High-counting DSP for X-ray spectroscopy

TechnoAP

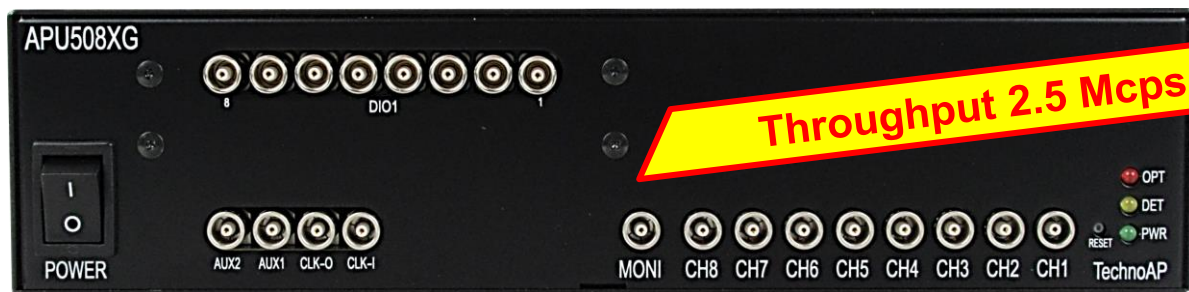## APU508XG — 10 Gbps speed support — UNIT

Taking advantage of the high data transfer rate due to the 10 Gbps Ethernet, it is possible to measure at ultra-high speeds such as less than 1ms for quick scan measurement where histograms can be transferred by external triggering.

In addition, the circuit configuration is such that ultra-high counts can be measured even among X-ray spectral scans, achieving an output rate of 2.5Mcps.

APU508XG

Throughput 2.5 Mcps

OPT
DET
PWR
POWER | RESET
AUX2 AUX1 CLK-O CLK-I | MONI CH8 CH7 CH6 CH5 CH4 CH3 CH2 CH1 | TechnoAP
8 DIO1 1

Main specifications

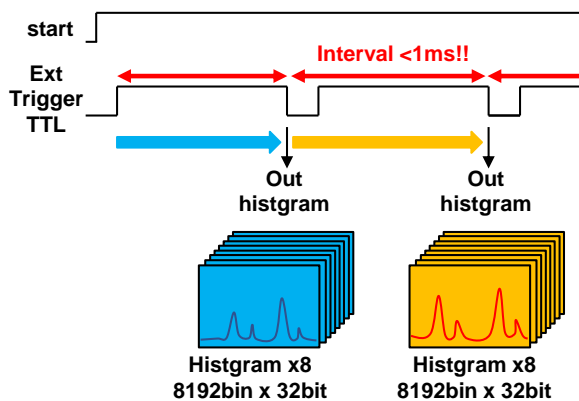| Analog input	8 channel max., LEMO connector Input impedance 1 kΩ
ADC	Input range ±2 V Sampling 100MHz, resolution 16-bit
Analog Coarse Gain	x1, x5, x10, x20
Measurement mode	1. Histogram 2. Quick-Scan (High-speed histogram)
FAST-SCA function *Option	LVTTL logic signal output from external output terminal at fast timing and peak detection between ROIs.
Communication I/F	TCP/IP, 10GBASE-SR for data transfer UDP for command transceiver
Power supply	AC240V
Dimensions	210(W) x 52(H) x 250(D) mm
Weight	1700g

■ **Command manual for external PC control included.**

```
コマンド プロンプト                                    —    □    ×
C:¥Projects¥apu101_vc¥Debug>APU101_sample.exe
start measurement!!!
time(msec):    0/ 3000.  input rate(cps):    0   throughput rate(cps):    0
time(msec):  201/ 3000.  input rate(cps):    0   throughput rate(cps):    0
time(msec):  402/ 3000.  input rate(cps):    0   throughput rate(cps):    0
time(msec):  603/ 3000.  input rate(cps):    0   throughput rate(cps):    0
time(msec):  804/ 3000.  input rate(cps):    0   throughput rate(cps):    0
time(msec): 1004/ 3000.  input rate(cps):    0   throughput rate(cps):    0
time(msec): 1205/ 3000.  input rate(cps): 1000   throughput rate(cps): 1000
time(msec): 1406/ 3000.  input rate(cps): 1000   throughput rate(cps): 1000
time(msec): 1607/ 3000.  input rate(cps): 1000   throughput rate(cps): 1000
time(msec): 1808/ 3000.  input rate(cps): 1000   throughput rate(cps): 1000
time(msec): 2009/ 3000.  input rate(cps): 1000   throughput rate(cps): 1000
time(msec): 2210/ 3000.  input rate(cps): 1000   throughput rate(cps): 1000
time(msec): 2411/ 3000.  input rate(cps): 1000   throughput rate(cps): 1000
time(msec): 2612/ 3000.  input rate(cps): 1000   throughput rate(cps): 1000
time(msec): 2812/ 3000.  input rate(cps): 1000   throughput rate(cps): 1000
time(msec): 3000/ 3000.  input rate(cps): 1000   throughput rate(cps): 1000
finish measurement...
measurement completed!!!

C:¥Projects¥apu101_vc¥Debug>
```
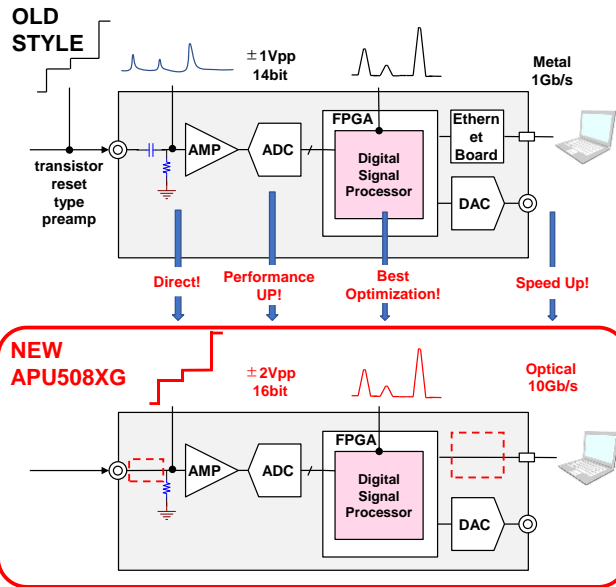
Sample program included *LabVIEW, python etc.

High-speed histogram transfer mode

start

Ext Trigger TTL

Interval <1ms!!

Out histgram   Out histgram

Histgram x8
8192bin x 32bit

Histgram x8
8192bin x 32bit

High digitization

OLD STYLE

±1Vpp 14bit

Metal 1Gb/s

transistor reset type preamp

AMP   ADC   FPGA Digital Signal Processor   Ethernet Board   DAC

Direct!   **Performance UP!**   **Best Optimization!**   **Speed Up!**

NEW APU508XG

±2Vpp 16bit

Optical 10Gb/s

AMP   ADC   FPGA Digital Signal Processor   DAC

*Images is for illustration purpose.
*Please note that contents may change without prior notice.