Digital Pulse Processor MXDPP-50

(Box Version) Datasheet

MXDPP-50 (Front)

MXDPP-50 (Back)

Applications

- Portable XRF applications
- X-ray gamma ray detectors
- Process control
- Scientific research
- Nuclear monitoring

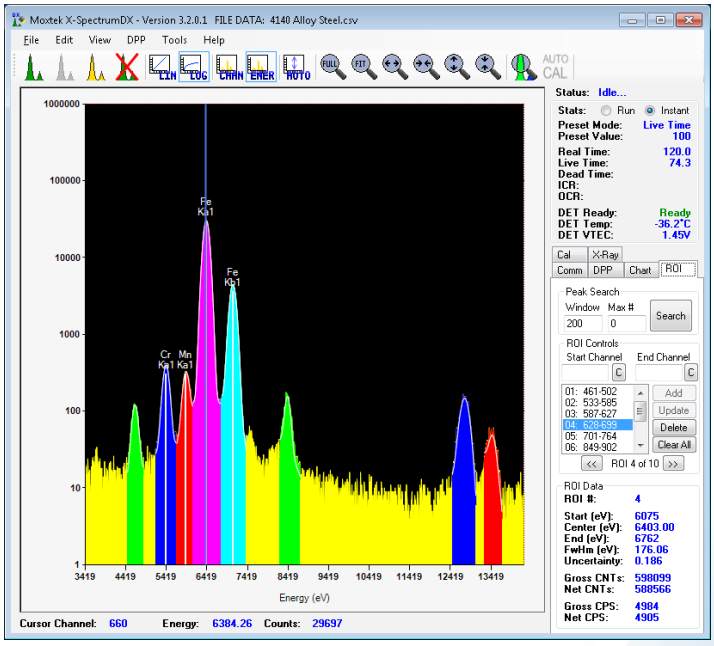
Standard Package Includes

- MXDPP-50 Digital Pulse Processor
- Detector power supply with HV bias
- 5 VDC power supply brick
- XPIN detector cable (LEMO)
- XPIN signal cable (BNC)
- USB cable
- Software CD
  - Product manual (PDF)
  - X-spectrum DX software
  - Software development kit

FP Software Sold Separately

The MXDPP-50 digital pulse processor (DPP) is ideal for analytical x-ray and gamma-ray instruments such as; SDD, Si-PIN, CaTe, Si(Li), and Germanium detectors. The MXDPP-50 is designed to digitize detector output signals, achieving high throughput, with excellent pile-up rejection. The MXDPP-50 box includes the digital pulse processor, the detector power supply including high voltage bias, and the automatic temperature controller for Moxtek detectors.

Features	Benefits
Analog-to-Digital Converter (ADC) system (50 MHz, 14 bit)	Fast processing speeds
Two independently configurable fast channels for pileup rejection	Best pile-up rejection for wide range of energies
Pulse / Continuous feedback	Compatible with various detector types
Positive / Negative step	
Configurable: HV bias, ramp polarity, temperature set point	Change detector settings without changing jumpers
USB2 Interface	High speed communication with Personal Computer (PC)
Certified Microsoft Windows Drivers XP, Vista, Windows 7 & 8 (32 bit and 64 bit)	



Example MXDPP-50 Spectrum

MOXTEK®

MXDPP-50 Product Specifications

Inputs:

Detector signal input range -6 V to +6 V

- Software selectable signal polarity
- 2 Auxiliary software monitorable digital inputs

Multi Channel Analyzer(MCA):

4G counts / channel maximum

Multi preset functions

- Real Time
- Live Time
- Total Counts
- Peak Counts

4096 channels

Live-time and Real-time acquisition (1 msec to 49 days)

Integrated non-volatile EEPROM Memory:

For persistent parameter settings between power cycles

Outputs:

Selectable analog output signal for monitoring filter outputs with oscilloscope or input into external MCA

2 Auxiliary digital outputs

8 Single Channel Analyzer (SCA) outputs with software selectable windows

- Selectable dead time corrected frequency output or pulse per event output

Pulse Processing:

Trapezoidal shaping

Slow channel and two fast channels for pile-up rejection

Programmable peaking time (flat top) for all channels

- Slow 0.08 to 81µs
- Fast 0.08 to 19.8µs

Offset function for adjustment of 0 channel to 0eV

Adjustable holding time for all channels

- Slow 0.08 to 19.8 µs
- Fast 0 to 19.8µs (typically 0)

Digital fine gain setting for adjustment of eV/channel with high resolution

Preprocessor:

50MHz 14Bit ADC

Adjustable coarse gain for keeping same signal-to-noise ratio level at ADC

Adjustable differentiator time constant for optimal performance

Communication:

Virtual Com Port (VCP) and Direct (D2XX) drivers available

USB 2.0 high speed communication

Power Supply Specifications

Power Supply:

+5V ±10% 1A Max (Includes power for detector)

Integrated detector power supply

- ±5V for XT style detectors, ±9V for BT style detectors
- Software adjustable detector bias supply
  - -250Vdc to +250Vdc

Environmental:

0 to 60°C Operating Temperature

EAR99 Export Classification

-40 to 80°C, 10 to 90% humidity non-condensing

Storage Temperature

RoHS Compliant

Integrated Detector Temperature Controller (TC):

Software selectable TC mode

- Detector mode for use with detectors with integrated temperature controllers
- Box mode for use with detectors without integrated temperature controllers

Software selectable temperature setting

- 0°C to -100°C

Software monitor for Detector temperature, TEC voltage, Ready Signal, DPP temperature

MOXTEK®

Free Evaluation Software (X-SpectrumDX) Specifications

Read/Write DPP Parameters:

Factory Default DPP configuration files for easy operation

Fine Control of all DPP parameters for advanced users

Read/Write Detector Settings:

Predefined detector settings for Moxtek detectors

Monitor and display detector temperature, TEC voltage

Save Data:

Save raw data to .csv file

Save full date including ROIs, calibration, X-Ray lines to .csv file

Save spectrum as image (.bmp, .gif, .jpg, .png, .tiff)

Software Development Kit (SDK):

Example Code

- Visual Basic 2010
- C#.NET 2010
- LabView

Intuitive GUI Interface:

Linear/Logarithmic display

Spectrum controls using mouse

Integrated help for DPP parameters

Copy & Paste spectrum data to/from excel using windows clipboard

Customizable colors

Basic XRF Analysis:

Start/Stop acquisition controls

Download spectra

Automatic peak search

2 peak linear calibration

Integrated X-Ray Line display

Example spectrums

Connector Specifications

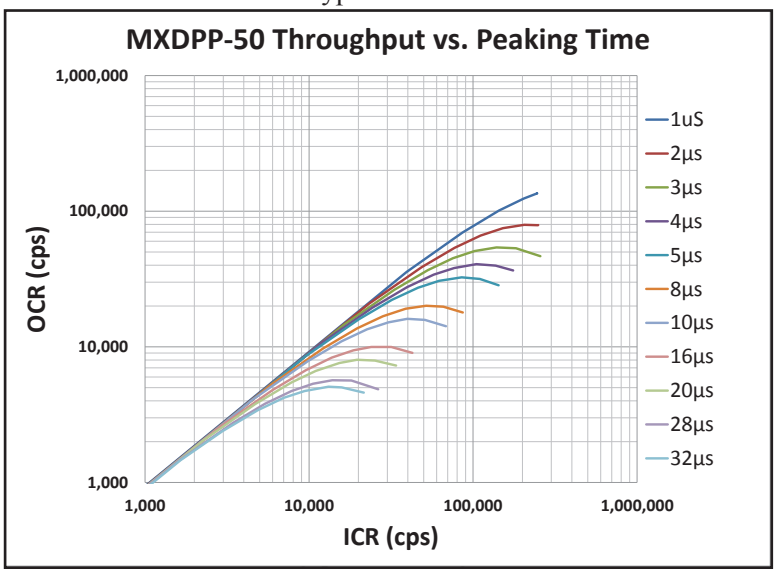
Connections:

Detector:

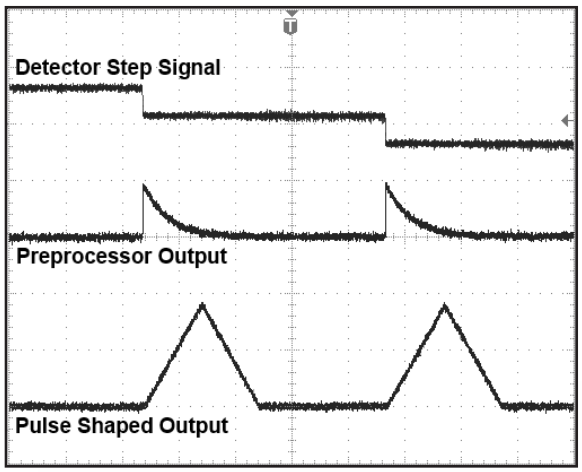
- Detector Power connector: Lemo, EPL.1S.306.HLN
- Detector Signal (BNC) connector: Amphenol, 31-5538-10RX

Auxiliary: Samtec, T2M-110-01-L-D-RA

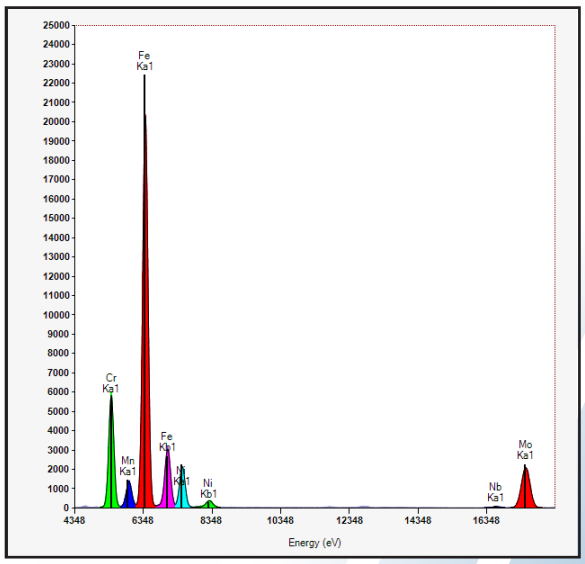
Communications: USB type B connector



DPP Signal Diagram and Spectrum



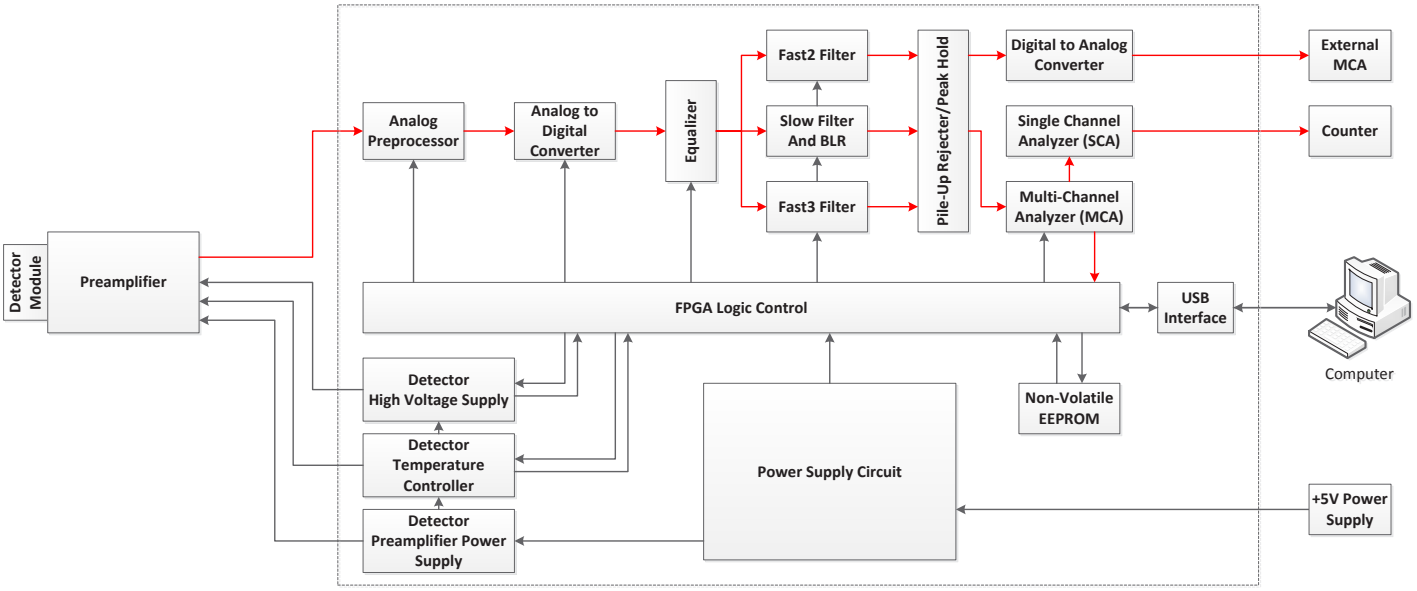
DPP Signal Example



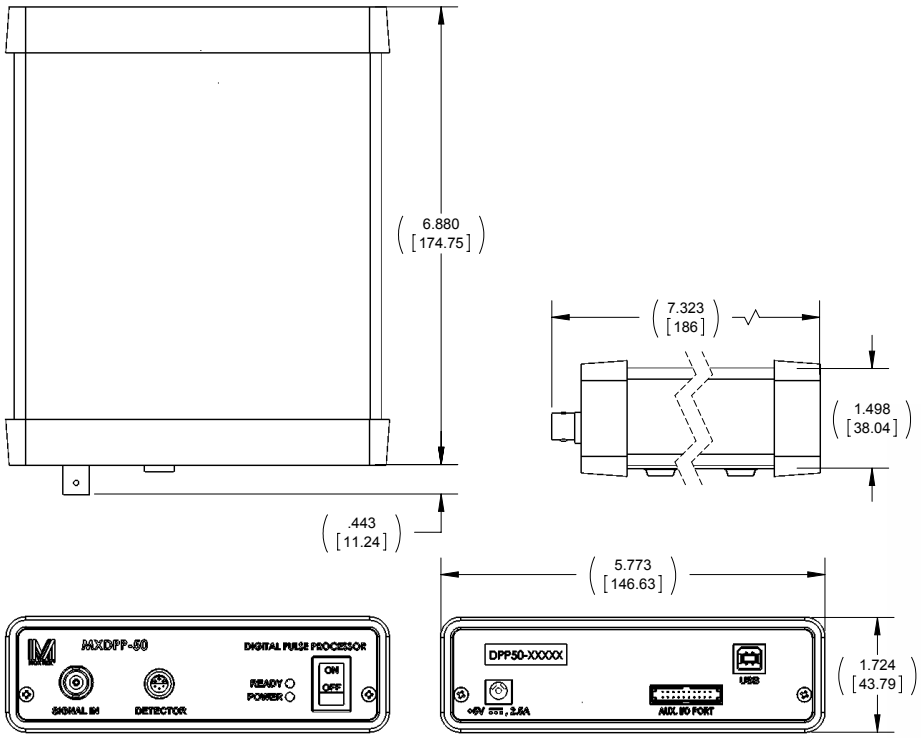
DPP Spectrum Example

MOXTEK®

Block Diagram of MXDPP-50 and XRF System



MXDPP-50 Box Dimensions and Pinouts



Note: Dimensions are in (inches) and [millimeters]

Detector Power Connector (Lemo*)		
Pin ID	**Description**	**Set**
1	Temp / Ready	Input
2	High Voltage Bias	-250 to +250Vdc
3	Preamp Power -	-9V Output
4	Preamp Power +	+9V Output
5	Temp GND / TEC -	TC GND / Return
6	TC Power / TEC +	Output
Shield	Detector Ground	GND

Table 1 Lemo Power Connector Pinout

Signal Connector (BNC)	
Contact	**Description**
Pin	Detector Signal
Shield	Signal GND

Table 2 Signal Connector Pinout

MOXTEK

452 West 1260 North / Orem, UT 84057
Phone 801.225.0930 / Fax 801.221.1121
www.moxtek.com
info@moxtek.com