

# AMC-MKX1

## Product Brief

### Preliminary



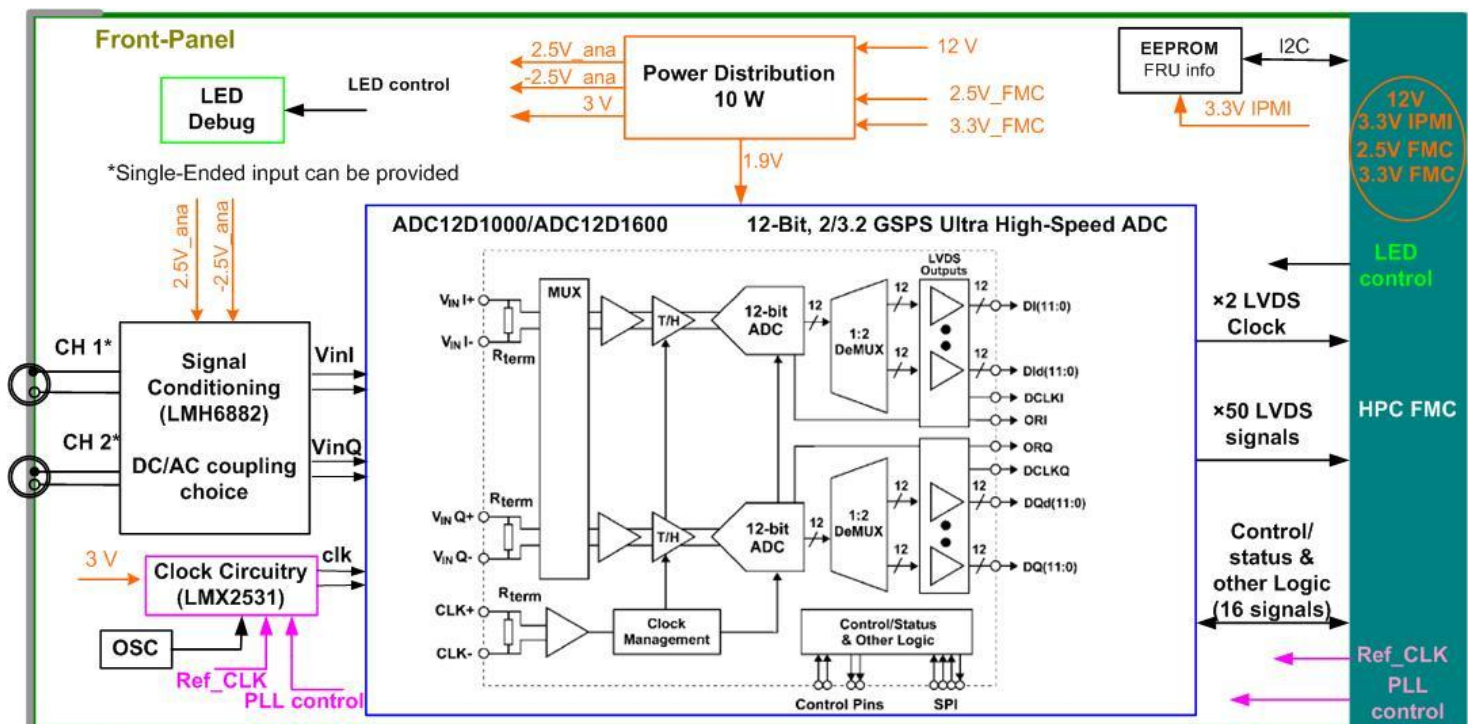
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INSTITUTO DE PLASMAS  
E FUSÃO NUCLEAR

- ❖ Dual channel 12-bit 1/1.6 GSPS A/D
- ❖ or Single channel 12-bit 2/3.2 GSPS A/D
- ❖ FMC VITA 57.1 Compliant
- ❖ AC or DC Coupling
- ❖ Single-Ended or Differential input



The FMC-AD-1Gx is a configurable mezzanine card compliant to the High-Pin-Count (HPC) VITA 57.1 standard, that provides either one 2/3.2 GSPS interleaved ADC or two 1.0/1.6 GSPS ADCs. The card was designed to meet the processing needs of high-performance data acquisition applications in the nuclear fusion and is compliant to the AMC-MKX1 FMC carrier. The FMC-AD-1Gx analogue input channels can be configured as AC or DC coupled and single-ended or differential, as required by the specific application. The ADC sampling clock is provided by an in-board PLL, which is synchronized by a reference clock supplied by the local oscillator or by the carrier card through the HPC connector.

### FMC-AD-1Gx Functional Block Diagram



## Specifications

|   |   |   |
|---|---|---|
| <b>Channel Operation</b>                  | <ul style="list-style-type: none"> <li>Dual Channel</li> <li>12-bit A/D up to 1.6 GSPS</li> </ul>   | <ul style="list-style-type: none"> <li>Single channel</li> <li>12-bit A/D up to 3.2 GSPS</li> </ul>                         |
| <b>Memory</b>                             | <ul style="list-style-type: none"> <li>EEPROM for FRU hardware information</li> </ul>   |   |
| <b>Front Panel</b>                        | <ul style="list-style-type: none"> <li>2 Single-Ended (SE) Lemo<br/>EPL.00.250.DTN</li> </ul>   | <ul style="list-style-type: none"> <li>2 Differential(Diff) Lemo<br/>EPG.00.302.HLN</li> </ul>                              |
| <b>Input Coupling</b>                     | <ul style="list-style-type: none"> <li>DC</li> </ul>  | <ul style="list-style-type: none"> <li>AC (first order High passive filter<br/><math>F_C = 3 \text{ kHz}</math>)</li> </ul> |
| <b>Input impedance</b>                    | <ul style="list-style-type: none"> <li><math>50 \Omega</math> SE</li> </ul>   | <ul style="list-style-type: none"> <li><math>100 \Omega</math> Diff</li> </ul>  |
| <b>Input Gain</b>                         | <ul style="list-style-type: none"> <li>Hardware configurable gain from 0 to 20 dB (PGA)</li> </ul>  | <ul style="list-style-type: none"> <li>An additional -2.5 dB gain can be digitally configured (ADC)</li> </ul>              |
| <b>Input dynamic range (Full Scale)</b>   | <p>DC</p> <ul style="list-style-type: none"> <li><math>\pm 200 \text{ mV}</math></li> </ul>   | <p>AC</p> <ul style="list-style-type: none"> <li><math>400 \text{ mV}_{\text{pk-pk}}</math></li> </ul>                      |
| <b>FMC HPC connector</b>                  | <ul style="list-style-type: none"> <li>High-pin-count VITA 57. 1 FMC site</li> <li>➤ 78 differential user defined pairs: 34 LA pair; 24 HA pair; HB pairs</li> <li>➤ 2 differential clocks</li> </ul>   |   |
| <b>Mechanical</b>                         | <ul style="list-style-type: none"> <li>VITA 57.1 FMC High-Pin-Count (HPC) connector</li> </ul>  |   |
| <b>Clock Reference Source</b>             | <ul style="list-style-type: none"> <li>Internal clock source</li> <li>50 MHz oscillator</li> </ul>  | <ul style="list-style-type: none"> <li>External reference clock from HPC</li> </ul>   |
| <b>Electrical</b>                         | <ul style="list-style-type: none"> <li>+12 V mains source</li> <li>+3.3V IPMI</li> </ul>  | <ul style="list-style-type: none"> <li>+2.5 V</li> <li>+3.3V</li> </ul>   |
| <b>Testing and development interfaces</b> | <ul style="list-style-type: none"> <li>LEDs</li> <li>Test points</li> </ul>   | <ul style="list-style-type: none"> <li>Jumpers</li> <li>ADC test patterns</li> </ul>  |
| <b>ADC compatibility</b>                  | <ul style="list-style-type: none"> <li>ADC10D1000 ( 10-bit @ 1GHz)</li> <li>ADC12D1000( 12-bit @ 1GHz)</li> </ul>   | <ul style="list-style-type: none"> <li>ADC10D1600 ( 10-bit @ 1.6GHz)</li> <li>ADC12D1600( 12-bit @ 1.6GHz)</li> </ul>       |
| <b>VITA 57.1 compliant carrier card</b>   | <p><b>AMC-MKX1</b></p> <ul style="list-style-type: none"> <li>Xilinx® Kintex™-7 FPGA;</li> <li>2048 + 256 MB DDR3 SDRAM</li> <li>AMC.1 PCI Express: One <math>\times 4</math> PCIe Gen2 link</li> </ul> |   |
| <b>Applications</b>                       | <ul style="list-style-type: none"> <li>Data Acquisition Systems</li> <li>LIDAR</li> </ul>   |   |



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- RF Reflectrometry
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**Please find more information of this product at:**

<http://metis.ipfn.ist.utl.pt/CODAC/Instrumentation/Boards/ATCA/FMC-AD-1Gx>

Visit us on the Web at [www.ipfn.ist.utl.pt](http://www.ipfn.ist.utl.pt)