C&H Technologies, Inc. • 445 Round Rock West Drive • Round Rock, TX 78681-5012

(512) 733-2621 • FAX (512) 733-2629 • www.chtech.com

M228
1MSPS Aperture A/D M-Module

The M228 is a 1MSPS 14-bit A/D converter module that samples and selectively stores differential analog signals along with a 32-bit time stamp at a rate up to 1MSPS. The module has the ability to convert and store all data at the specified sample rate or selectively store input values that exceed the range of the programmed aperture window. This technique provides extensive real-time data compression and data extraction for transient type input signals.

In addition, two anti-aliasing filter types, Elliptic and Bessel, plus a bypass provide flexible input conditioning.

Overview:

Number of Channels: 1
Resolution: 14-Bit
Maximum Sample Rate: 1MSPS
Input Type: Bipolar Diff
Input Impedance: 10MΩ
Input Ranges: ±10V or ±60V
Gain: 1 to 1000
Timestamp: 32-Bit
Data Storage: 32M Samples
Anti-Aliasing Filter: Elliptic & Bessel
Front Panel Inputs/Outputs: 2/2
Backplane Triggers 2

Operational Features:

- Programmable Aperture Window with external real-time change capability
- Relative or Absolute Aperture Windowing
- Capture Till Full or Capture Last
- Continuous Time-Stamping while Capture Disabled
- External “Data Stored” signal
- Two Programmable Anti-aliasing Filters (one Bessel response and the other a linear phase elliptic response) plus a bypass mode

Inputs:

Each input, front panel and back plane triggers are programmable as the Sample Clock, Conversion Storage Enable, Timestamp Run, Aperture Select, or Force Store signal.

Outputs:

Each output, front panel and back plane triggers, are programmable as the Sample Clock (before or after prescaling), Force Store, Aperture Select, A/D Conversion Storage Enable, Timestamp Run, or Value Stored Strobe to allow one M228 to act as the master control for other M228’s.

I/O Connector:

44-pin DSUB receptacle

Power:

+5V	TBDma
+12V	TBDma
-12V	TBDma

M Module Compliance

Complies with ANSI/VITA Std. 12-1996 for single-wide MA Modules

Addressing	A8
Data	32-Bit
Interrupts	INTA
Triggers	TRIGA/B

Temperature:

Operating	0°C to 50°C
Storage	-40°C to 70°C

Applications

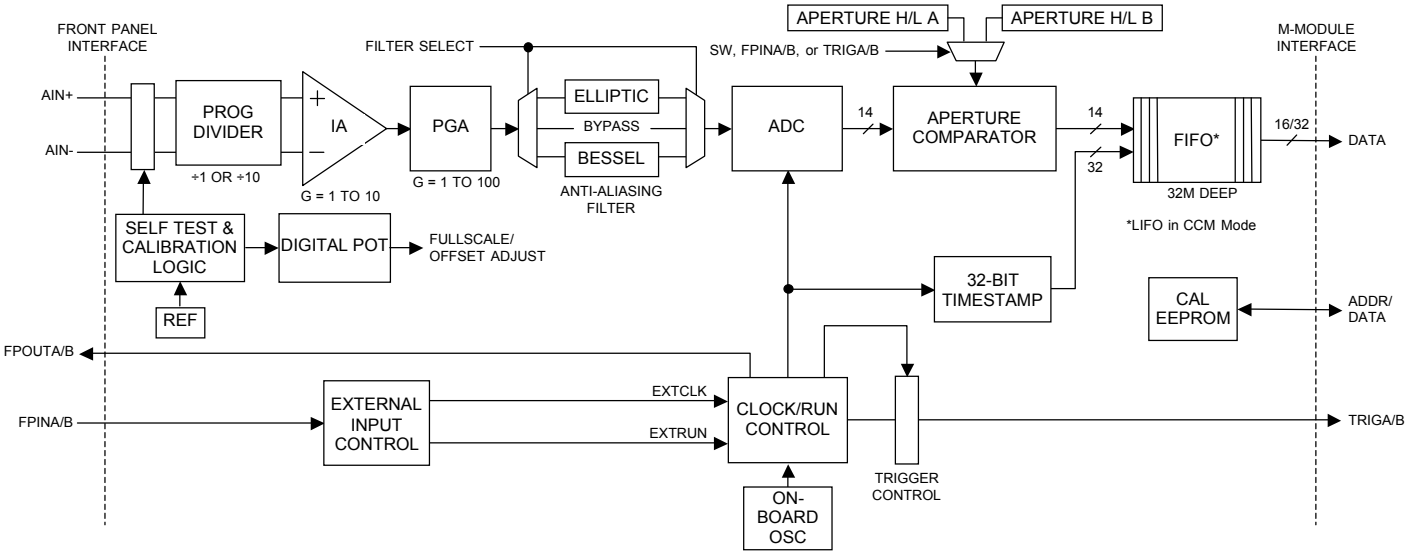
- Acquisition of transient signals
- Real-time data compression
- General A/D Conversion

Ordering Information

11030500-0001

Additional Information

User Manuals for C&H carriers and this module can be found on our website at www.chtech.com.



Specifications:

A/D Converter:

Resolution		14 bits
Integral Linearity Error		±1 LSB
Differential Linearity Error		±1 LSB
Zero Error		±15 LSB
Throughput (max)	Warp Mode [1]	1 MSPS
	Normal Mode	800KSPS
Zero Offset Error (max) [2]		TBD mV
Full Scale Error [2]		TBD % + TBD mV
Signal to Noise Ratio		85.5 dB

Signal Input Conditioning:

Input Range	normal (G=1)	±10V
	÷10 active (G=1)	±60V
Common Mode Voltage Range (dc to 50KHz)		±13V
Common Mode Rejection Ration		80dB
Input Impedance	differential	20MΩ
	common-mode	10MΩ
	÷10 active	10MΩ
Divider	programmable	1 to ÷10
Gain overall		1 to 1000 V/V
front end		1, 2, 5,or 10 V/V
back end		1, 2, 5, 10, 20, 50,or 100 V/V
Filter Cutoff Frequencies	Elliptic	1.6 - 416 KHz
	Bessel	0.3 - 88 KHz
Group Delay	Elliptic, f_c=208KHz	11.7 - 14.1µs
	Bessel, f_c=88KHz	6-8µs
Passband Ripple [3]	Elliptic, f_c=208KHz	TBD
	Bessel, f_c=88KHz	TBD
Filter Roll Off	Elliptic at 1.5 x f_c	57dB
	Elliptic at 6.0 x f_c	80dB
	Bessel at 1.5 x f_c	5dB
	Bessel at 6.0 x f_c	80dB

Input Sample Clock:

Accuracy		±0.01%
Frequency (incremental) [4]		10Hz to 1MHz
Jitter (max)		±500ps

Calibration References:

Accuracy	±0.5V	±0.35%
	±10V	±0.1%
Temperature Coefficient	±0.5V	25ppm/°C
	±10V	50ppm/°C

External Inputs (FPINA/B):

Input Threshold	programmable	-5.0 to +5.0V
Input Impedance	programmable	50Ω/100KΩ
Pulse Width (min)		5ns
Frequency (max) [5]		50MHz
Maximum Input Level	no damage, pwr off	±40V
	no damage, pwr on	±36V

External Outputs (FPOUTA/B):

Output Level	V_{OH} at -3ma (min)	2.5V
	V_{OL} at 3ma (max)	0.5V
Output Impedance		50Ω

Notes:

1. In Warp Mode, the time between conversions must not exceed 1ms.
2. After calibration
3. Relative to gain at $0.1f_C$.
4. The internal clock rate is 1MHz. A programmable prescaler of 1, 2, 5, 10, 20, 50, 100, and 200 allows various sample rates.
5. This is the maximum frequency that the input logic can accept. The maximum functional frequency is limited by the use of the input signal.