labZY nanoMCA-II and nanoMCA versus Amptek Digital MCA's

naoMCA-II and nanoMCA integrate together and greatly enhance the functionalities of MCA8000D and DPP5

COMPANY	labZY	labZY	Amptek	Amptek
PRODUCT	**nanoMCA-II**	**nanoMCA**	**MCA8000D**	**DPP5 OEM**
PULSE PROCESSING				
DIGITAL PULSE PROCESSING (DPP)	YES	YES	NO	YES
MCA PULSE-HEIGHT MEASUREMENT (PHA)	YES	YES	YES	NO
OPEN PLATFORM	YES	YES	NO	NO
USER CUSTOMIZABLE	YES	YES	NO	NO
ADC Resolution	16-bit	16-bit	16-bit	12-bit
ADC Sampling Frequency	125 MHz	80MHz	100MHz	80MHZ (20MHz)
Pulse Shaping	Trapezoidal or Custom	Trapezoidal or Custom	NA	Trapezoidal
Shaped Pulse Rise Time (RT)	16ns to 16μs, Cont. in 8ns increments	25ns to 25μs, Cont. in 12.5ns increments	NA	100ns to 102μs, 30 preset values
Shaped Pulse Flat Top (FT)	0 to 8.2μs, RT Independent	0 to 3.2μs, RT Independent	NA	RT Dependent, >50ns
Input Pulse Polarity	Positive or Negative	Positive or Negative	Positive only	Positive only
Input Pulse Rise Time PHA	>150ns	>200ns	>500ns	NA
Coarse Gain DPP	32 steps, 1 to 215	32 steps, 1 to 215	NA	16 steps, 1.12 to 102
Coarse Gain PHA	1, 1,41, 2, 2.83	1, 1,41, 2, 2.83	NO	NA
Fine Gain PHA or DPP	1 to 1.2, 16-bit resolution	1 to 1.2, 16-bit resolution	NA	0.75 to 1.25, 13-bit resolution
Gain Stability (typ)	±5 ppm/°C	±5 ppm/°C	±10 ppm/°C	<20 ppm/°C
Base Line Drift PHA (typ)	< 1 ppm/°C	< 1 ppm/°C	±10 ppm/°C	NA
Fast Channel Rise Time (FRT)	8ns to 2μs, in 8ns increments	12.5ns to 3.2μs, in 12.5ns increments	NA	50ns to 800ns (200ns to 3.2 μs) 5 preset values
Fast Channel Flat Top (FFT)	8ns to 2μs, Cont. in 8ns increments	12.5ns to 3.2μs, Cont. in 12.5ns increments	NA	FRT Dependent
PHA Peak Estimator	Real Time Peak Fitting	Real Time Peak Fitting	Not Specified	NA

Timing Signal PHA or DPP	Constant Fraction	Constant Fraction	NO	NO
Pole-Zero Adjustment DPP	25µs to ∞, Auto	50µs (25µs - Z) to ∞, Auto	NA	NO
MCA				
Numbers of Channels	16k	16k	8k	8k
Channel Capacity	4 bytes ($4.3 \cdot 10^9$ counts)	4 bytes ($4.3 \cdot 10^9$ counts)	3 bytes ($16.7 \cdot 10^6$ counts)	3 bytes ($16.7 \cdot 10^6$ counts)
Input Sensitivity DPP	±1.5V/16k chn, gain 1	±0.8V/16k chn, gain 1	NA	1V/8k chn, gain 1
Input Sensitivity PHA	±3.3V/16k chn, gain 1	±3.3V/16k chn, gain 1	1V/8k or 10V/8k	NA
Preset Acquisition Time	2^{32}s	2^{32}s	2^{24}s	10ms to 496 days
Acquisition Time Resolution	200ns	200ns	10ms	10ms
Timer Accuracy (MAX, over all conditions)	±10ppm	±25ppm	Not Specified	Not Specified
Coincidence/Anticoincidence	YES	YES	YES	NO
DPP Input Referred Noise RMS [channels]	See Graph Below the Table	See Graph Below the Table	Not Specified	Not Specified
Special Functions				
Automatic Thresholds PHA or DPP	YES	YES	Not Specified	Not Specified
Baseline Restoration PHA or DPP	1024 Settings	1024 Settings	NO	16 Settings
Digital Pulser Noise Estimator	YES	YES	NO	NO
Enhanced Pile-Up Rejector DPP	YES	YES	NA	NO
Counting Losses Estimator DPP	Extended Pulse Width	Extended Pulse Width	NA	Not Specified
True Incoming Rate Estimator DPP	Yes	Yes	NA	NO
Digital Trace Viewer (Oscilloscope) PHA or DPP	YES	YES	NO	NO

Automatic Pulse Polarity PHA or DPP	YES	YES	NO	NO
MCS	NO	NO	YES	YES
SCA	Up to 3 Per Customer Specifications	NO	NO	16
Particle Counting Option PHA-MCA	Standard, Built-in	Standard, Built-in	Option	NA
SPECTRUM LOGGER	YES	YES	NO	NO
Connectors and Interface				
Digital Inputs/Gates	3	2	2	Multiple IO
Digital Outputs	3	2 per customer request	0	Multiple IO
Interface	USB Ethernet WiFi Bluetooth Serial Fiber Optic (opt)	USB Ethernet WiFi Bluetooth Serial Fiber Optic (opt)	USB Ethernet Serial	USB Ethernet Serial
Mechanical and Power				
Size	3.6” x 1.5” x 1” (92 x 38 x 25 mm)	3.6” x 1.5” x 1” (92 x 38 x 25 mm)	5” x 2.8” x 0.8” (125 x 71 x 20 mm)	Board 3.5” x 2.5” (89 x 64 mm)
Weight	<135g Enclosed	<135g Enclosed	<165g Enclosed	32g Board
Power Consumption	1350mW	900mW	2000mW	1000mW(900mW) Board Only

& Includes both DPP and PHA, fully reprogrammable and customizable

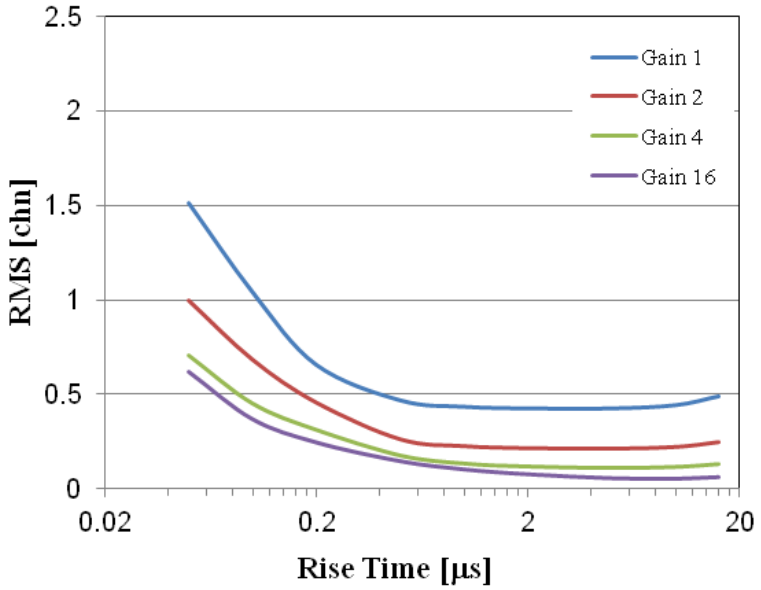
PHA only

***** DPP only

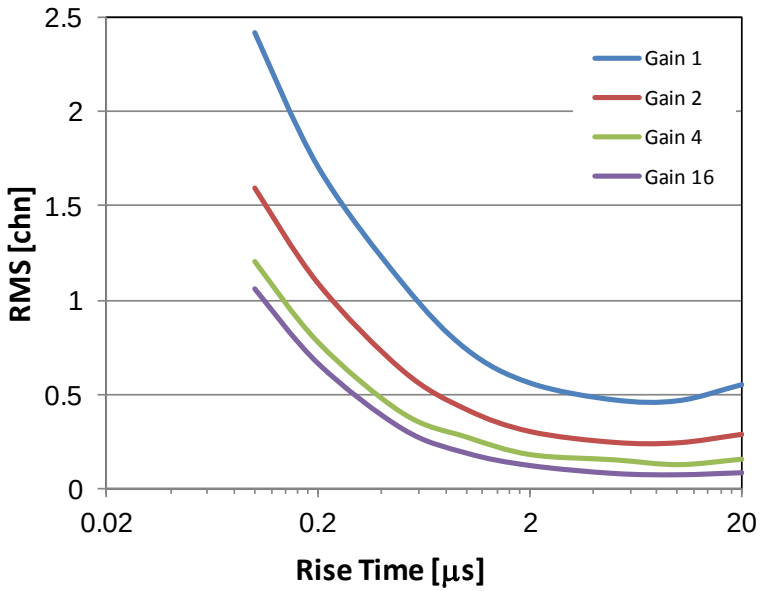
NA - Not Applicable

For specs not included in this table, please, visit ***www.labzy.com*** or contact ***info@labzy.com***

Noise performance of nanoMCA-II and nanoMCA



nanoMCA - II - input referred noise for triangular pulse shape with rise time from 50ns to 16µs, spectrum size 16k channels (DPP mode)



nanoMCA - input referred noise for triangular pulse shape with rise time from 100ns to 20µs, spectrum size 16k channels (DPP mode)

nanoMCA-II - PHA Mode

Digital Pulser FWHM (±20%), 16k Spectrum

Gain	1	1.4	2	2.8
FWHM [chn]	1.5	1.6	1.6	1.6

nanoMCA - PHA Mode

Digital Pulser FWHM (±20%), 16k Spectrum

Gain	1	1.4	2	2.8
FWHM [chn]	3.8	4.0	4.2	4.4