



DIGITAL X-RAY PULSE PROCESSOR XBDPP50-100

Specifications of Digital X-ray Pulse Processor (DPP) XBDPP50-100

Overview

XBDPP50 series DPP is for use in analytical X-ray instruments such as Energy Dispersive X-Ray Fluorescence spectrometer (EDXRF), X-Ray Diffractometer (XRD) and Energy Dispersive X-ray analyzer for Scanning Electron Microscope (SEM-EDX). XBDPP50-100 is a high performance version and mostly used with high energy resolution detectors such as Silicon Drift Chamber Detector (SDD), Si PIN diode detector (Si-PIN), Lithium drifted silicon detector (Si(Li)) and High Purity Germanium Detector (HPGE). It is very flexibly configurable in order to match various kinds of X-ray detectors and preamplifiers and achieves high energy resolution, high throughput and good pile-up rejection at the same time.

Features

- Double Analog-to-Digital Converter (ADC) system (25MHz 16bit and 50MHz 12bit) for achieving good pile-up elimination
- Three independently configurable pile-up rejecters for achieving the best pile-up rejection in wide range of energy
- Compatible with various kinds of preamplifier output
 - Pulse / Continuous feedback
 - Positive / Negative step
- USB2 Fast high speed communication with PC
- Multi-purpose switchable Digital / Analog interfaces
 - Pulse Height + Event timing + Dead-time signals for external MCA
 - Region Of Interest (ROI) pulse outputs (SCAs)
 - ◇ Quasi real-time dead-time correction
 - ◇ Quasi real-time background correction (to be added soon)
 - Analog I/O for controlling X-ray tube, Bias PS and/or other peripherals
 - Digital I/O for controlling X-ray tube, Bias PS and/or other peripherals
- Control software with source code (VB 2010) freely downloadable



DIGITAL X-RAY PULSE PROCESSOR XBDPP50-100

Preamplifier Input

- Analog Input range -6V - +6V
- Analog coarse gain setting (0.056 - 50) for keeping the same signal-to-noise ratio level at ADC
- 25MHz ADC for Slow, Fast2, Fast3 filters
- 50MHz 12bit ADC for Fast filter

Pulse Processing

- Trapezoidal shaping
- Slow channel and three fast channels for pile-up rejecters
- Programmable Peaking Time for all filters

	Slow	Fast	Fast2	Fast3
Peaking time (usec)	0.08 - 81	0.02 - 0.62	0.08 - 19.8	0.08 - 19.8
Holding time (usec)	0 - 19.8	N/A	(0 - 19.8)	(0 - 19.8)

Since Slow / Fast2 / Fast3 time constants are dependent on common processor clock frequency that depends on Slow Peaking Time, not all combinations can be used. Fast2 / Fast3 holding times are normally left to default value 0.

Pulse pair resolving time for the FastPeakingTime = 0.02usec is approximately 40nsec.

- Digital fine gain setting for adjustment of eV/ch in high resolution
- Offset function for adjustment of 0 channel to 0eV
- Analog output for monitoring filter outputs with a oscilloscope

Multi Channel Analyzer (MCA)

- 4096 channel (Number of channel for data transfer can be programmable from 1 to 4096)
- 4G counts / ch maximum
- Live-time and Real-time acquisition (1msec - 49days)
- Multiple preset functions : Time / Total count / Peak count / ROI count

Communication

- USB2 Fast mode high speed communication with PC
- Both D2XX and Virtual COM Port (VCP) drivers available
- USB serial number reprogrammable
- Control software with source code (VB 2010) freely downloadable



DIGITAL X-RAY PULSE PROCESSOR XBDPP50-100

Analog inputs and outputs

- 4 (+8 optional) Analog outputs for controlling X-ray tube, Bias voltage and/or other peripherals (0 - 2.5V)
- 4 Analog inputs for monitoring X-ray tube, temperature and/or other peripherals (0-2.5V)
- Built-in feedback control logic for X-ray filament and/or detector temperature control

Digital inputs and outputs

- 16 Digital outputs that has switchable functions
 - Simple output mode (On / Off by USB command)
 - 12 ROI count outputs (SCA)
 - ◇ Quasi real-time dead-time correction
 - ◇ Quasi real-time background correction (to be added soon)
 - Pulse Height + Event timing + Dead-time signals for external MCA that is mainly used for imaging applications
 - ◇ Custom design imaging interface board available upon request
- 8 Digital inputs

Power Supply

- 5V (4.5V - 5.5V) 500mA Max.

Dimension

71mmW x 134mmL x 35mmH

