

Amptek Spectrum File Format

The **Amptek Spectrum File Format** file format is ASCII. The fields are delimited in the MS-DOS format (return delimited). If creating or modifying a file to be read by the DppMCA software using Microsoft Excel, it must be saved as **Text (OS/2 or MS-DOS) (*.txt)** format.

The files are saved with the ***.mca** extension and contain the following information in this format:

<<PMCA SPECTRUM>>

Tag

Description

<gen>

<sys>

<not>

ADC Gain

Threshold

Timer Mode

Preset Time

Live Time

Real Time

Start Time and Date

Serial Number

<<CALIBRATION>>

Label

Calibration points (channel value)

<<ROI>>

Regions of Interest ranges (start channel end channel)

<<DATA>

.

.

<<END>

Gain is defined on a scale of 0-6 corresponding to gains of 256-16,384.

Live Mode – 0 indicates the Real Preset Timer was used and Live Mode – 1 indicates the Live Preset Timer was used.

Sample File:

<<PMCA SPECTRUM>>

TAG – Am241

DESCRIPTION – Am241 Spectrum 4000 second.
Accumulation

<gen> descriptions entered under Notes-General

<sys> descriptions entered under Notes-Type of System

<not> descriptions entered under Notes-Performance and Notes

GAIN – 2 (indicating a gain of 1024)

THRESHOLD – 50 (indicating a threshold setting at channel 50)

LIVE_MODE – 0 (indicating the real preset timer was used)

PRESET_TIME – 4000 (in seconds)

LIVE_TIME - 3983.720000

REAL_TIME - 4000.000000

START_TIME - 10/20/1998 12:17:17

SERIAL_NUMBER - 1199

<<CALIBRATION>>

LABEL - Energy (eV)

1 0.000000

322 13950.000000

<<ROI>>

312 330

<<DATA>>

data points

<<END>>

Spectrum File Format Additional Features DPP/DP5 with Firmware 5

Additional fields have been added to the original file format to accommodate the increase in settings. Old files can still be read and displayed. When DP4 and PX4 spectrum files are saved, the current settings are saved with the file.

Two additional sections have been added after the data section (<<END>>):

<<DPP CONFIGURATION>> holds the configuration parameters.

<<DPP STATUS>> holds the status of the device when the file was saved.

Sample PX4 Configuration and Status:

<<DPP CONFIGURATION>>

COM Port: USB

Rise: 51.2uS

Top: 12.8uS

Fast Threshold: 34

PUR Enable: PUROff

RTD ON/OFF: RTDOff

RTD Threshold: 0.00% FS

RTD Fast HWHM: 10

AutoBaseline: Off

BLR: BLR:OFF

Acquisition Mode: MCA

MCS Timebase: 50mS/channel

MCA Channels: 1024

Slow Threshold: 3.71% FS

Buffer Select: Buffer A

Gate Input (TTL): GateOff

Preset: None

Coarse Gain: 17.46x

Fine Gain: 1.0000

Input Polarity: Negative

Input Offset: 0.037V

Pole Zero: OFF

Det Rst Lockout: 3.28mS

TEC: 219.9K

HV: 145.8V

Preamp Power: 8.5V

Analog Out: Shaped Pulse

Offset: 101mV

Aux: ICR

Audio: Off

<<DPP CONFIGURATION END>>

<<DPP STATUS>>

Device Type: PX4

Serial Number: 1070

Firmware: 3.11

FPGA: 3.11

Fast Count: 74643

Slow Count: 60470

Accumulation Time: 6375

Dead Time: 18.99%

HV Volt: 140V

TEC Temp: 243K

Board Temp: 30°C

<<DPP STATUS END>>

Spectrum File Format Additional Features DP5/PX5/DP5G/DP5 with Firmware 6

Additional fields have been added to the original file format to accommodate the increase in settings. Old files can still be read and displayed. When older format spectrum files are saved, the current settings are saved with the file.

Two additional sections have been added after the data section (<<END>>):

<<DP5 CONFIGURATION>> holds the configuration parameters.

<<DPP STATUS>> holds the status of the device when the file was saved.

Sample DP5 Configuration and Status With Firmware 6:

<<DP5 CONFIGURATION>>

RESC=?; Reset Configuration

CLCK=80; 20MHz/80MHz

TPEA=11.200; Peaking Time

GAIF=0.980;

GAIN=99.88; Total Gain (Analog * Fine)

RESL=409; Detector Reset Lockout

TFLA=0.200; Flat Top

TPFA=100; Fast Channel Peaking Time

PURE=ON; PUR Interval On/Off

RTDE=OFF; RTD On/Off

MCAS=NORM; MCA Source

MCAC=4096; MCA/MCS Channels
SOFF=OFF; Set Spectrum Offset
AINP=POS; Analog Input Pos/Neg
INOF=DEF; Input Offset
GAIA=16;
CUSP=0; Non-Trapezoidal Shaping
PDMD=NORM; Peak Detect Mode (Min/Max)
THSL=1.07; Slow Threshold
TLLD=OFF; LLD Threshold
THFA=29; Fast Threshold
DACO=INPUT; DAC Output
DACF=300; DAC Offset
RTDS=600; RTD Sensitivity
RTDT=9.96; RTD Threshold
BLRM=1; BLR Mode
BLRD=2; BLR Down Correction
BLRU=2; BLR Up Correction
GATE=OFF; Gate Control
AUO1=ICR; AUX_OUT Selection
PRET=1200.0; Preset Time
PRER=OFF; Preset Real Time
PREC=OFF; Preset Counts
PRCL=1; Preset Counts Low Threshold
PRCH=8192; Preset Counts High Threshold
HVSE=-120; HV Set
TECS=220; TEC Set

PAPS=ON; Preamp 8.5/5 (N/A)
SCOE=FA; Scope Trigger Edge
SCOT=12; Scope Trigger Position
SCOG=1; Digital Scope Gain
MCSL=1; MCS Low Threshold
MCSH=8192; MCS High Threshold
MCST=0.00; MCS Timebase
AUO2=ONESH; AUX_OUT2 Selection
TPMO=OFF; Test Pulser On/Off
GPED=RI; G.P. Counter Edge
GPIN=DETRES; G.P. Counter Input
GPME=ON; G.P. Counter Uses MCA_EN?
GPGA=ON; G.P. Counter Uses GATE?
GPMC=ON; G.P. Counter Cleared With MCA Counters?
MCAE=OFF; MCA/MCS Enable
BOOT=ON; Turn Supplies On/Off At Power Up

<<DP5 CONFIGURATION END>>

<<DPP STATUS>>

Device Type: DP5

Serial Number: 10160

Firmware: 6.03

FPGA: 5.10

Fast Count: 101502

Slow Count: 95052

Accumulation Time: 51

Dead Time: 6.35%

HV Volt: -121V

TEC Temp: 226K

Board Temp: 36°C

<<DPP STATUS END>>