains via model-based flow support

High-speed communication.

Gain superior internal bandwidth and multi-gigabit point-to-point backplane channels with the FMC-4000, as well as state-of-the-art interfaces such as GEth, PCI Express and Serial RapidIO.

Gigabit Ethernet switching.

Provides internal and external Gigabit Ethernet switching capability. The FMC-4000 series also offers a 10-gigabit uplink option.

Multiple operating system options.

Currently supports optional commercial-off-the-shelf, real-time operating systems such as VxWorks-653, Green Hills® Software INTEGRITY® and LynxOS®. Other options, including PikeOS®, Microsoft® Windows® 7 and XP-embedded could be made available on request.
## Typical system configurations.

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<th>FMC-4000 family</th>
<th>Representative configuration</th>
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<tr>
<td><strong>FMC-4200 series</strong></td>
<td><strong>Standalone GEth switch</strong></td>
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<tr>
<td>Low profile enclosure</td>
<td>GEth switch module with up to 22x GEth interfaces</td>
</tr>
<tr>
<td>2-slot VPX backplane</td>
<td>Up to 2x 10GEth Uplinks</td>
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<tr>
<td>MIL-STD-38999 compatible connectors</td>
<td><strong>Video/signal processing and compression</strong></td>
</tr>
<tr>
<td>Integrated 28 VDC PSU, 100W max</td>
<td>Hardware accelerated video/image/signal processing and compression module</td>
</tr>
<tr>
<td></td>
<td>GEth VoIP streaming, 3G/SD-HD SDI digital video, STANAG 3350 A/B/C analog video, stereo audio</td>
</tr>
</tbody>
</table>

| **FMC-4300 series** | **Datalink processor/mission computer** |
| Low profile enclosure | x86 or PPC processor module |
| 3-slot VPX backplane | Hardware accelerated video/image/signal processing and compression module |
| Integrated 28 VDC PSU, 100W max | **Mission computer for airborne applications** |

| **FMC-4700/4900 series** | **ATR high-end fighter mission computer** |
| ARINC 600 enclosure, e.g., 4 MCU short | Dual/quad core PPC processing modules |
| 7-slot/9-slot backplane | Hardware accelerated video/image/signal processing and compression module |
| ARINC Type 1-3 equipment connector | GEth switch module with up to 22x GEth interfaces |
| 28 VDC or 115 VAC PSU, 250W max | Up to 2x 10 GEth uplinks |
| Forced air cooling | Bulk storage mezzanine for data storage |
| 3G/SD-HD SDI digital video, STANAG 3350 A/B/C analog video, stereo audio, MIL-STD-1553B, ARINC 429, RS485/422, USB 2.0 | **ATR compliant enclosure (1/2 ATR short)** |
| **FMC-4600 series** | **6-slot backplane** |
| ATR compliant enclosure (1/2 ATR short) | **EF equipment connector** |
| 6-slot backplane | 28 VDC or 115 VAC PSU, 250W max |
| EF equipment connector | Forced air cooling |
| 28 VDC or 115 VAC PSU, 250W max | **Common EFABUS express module** |
| Forced air cooling | Bulk storage mezzanine for data storage |
| 3G/SD-HD SDI digital video, STANAG 3350 A/B/C analog video, stereo audio, MIL-STD-1553B, ARINC 429, RS485/422, USB 2.0 | **Bulk storage mezzanine for data storage** |
Customize your system with a wide range of components and configurations.

The FMC-4000’s scalable, modular configurability enables you to choose a computing platform that accommodates your needs, today and well into the future.

You’ll have the flexibility and efficiency of creating new configurations using the same hardware – with small, midsize or large module slots – on the same platform. We can also offer simplified customization of interfaces, functionality and performance to keep your platform-to-platform adaptation costs low.

All components in the series are highly rugged, with optimized thermal, mechanical and volume parameters. They stand up to gunfire vibration, high heat and other extreme operating conditions of the military and civil environment.

System components.

- Enclosures
- Processing modules, including signal and video processing
- Gigabit Ethernet switch
- VPX backplanes
- Power supplies
- Input/output interfaces
- Third-party modules
- Real-time operating modules

Global capabilities. Global support.

As a Rockwell Collins customer, you can count on optimal, seamless and tailored support throughout your aircraft’s life cycle. We offer 24/7 global service and support capability, with more than 80 worldwide locations and more than 3,200 dedicated employees. We’ll work with you in a customer-focused spirit of collaboration to help you advance your goals.

FMC-4000 – ENVIRONMENTAL COMPLIANCE

- Temperature range: -40°C to +70°C operating, -55°C to +85°C storage
- Electrical power: MIL-STD-704F
- Electromagnetic interference: MIL-HDBK-461F
- Temperature: MIL-STD-810F
- Rain: MIL-STD-810F, Method 506.4, Procedure III – Drip
- Humidity: MIL-STD-810F, Method 507.4, 95 percent RH
- Salt-spray/fog: MIL-STD-810F, Method 509.4
- Sand/dust: MIL-STD-810F, Method 510.4, Procedure I and II
- Explosive atmosphere: MIL-STD-810F, Method 511.4, Procedure I
- Sine-on-random: MIL-STD-810F, Method 514.5, Procedure I
- Shock, operational: MIL-STD-810F, Method 516.5, Procedure I, Category 8
- Shock, crash safety: MIL-STD-810F, Method 516.5, Procedure V
- Gunfire vibration: MIL-STD-810F, Method 519.5, Procedure I, Category 8
- Altitude: MIL-STD-810F
- Vibration: MIL-STD-810F

FMC-4000 COMPONENTS – MECHANICAL CHARACTERISTICS

- Ruggedized design for military applications
- Complies with conduction-cooled specification (VITA 48.2)
- Form factor: 3U VPX (VITA 46)
- Size: 100 mm x 160 mm

POWER SUPPLY CAPABILITIES

- PSUs designed for up to 50 ms hold-up time per MIL-STD-704A
- 28 VDC and/or 115 VAC system power

COMMERCIAL STATE-OF-THE-ART STANDARDS

- VITA 20-2001 (R2005) Conduction cooled PMC
- VITA 32-2003 Processor PMC
- VITA 39-2003 PCI-X for PMC and Processor PMC
- VITA 42.0 XMC
- VITA 42.3 XMC PCI express
- VITA 46.0 VPX base standard
- VITA 46.3 Serial RapidIO on VPX fabric connector
- VITA 46.4 PCI express on VPX fabric connector
- VITA 46.7 Ethernet on VPX fabric connector
- VITA 46.8 PMC-XMC Ethernet signal mapping to 3U6U on VPX User IO
- VITA 46.10 Rear transition module for VPX
- VITA 46.11 System management on VPX
- VITA 46.20 VPX switch slot definition
- VITA 48.0 Ruggedized Enhanced Design Implementation (REDI)
- VITA 48.1 REDI air cooling applied to VITA 46
- VITA 48.2 REDI conduction cooling applied to VITA 46
- VITA 57 FPGA Mezzanine Card (FMC) draft standard
- IEEE Std. 1101.2 Standard for mechanical core specifications for conduction-cooled Eurocards
- IEEE P1386-2001 Standard for a common mezzanine card family
- IEEE P1386.1-2001 Standard physical and environmental layers for PCI mezzanine cards
- IEEE Std. 802.3 Ethernet standards
- IEEE Std. 1588 Standard for a precision clock synchronization protocol
Building trust every day.

Rockwell Collins delivers smart communication and aviation electronic solutions to customers worldwide. Backed by a global network of service and support, we stand committed to putting technology and practical innovation to work for you whenever and wherever you need us. In this way, working together, we build trust. Every day.

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