

# CoreEL Signal Conditioning and Processor Module

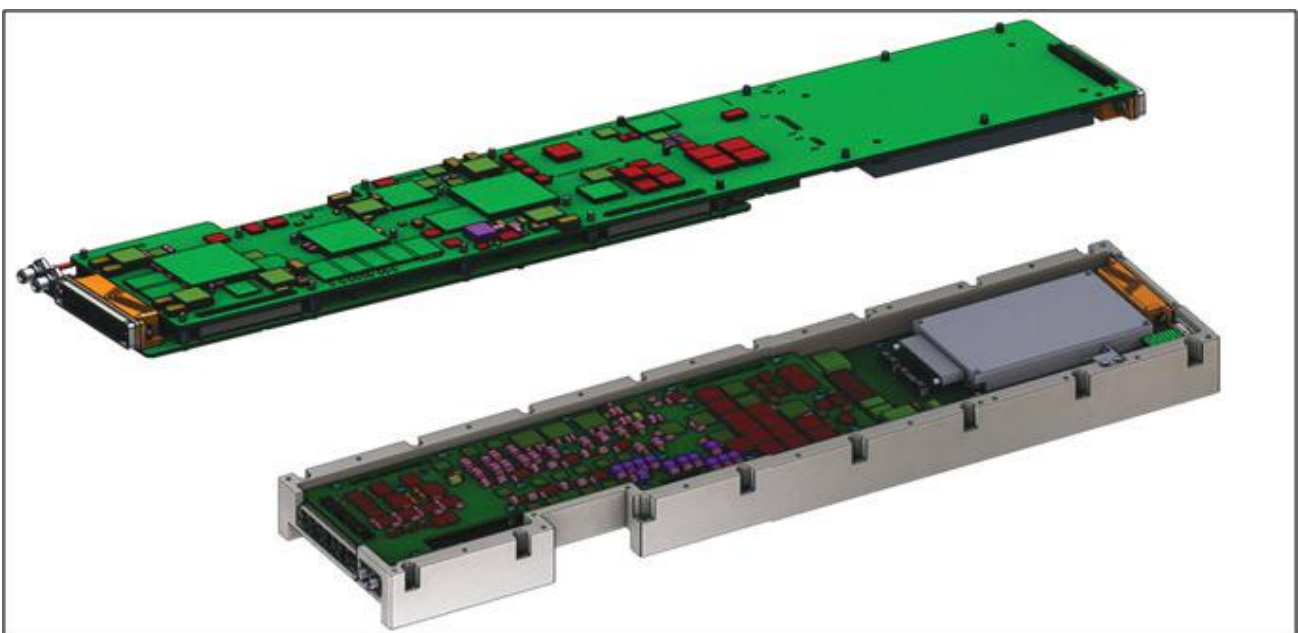
SCPM is an integrated conduction cooled system with a TMS320 based signal processing card and a signal conditioning card.

Signal processing card has a TMS320 DSP and two Xilinx FPGAs for signal processing. TMS320 is interfaced to the FPGAs with x2 Serial RapidIO interface and a processor interface. The FPGAs are interconnected with x2 GTX high speed serial IOs both of which can be operated at 3.125Gbps per lane facilitating high speed data transfer between the devices. The card also has support for Ethernet, QDR II+ memory, DDR3 memory, QSPI Flash.

Signal conditioning card has multiple ADC/DAC interfaces. It has simultaneous sampling ADCs, single ended and differential ended ADCs, and single ended unipolar and bipolar DACs. The digital interfaces of ADCs and DACs are connected to the FPGAs in signal processing card. It also supports multi-purpose discrete inputs.

## KEY FEATURES

- TI TMS320 Digital Signal Processor
- Two Xilinx FPGAs with DSP capabilities
- x2 3.125Gbps sRIO lanes between TMS320 and each of the two FPGAs
- x2 3.125Gbps lanes between the FPGAs
- QDR-II+, DDR3, PSRAM, QSPI flash memory interfaces
- Ethernet connectivity
- Supports single ended and differential ended ADCs
- Supports high speed and slow speed ADCs
- Supports single ended unipolar and single ended bipolar DACs



Signal Conditioning Board and Signal Processing Board Stacked with Enclosure



Signal Processing Board Top View

## SPECIFICATIONS

### Signal Processing Board DSP and FPGAs

- TI TMS320 Digital Signal Processor
- Xilinx FPGAs

### Signal Conditioning Board

- x15 +5V single ended simultaneous sampling ADC. (up to 200ksps)
- x16 5V ADCs operating (up to 200ps)
- x8  $\pm 15V$  single ended bipolar and x2  $\pm 15V$  differential ended bipolar ADCs
- x10 5V single ended unipolar DAC.
- x16  $\pm 15V$  single ended bipolar DAC

### Interfaces

- x2 serial RapidIO interface between DSP and FPGAs
- x2 High speed GTX serial lines between FPGAs
- QDR-II+ memory with operating frequency up to 450 MHz
- QSPI configuration data and software flash
- 512MB DDR3 operating at 533 MHz
- Various ADC and DAC interfaces to signal conditioning Board

## MECHANICAL

Conduction cooled chassis.

## POWER CONSUMPTION

- External power supply 28V, 4A
- The board approximately consumes less than 90W power

## ENVIRONMENTAL

MIL Grade

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