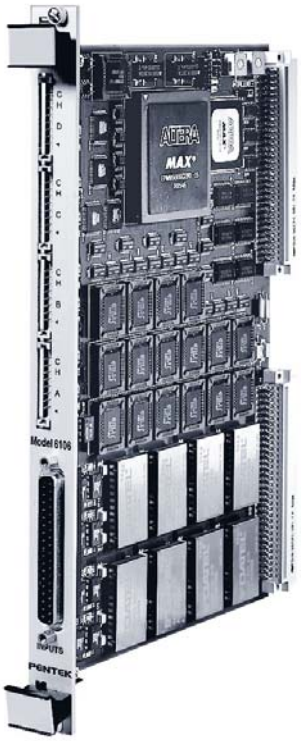
Model 6106
Model 6109

8-Channel 14-bit 2 MHz A/D Converter VME Board
8-Channel 12-bit 20 MHz A/D Converter VME Board



General Information

Models 6106 and 6109 are high-performance 8-channel A/D converters for VMEbus data acquisition, control, and DSP applications. Model 6106 offers 14-bit resolution, 2 MHz maximum sampling rate, and optional differential inputs. Model 6109 offers 12-bit resolution, 20 MHz maximum sampling rate and single-ended inputs only. Otherwise, Models 6106 and 6109 are identical.

Digitized data is stored in eight independent 1-ksample FIFOs; 16-ksample FIFO depth is optionally available.

Interfaces

Output data can be delivered to the VMEbus, or to four front panel C40-compatible comm ports. Each comm port delivers data for two A/D channels. Alternately, the comm port associated with channels 1 and 2 can be programmed to deliver data for all channels.

The VMEbus interface provides full memory-mapped access to all FIFOs, interrupt controls, sample rate generators, status registers, and control registers. The FIFOs can be configured under software control to interrupt the VMEbus on full, half-full, and not empty conditions.

Sampling Rate Control

The sampling clock can be supplied from one of four internal sample rate generators, or an external TTL sampling clock. The internal generators include programmable dividers to support four different sampling rates, one for each pair of A/D's. Sampling rates up to 2 MHz (Model 6106) or 20 MHz (Model 6109) are supported.

Trigger Input

A front panel TTL trigger input allows data collection to be initiated by positive- or negative-edge transitions, or gated by logic levels. A programmable sample counter interrupts the VMEbus after 2 to 256 samples have been collected.

Applications

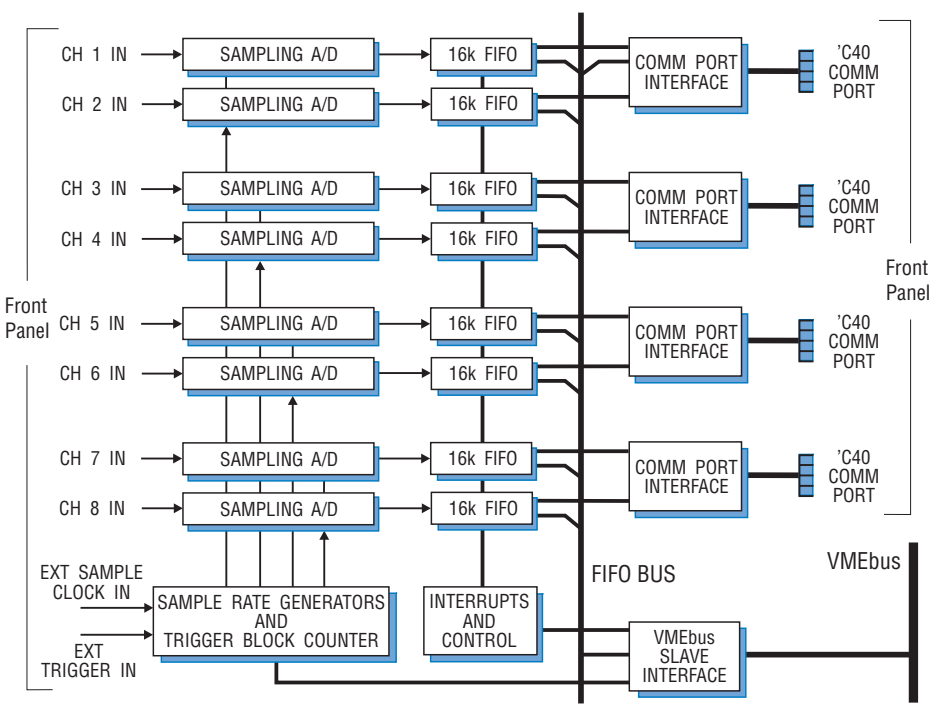
These models are ideal for real-time process control applications where latency and loop delay must be minimized.

As each sample is converted, it is immediately available to the selected interface because of the near-zero fall through time of the FIFOs. A minimum delay between conversion and processing is thus made possible. ➤

Features

- 8 channels with 14-bit or 12-bit resolution
- Internal or external sampling clocks to 2 MHz or 20 MHz
- VME and C40 comm port interfaces
- FIFO buffering for each converter output
- 8-Channel anti-aliasing lowpass filter, Model 6606
- Optional differential inputs (Model 6106 only)

Block Diagram, Models 6106, 6109



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➤ Anti-aliasing Filter (Contact Factory)

The Model 6606 is an 8-channel passive LC anti-aliasing filter VMEbus board. It provides a cutoff frequency of 800 kHz or, optionally, 8 MHz and is pin-for-pin compatible with the Models 6106 and 6109.

Specifications

Input Channels

Number: eight, any channel may be enabled or disabled

Input, Model 6106

Single-ended: ±5.0 V full scale, 10 kohm input impedance

Differential (option -005): ±10.0 V full scale, 10 kohm input impedance, ±9.0 V max. input with respect to ground; 300 kHz small signal bandwidth

Input, Model 6109

Single-ended: ±1.0 V full scale, AC-coupled with 10 kHz high-pass cutoff, 50 ohm input impedance

A/D Converters

Type: ADS927 Model 6106; AD9042 Model 6109

Sampling rate: DC to 2 MHz, Model 6106; 5 to 20 MHz, Model 6109

	Model 6106	Model 6109	
Resolution:	14	12	bits
THD:	−84	−60	dB re FS
SNR:	76	50	dB
SFDR:	75	60	dB

Sampling Clocks

Frequency dividers: four, one for each A/D pair; each divides internal or external reference by N, where N = 1 to 65536

Internal reference: 20 MHz (±100 ppm)

External reference: 20 MHz max. optically-isolated TTL-compatible front panel input

Trigger/Gate Control

Input: optically-isolated TTL-compatible front panel input, or VMEbus control bit

Trigger mode: positive or negative edge starts conversion

Gate mode: logic '0' or '1' enables conversion

Sample counter: generates VMEbus interrupt N samples after trigger, where N = 2 to 256

Output FIFO:

Model 6106: 1 ksample per channel, optionally expandable to 16 ksamples

Model 6109: 16 ksamples per channel

Comm Port Interface

Number: four C40-compatible comm ports, one per pair of A/Ds

Data and control lines: eight data plus four control lines each

Data format: data is always transferred as four eight-bit bytes forming a 32-bit C40 long word

Combined Port Mode

Transfers: one comm port delivers data for up to eight channels

Non-packed: one 14-bit sample left-justified in 32-bit word, with 3 LSBs indicating channel ID

Packed: two 14-bit samples left justified in both 16-bit fields of 32-bit long word, with two LSBs indicating channel pair ID

Independent Port Mode

Transfers: each comm port delivers data for one or two channels

Non-packed: one 14-bit sample left-justified in 32-bit long word, only one channel enabled per pair

Packed: two 14-bit samples left-justified in both 16-bit fields of 32-bit word

VMEbus Interface

Type: slave A32 D32 I(1-7)

Transfers: BLT (block level transfers), 16 k range per FIFO

Control registers: sample clock divisors, trigger/gate control, interrupt mask, channel enables, clock source, comm port modes, FIFO resets, A24/A32 base address, interrupt vector register

Status registers: interrupt status, FIFO flags

Memory map: all FIFOs, control and status registers are mapped into A16 space; FIFOs are also mapped into A24/A32 space

Maskable interrupts: FIFO status (full, half-full or not-empty conditions) and sample counter

Power: 3.0 A at +5 V; 0.5 A at ±12 V

Size: standard 6U VMEbus board, single slot; board 160 mm (6.3 in.) x 233.5 mm (9.2 in.), panel 0.8 in. wide

Ordering Information

Model	Description
6106	8-Channel 14-bit 2 MHz A/D Converter VME board
6109	8-Channel 12-bit 20 MHz A/D Converter VME board
Options:	
-001	16 ksample FIFO (Model 6106 only)
-005	Differential inputs, Model 6106 only

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