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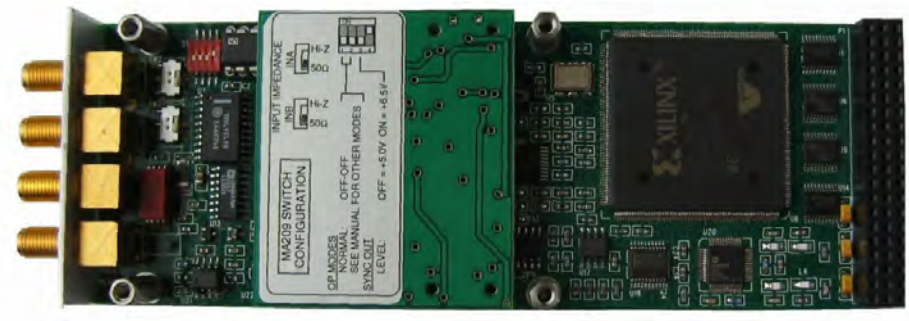
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Find the *Astronics / C&H Technologies MA209* at our website: *Click HERE*

C&H Technologies, Inc. • 445 Round Rock West Drive • Round Rock, TX 78681-5012
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MA209
100MHz Pulse Generator



The MA209 is a fully programmable pulse generator that allows the generation of precisely timed pulses of programmable frequency, pulse width, delay, and amplitude. Operational modes include single, continuous, burst, and follow trigger modes Extensive trigger and gating logic provides comprehensive control of pulse timing and the internal base clock can be disciplined to an external 1PPS*, 100PPS*, or 10MHz reference clock to support requirements for long term stability.

Overview:

Number of Channels: 1

Frequency: 0.1Hz - 100MHz

Pulse Output: -1.5V to +6.5V

Operational Modes:
- Single or continuous pulsing
- Single pulse or double pulse
- Burst from 2 to >1B pulses
- Follow trigger
- Inverted Pulse/Sync
- Programmable rise/fall time
- External triggering
- Asynchronous or synchronous gating

Clock Disciplining:
The internal oscillator can be disciplined to a 1PPS*, 100PPS*, or 10MHz external reference for increased accuracy and long term stability of the frequency output.

* Rev. C or higher

Inputs/Outputs:
- Front Panel Pulse & Sync Out
- Front Panel Input A & B
- M-Module Trig A & B

Gate, Trigger, Ref. Clock Inputs:
Source can be the front panel A or B connectors or the M-Module Trig A or Trig B signals

Pulse and Sync Outputs:
Can be directed to the front panel connectors and to the M-Module backplane Trig A or B signals

Front Panel Connectors: SMA

Power:

+5V	1500ma max
+12V	400ma max
-12V	330ma max

Note: The power consumption exceeds the M-module specification. Be sure to check the specifications of the M-module carrier to ensure that it can handle the rated current load and heat dissipation.

Temperature:

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

M Module Compliance

Complies with ANSI/VITA Std. 12-1996 for single-wide M-Modules, except for power consumption (see note)

Data Transfers:	16 bit
Interrupts:	INTA & INTC
Triggers:	TRIGA & TRIGB

Compatible with VXI, VME, PCI, cPCI, LXI and other M Module carriers.

Applications

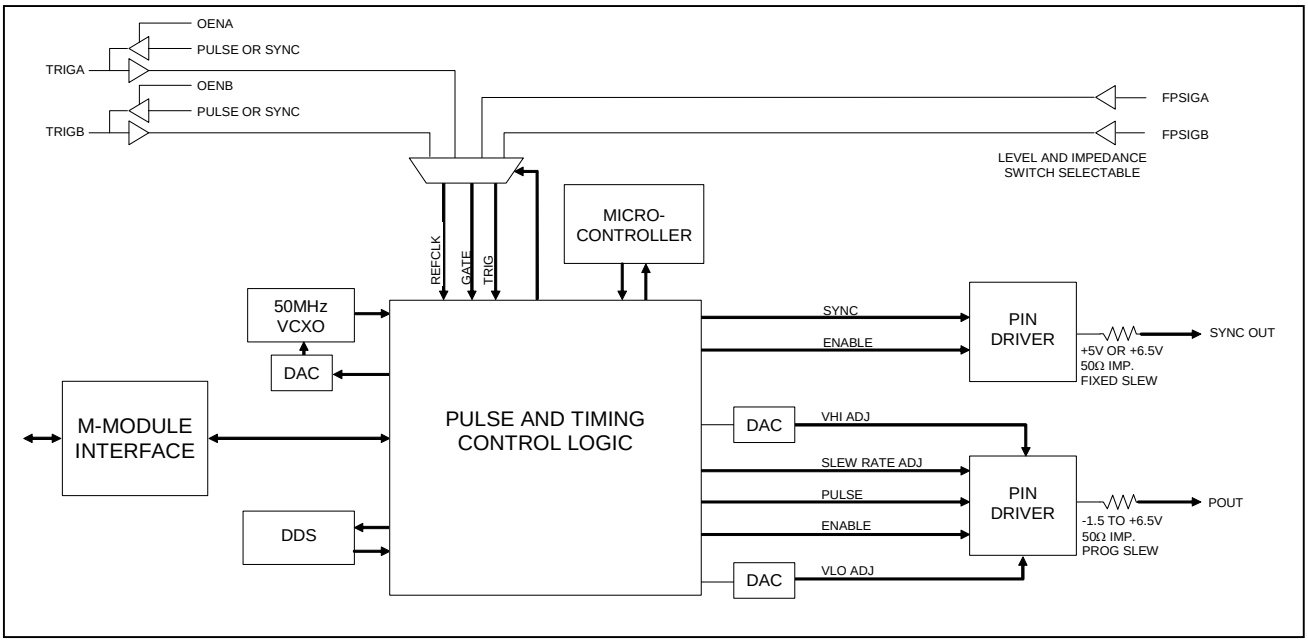
- Functional testing
- Design verification
- Signal simulation
- Timing control

Ordering Information

Part Number 11028790-0001

Additional Information

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



Specifications:

Pulse Frequency (internal clock):

Range	0.093Hz to 100MHz
Resolution	0.093Hz
Accuracy	±0.01% [1]

Pulse Width:

Range	5ns to (period – 3ns)
Accuracy	±(3% + 250ps) [2]

Pulse Delay (from Sync Out):

Range	5ns [3] to 5s
Accuracy	±(3% + 250ps) [2]

Double Pulse Spacing:

Range	(width + 3ns) to (period – width – 3ns)
Accuracy	±(3% + 250ps) [2]

Timing (Width, Delay, Double Spacing):

Resolution	4 to 13ns	10ps
	13 to 24ns	20ps
	≥ 24ns	see note 4
Temperature Coefficient		+17ppm/°C typ

Pulse Out Characteristics:

Range ($R_L = \infty$)	-1.5V to +6.5V
Output Impedance	50Ω
Resolution (12 bit)	2mV
Accuracy	±(2.0% + 100mV)
Output Current (source or sink)	60mA
Short Circuit Current (dynamic)	±120mA max
Rise/Fall Time (prog, $R_L = \infty$)	0.625 to 2.5V/ns

On-Board Clock & Ext. Ref. Disciplining: [6]

Frequency Stability	
without ext. ref. disciplining	50ppm
with ext. ref. disciplining	0.01ppm [7]
Time to discipline lock	
after 10 minute module warm-up	30sec (typ)

Input Characteristics (FPSIGA & FPSIGB):

Threshold (programmable)	-5.0V to +5.0V
Resolution (8 bit)	39mV
Impedance (selectable)	50 or >10KΩ
Accuracy (mid-point falling/rising)	±(5% + 150mV)
Hysteresis	50-350mVpp
Frequency	100MHz max
Pulse Width	3ns min
Maximum Input Voltage (no damage)	12Vrms

Sync Out Characteristics:

Time from external trigger	<35ns [5]
Output Impedance	50Ω
Amplitude (selectable, $R_L = \infty$)	5.0V or 6.5V
Output Current (source or sink)	60mA
Rise/Fall Time ($R_L = \infty$)	2.5V/ns typ
Width (software selectable)	5ns or 55ns

Notes:

1. The frequency accuracy and long-term stability can be improved by using an external precision reference clock to discipline the internal oscillator. See External Reference Disciplining specifications for details.
2. Accuracy is within the tolerance specified at the calibration temperature. Temperature coefficient can be used to correct for temperature variation.
3. The pulse delay can be programmed to zero; however, the minimum Sync Out time to output pulse specification applies.
4. For times ≥24ns, the timing resolution increases approx. 10ps for every 12ns increase in time.
5. The Sync Out time specified is from the external front panel trigger to the external front panel Sync Out. Backplane trigger timing will vary depending on the carrier used.
6. Starting with Rev. C of the MA209, the reference disciplining logic was upgraded to include support for a reference input frequency of 1PPS and 100PPS.
7. The on-board oscillator will discipline to within one decade of the external reference, up to the specified stability.

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