



***DWA Solutions Ltd***

# *Data Acquisition*

**High Performance**



# *Data Acquisition*

**Simultaneous**

# PCI Formfactor

- ACQ32PCI
  - 32 Channels, 16 bit 250kSPS
  - Offset and Gain Calibration for good DC spec
  - Input Buffer Amp
  - Great AC Specs
  - Range of termination options
- ACQ16PCI
  - Options 16 x 1.8MSPS to 2 x 10MSPS, 14 bit
  - Buffered Differential Input
  - Good AC Specs.

# CompactPCI Formfactor

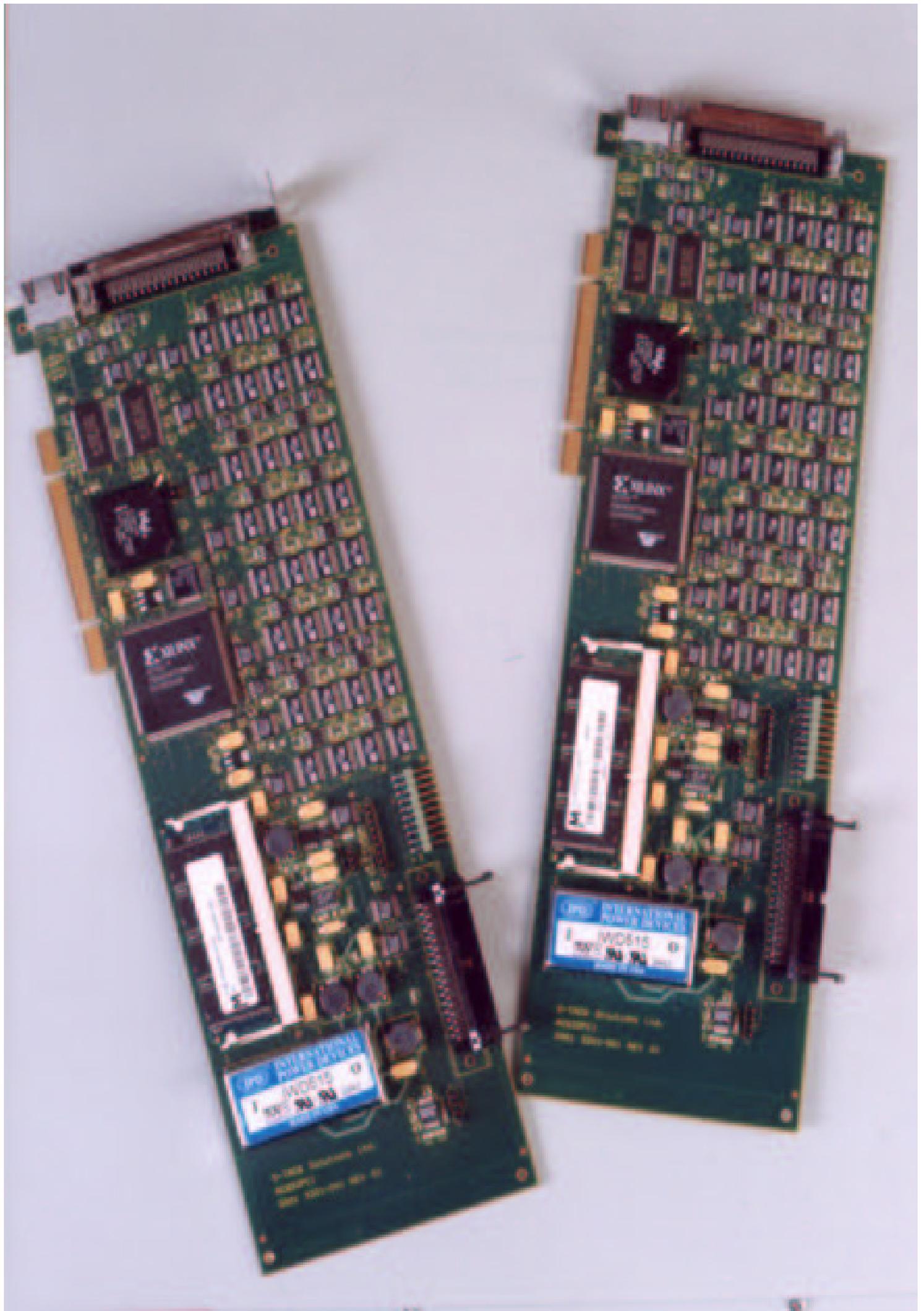
- ACQ32CPCI
  - Single slot 6U, base board + mezzanine, large useable board area
  - 32 Channels, 16 bit 250kSPS
  - Offset and Gain Calibration for good DC spec, Great AC Specs.
- M1 Mezzanine
  - Low cost single ended, with overvoltage
- M2 Mezzanine
  - Differential inputs, high gain PGA, Anti-Alias, medium speed.
- M3 Mezzanine
  - Differential inputs, PGA, Anti-Alias, high speed.
  - Wide Common Mode Range +/-90V Operation

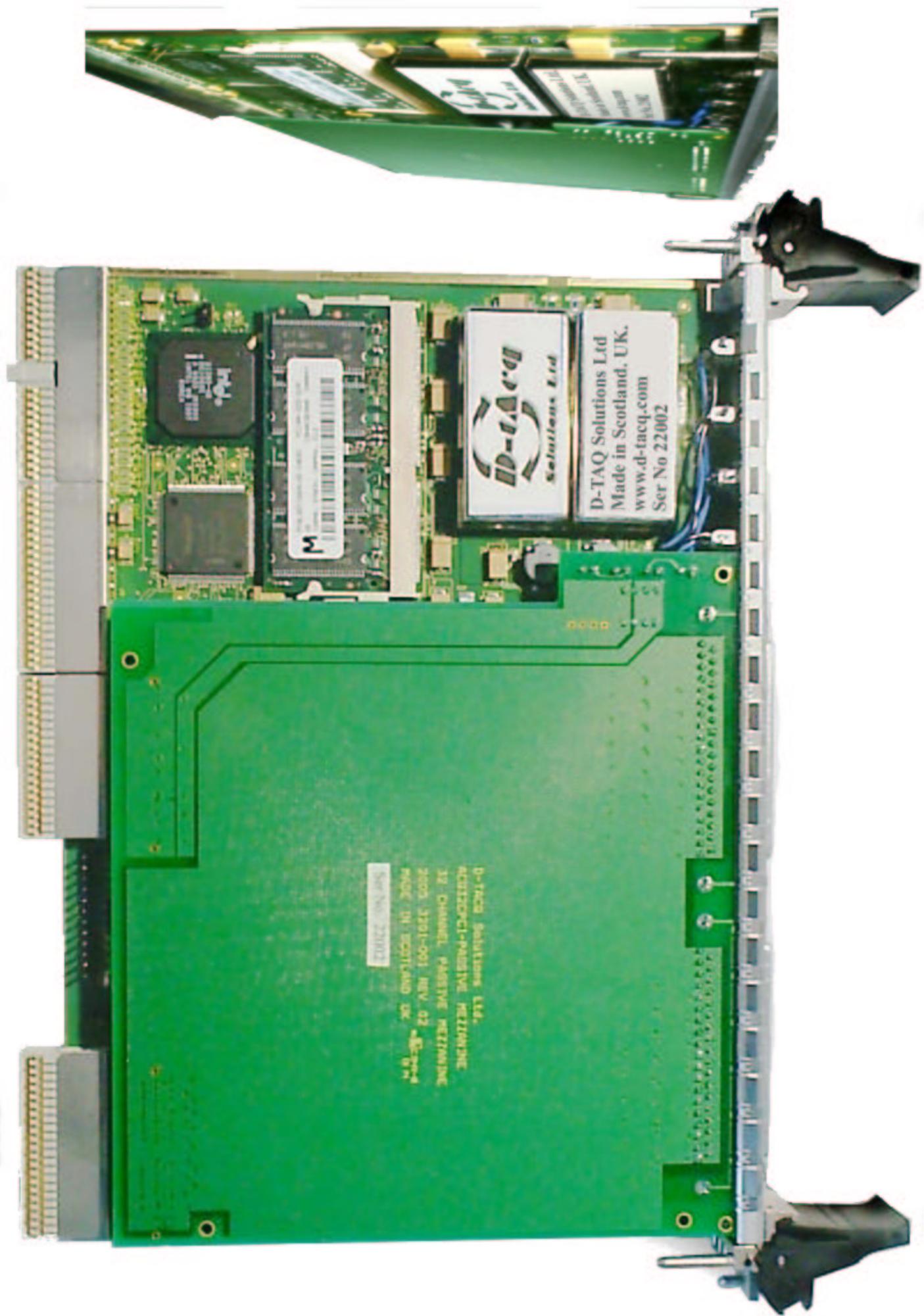
# Simultaneous Channels

- ADC per Channel Architecture
  - *no mux bottleneck, no expensive sample and hold.*
- Conventional SAR or Flash Convertors take point samples.
  - *no time averaging as seen with sigma delta convertors.*
- External, Internal and Derived Clock options coupled by asynchronous logic ensure all Convertors clock together
- External Trigger events inserted in digital data stream for correct synchronization.

# Simultaneous Systems

- Clock and Trigger Signals can be bussed between boards
  - Ribbon cable on PCI
  - PXI backplane bus lines on Compact PCI
- Multiple Clocking Options
  - Front panel clock (opto-isolated on ACQ32CPCI) can be divided and output to all boards in chassis
  - Internal Clock on one board can master other boards in chassis
- Simultaneous between chassis
  - Clock and trigger distributor panel.



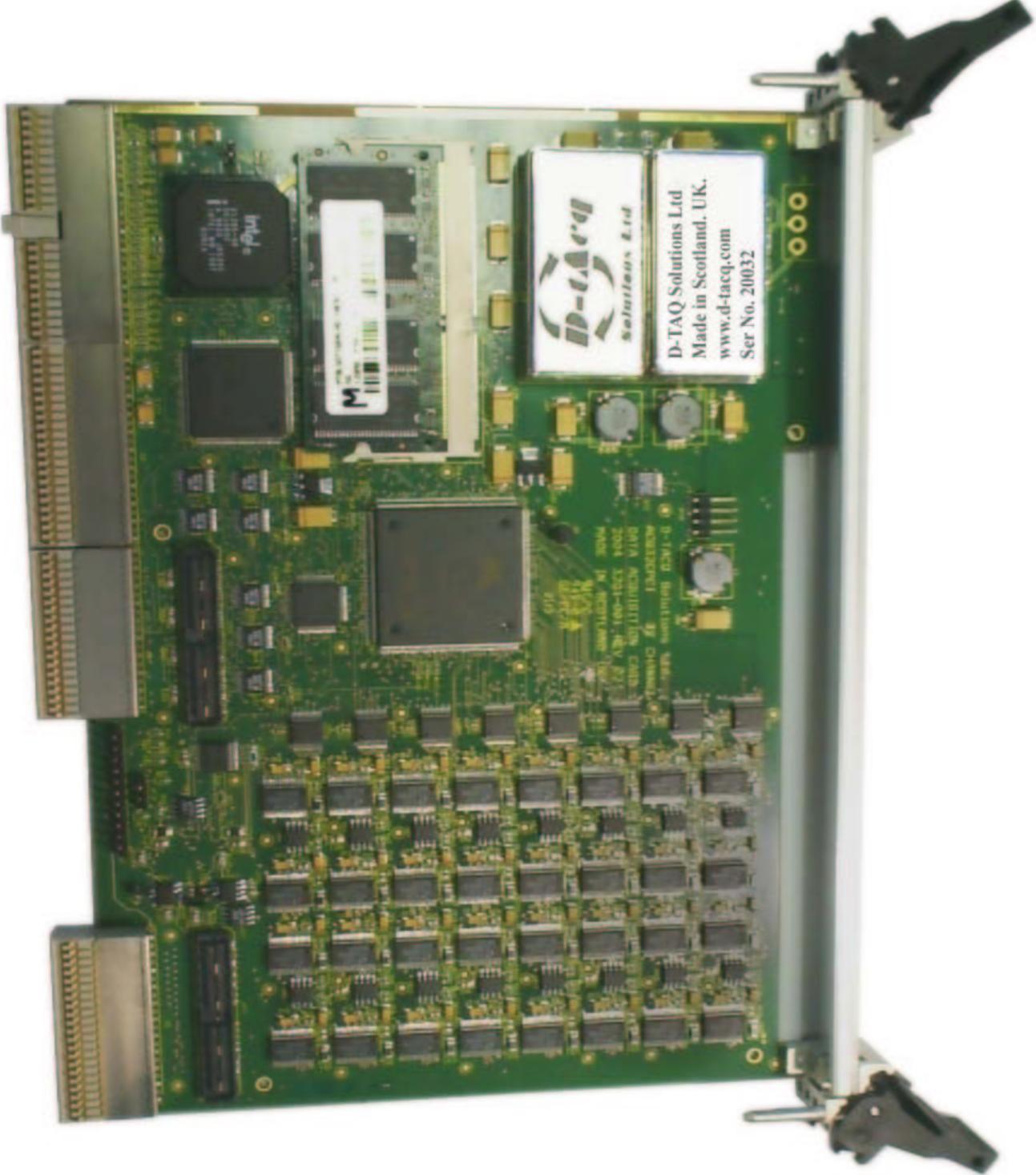


D-TAQ Solutions Ltd  
Made in Scotland, UK.  
www.d-taq.com  
Ser No 22002



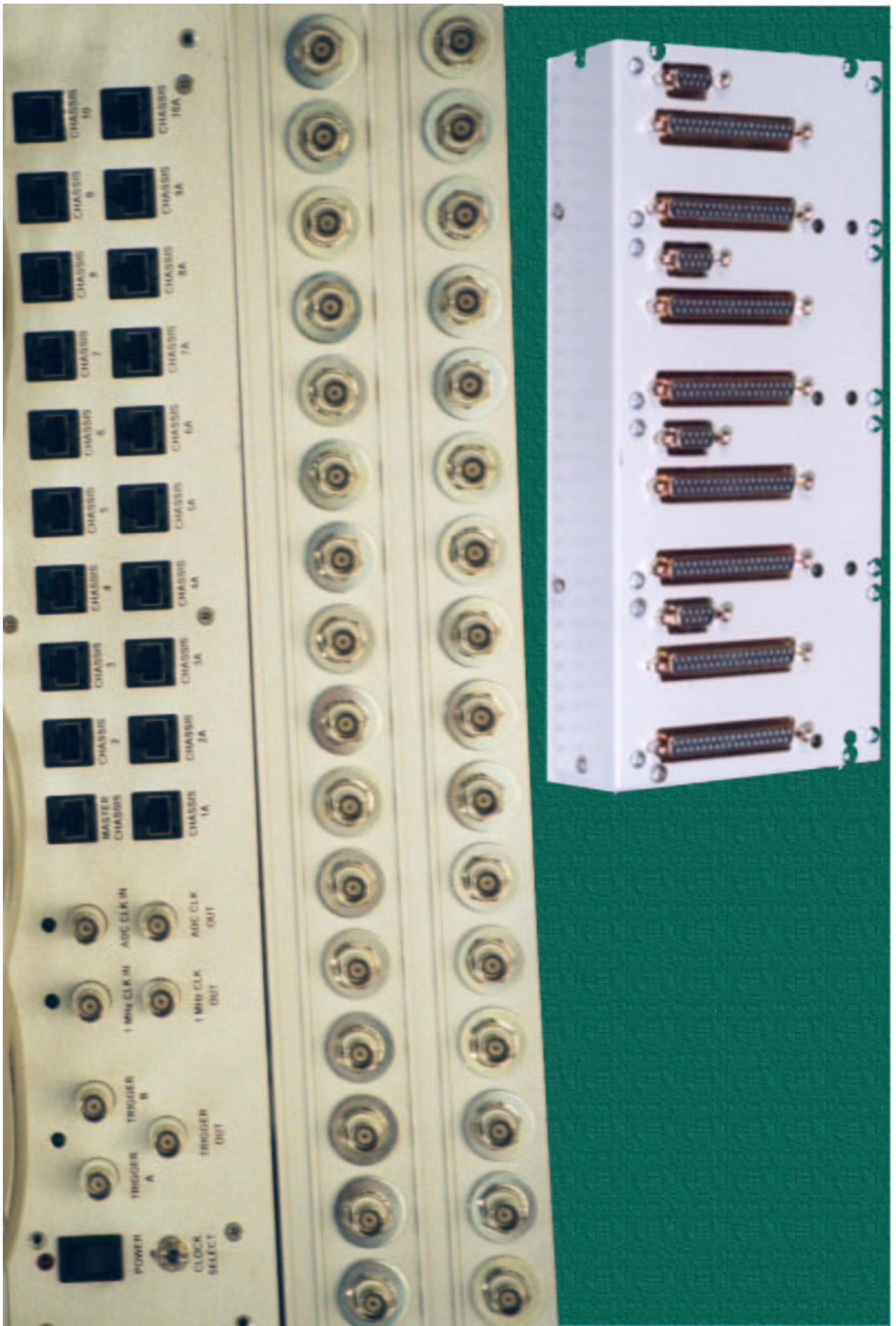
D-TAQ Solutions Ltd.  
ACB13DC1-PASSIVE MEASURING  
32 CHANNEL PASSIVE MEASURING  
2003 J191-01 REV 02 -E-2004  
MADE IN SCOTLAND UK  
Ser No 22002





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Ser No. 20032

D-TAQ Solutions Ltd  
DATA ACQUISITION CARD  
2004 1201-1001 REV. 02  
MADE IN SCOTLAND, UK





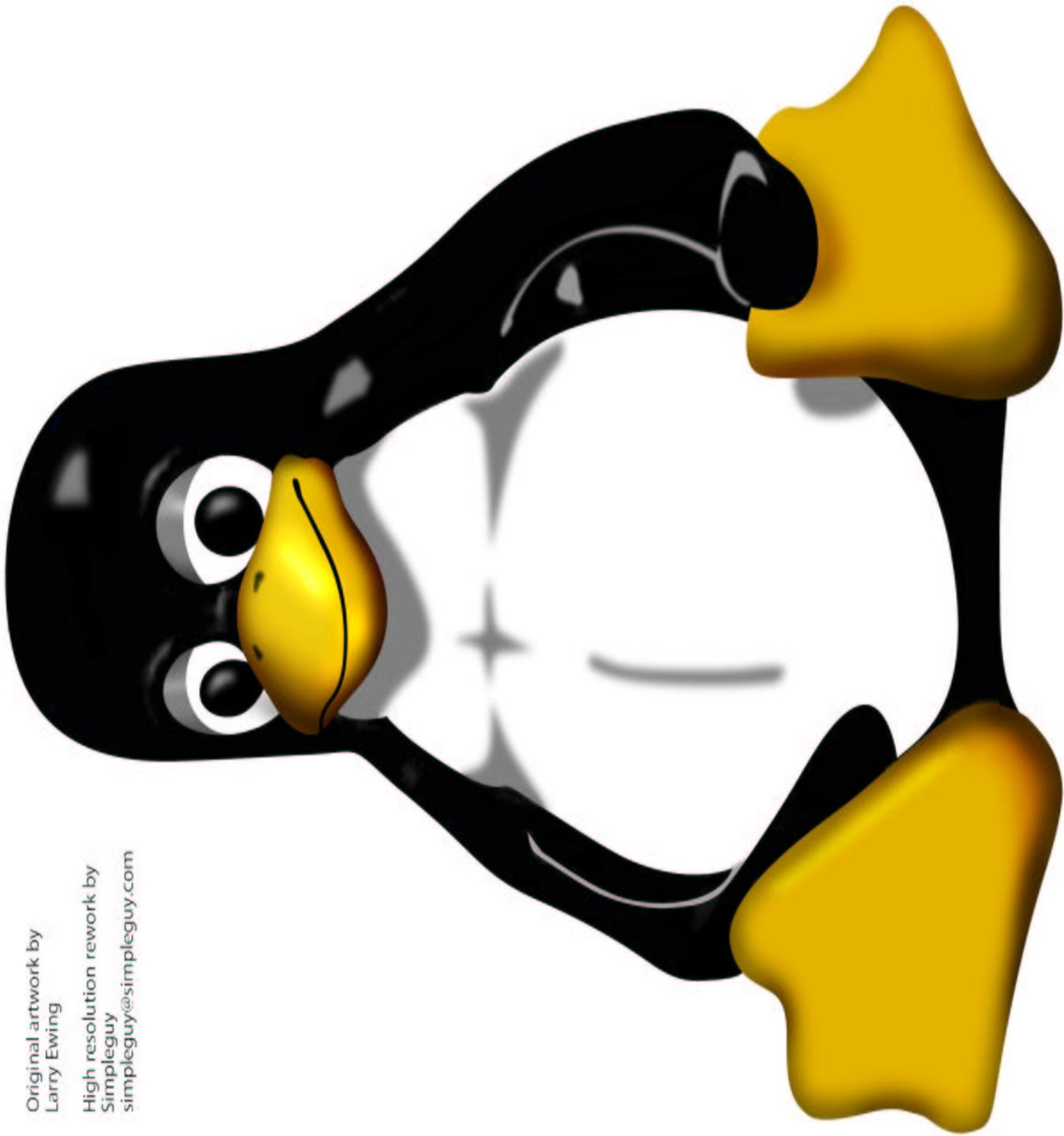
***DWA Solutions Ltd***

# *Data Acquisition*

**Intelligence**

**==**

**Flexibility**



Original artwork by  
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# *Data Acquisition*

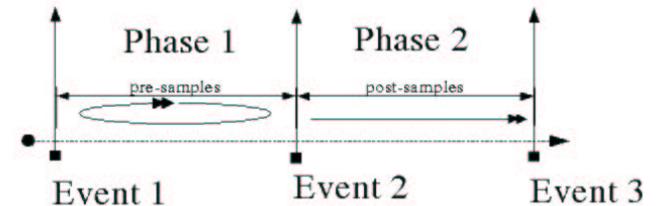
**Open System with  
Realtime and Control  
Capability**

# Embedded System

- Onboard uP
  - 230MIPS, low cost Strong Arm
  - Self test, set up, many options possible
- Big FPGA
  - Fast, wide, deep data path from ADC
  - Many triggering options
- Deep Memory
  - 128MB fitted as standard. 8 sec transient 250kSPS x 32 Channels.
  - High performance DMA upload over PCI.
- In System Upgradeable
  - uP and FPGA code in flash memory. Remote upgrades routine!

# Flexible Triggering

- Pre and Post
  - User specifies pre, post length to limit of onboard memory. Falling edge digital trigger
- Generalized Phase Event Model
  - Two phase, three event model.
  - Event can be any digital, any sense, soft or null
- Output Waveform Functions
  - 2 Channels analog to 1MSPS, 8 bits digital, concurrent with capture, independent clock and trigger.
- Analog Triggering
  - Level and threshold, any channel at subrate. Any pair of channels at 2MSPS on ACQ16.



# Open System

- Linux

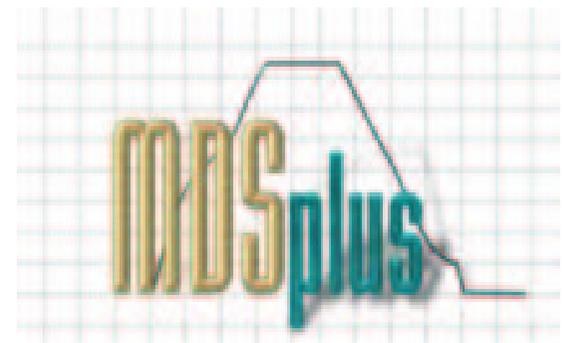
- Open Source Driver and Test Apps supplied free to customers.
- Highly Scriptable.
- Open and documented interface to driver.

- IP Networking

- Multithreaded control and data server
- Open Source, Easy to use, portable UI client app
- Web based status monitoring

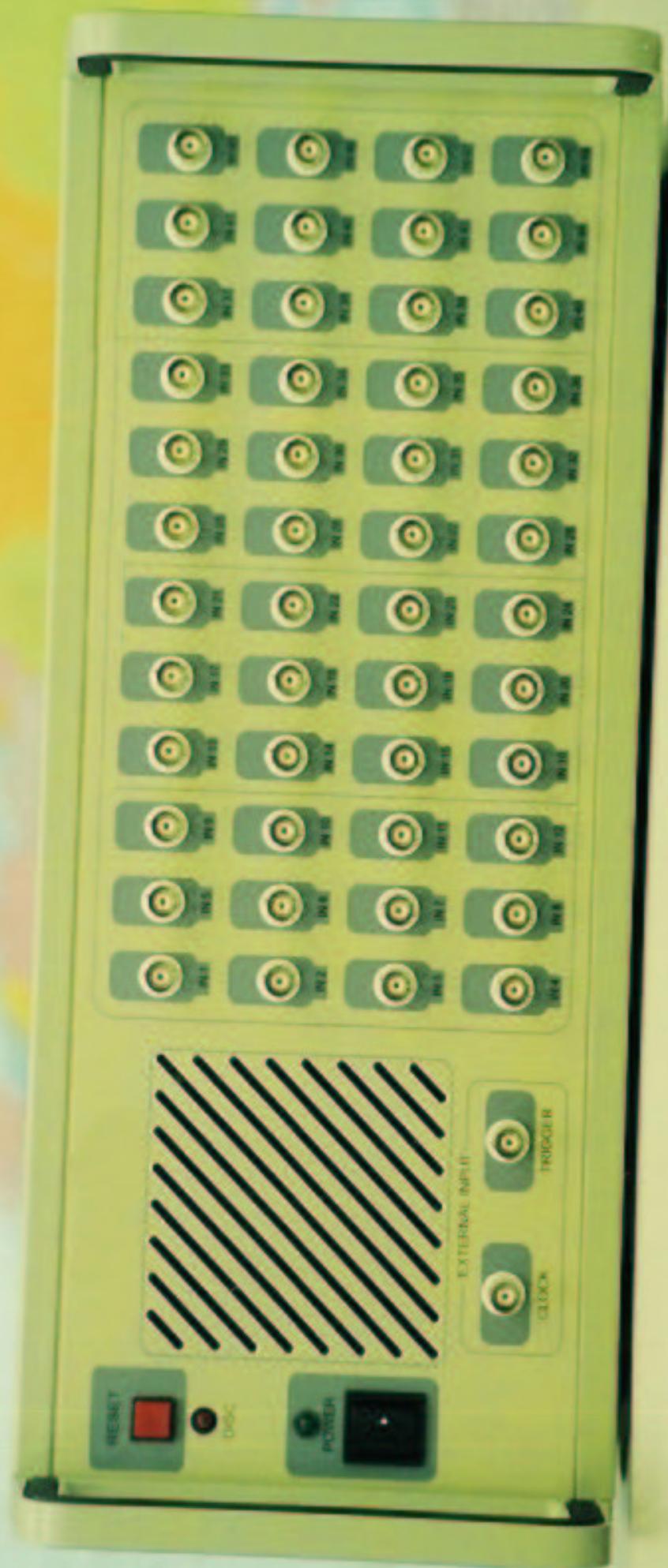
- MDSplus

- Fully supported and used with MDSplus, the system of choice for handling very large data sets.



# Realtime and Control

- Subrate Streaming
  - Stream a subset of the data over pci for monitoring or control during local data capture.
- High Throughput Streaming
  - Stream full rate data (16x1MSPS) over pci to host memory for deeper store or real time analysis.
- Low Latency Control
  - Stream data over pci for use in high channel count control apps (12usec from clock to delivery of 128 channels data to host memory).
- Very tight onboard control loops possible
  - Custom control apps using the onboard uP and FPGA coprocessor.





D:\Tacq dt100rc - dt100 Networked Data Acquisition System remote control

File Options Help

Connect Configure Control View Live View After

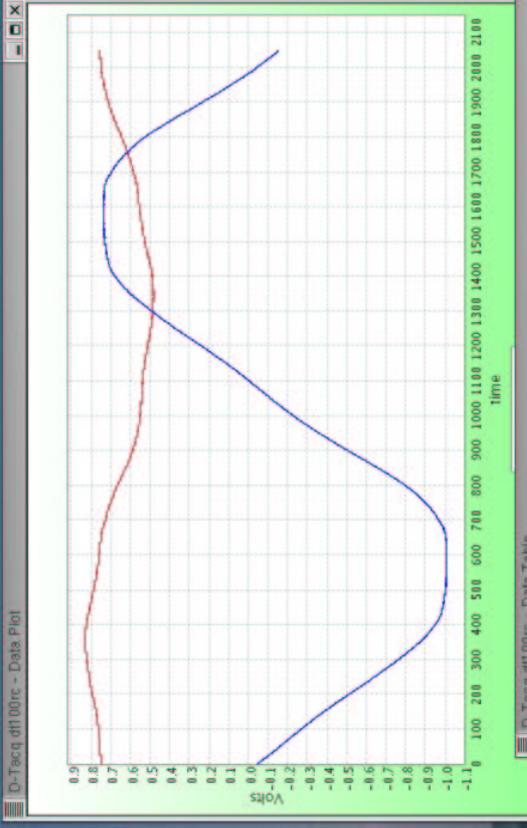
Host: diskless  
 Master: Board 2  
 Board 2

ch01 ch02 ch03 ch04 ch05 ch06 ch07 ch08 ch09 ch10 ch11 ch12 ch13 ch14 ch15 ch16  
 Board 1

Upload Complete

Store Data  
 Samples: 10  
 Save As... Save  
 Save in sequence  
 Sequence # 000

View Data  
 Samples: 2048  
 Volts  Bits  
 Overwrite plot  
 Plot Table



D:\Tacq dt100rc - Data Table

Sample	Ch033	Ch034	Ch035	Ch036	Ch037	Ch038	Ch039	Ch040	Ch041	Ch042	Ch043	Ch044
0	0.748	0.115	0.005	-0.048	0.116	0.110	0.120	-0.003	0.110	0.116	0.130	0.132
1	0.747	0.116	0.005	-0.050	0.114	0.110	0.120	-0.005	0.111	0.117	0.131	0.132
2	0.748	0.118	0.005	-0.051	0.116	0.110	0.120	-0.005	0.111	0.114	0.129	0.128
					0.114	0.108	0.123	-0.004	0.109	0.113	0.130	0.129
					0.115	0.112	0.117	-0.003	0.110	0.114	0.130	0.129
					0.116	0.110	0.121	-0.003	0.110	0.116	0.130	0.132
					0.115	0.109	0.119	-0.005	0.112	0.117	0.130	0.119
					0.115	0.110	0.121	-0.003	0.110	0.113	0.132	0.129
					0.114	0.106	0.118	-0.004	0.111	0.117	0.131	0.130
					0.115	0.112	0.121	-0.004	0.109	0.114	0.130	0.128
					0.116	0.109	0.120	-0.003	0.111	0.115	0.130	0.131
					0.115	0.108	0.119	-0.005	0.110	0.116	0.129	0.131
					0.114	0.112	0.118	-0.005	0.109	0.114	0.129	0.128
					0.114	0.107	0.121	-0.004	0.111	0.115	0.131	0.131
					0.116	0.111	0.119	-0.004	0.109	0.115	0.131	0.131
					0.115	0.110	0.121	-0.005	0.111	0.114	0.131	0.128
					0.115	0.112	0.120	-0.004	0.110	0.113	0.129	0.129
					0.114	0.109	0.121	-0.003	0.110	0.114	0.131	0.129
					0.116	0.107	0.118	-0.005	0.111	0.117	0.130	0.130
					0.115	0.109	0.122	-0.004	0.110	0.117	0.132	0.130
					0.115	0.109	0.117	-0.003	0.109	0.112	0.129	0.131
					0.114	0.112	0.121	-0.005	0.111	0.117	0.130	0.130
					0.114	0.109	0.119	-0.004	0.110	0.116	0.130	0.131
					0.116	0.108	0.119	-0.004	0.109	0.114	0.132	0.132
					0.115	0.109	0.119	-0.005	0.110	0.115	0.129	0.131
					0.115	0.112	0.121	-0.005	0.111	0.116	0.130	0.129
					0.115	0.113	0.121	-0.002	0.111	0.114	0.132	0.127
					0.114	0.107	0.120	-0.004	0.109	0.114	0.131	0.132

D:\Tacq dt100rc - dt100 Networked Data Acquisition System remote control

File Options Help

Connect Configure Control View Live View After

Synchronisation  
 Soft  
 Gate  
 Trigger

Post Samples 1k  
 Pre Samples 1k  
 Internal Clock: 2500kHz  
 Enable Streaming

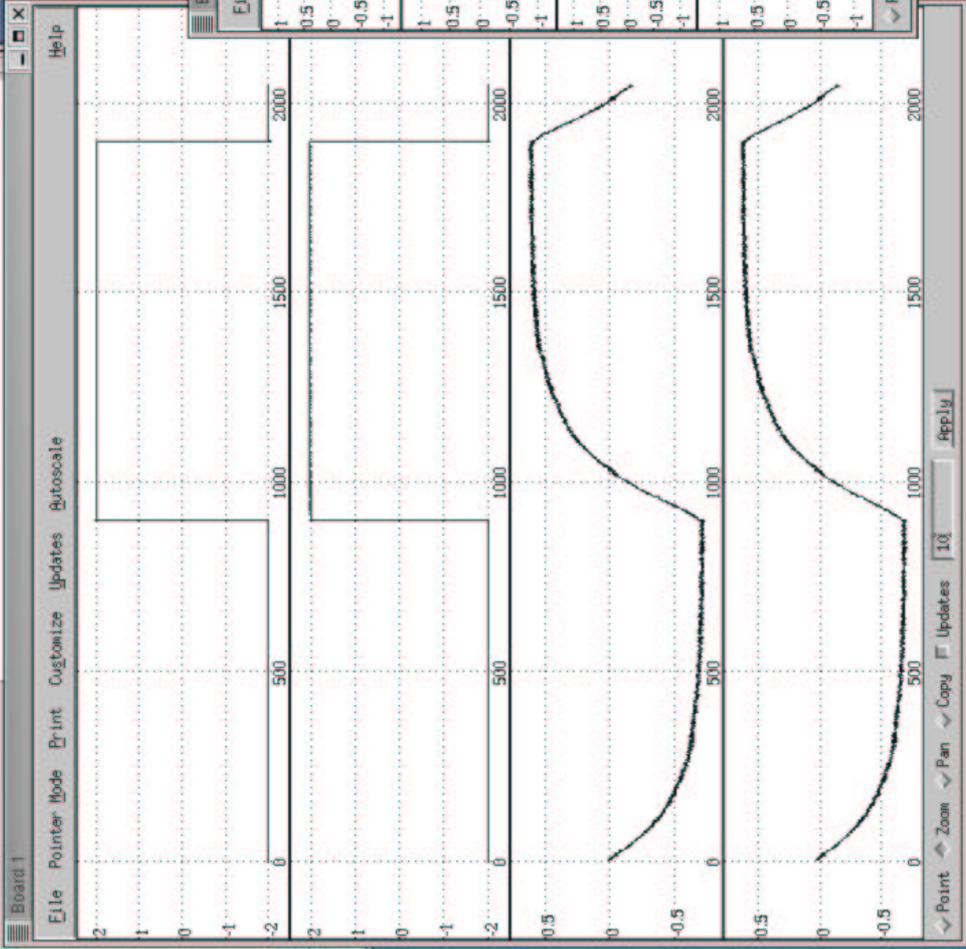
ST\_RUN

Pre: 1088 Total: 1088 Post: 0

Run Abort

File Options Help

Connect Configure Control View Live View After



Traverser

File Edit Data Help

<<<TOP...>>>

B1... B2...

- # ACTIVE\_CHAN
- # BOARD
- # CLOCK\_DIV
- CLOCK\_SRC
- COMMENT
- DAQ\_MEM
- DIO...
- D11...
- D12...
- D13...
- D14...
- D15...
- INIT\_ACTION
- INPUT\_01...

ct Boards 4 5 6 7 8

oreatum

erverser

COPE1

COPE2

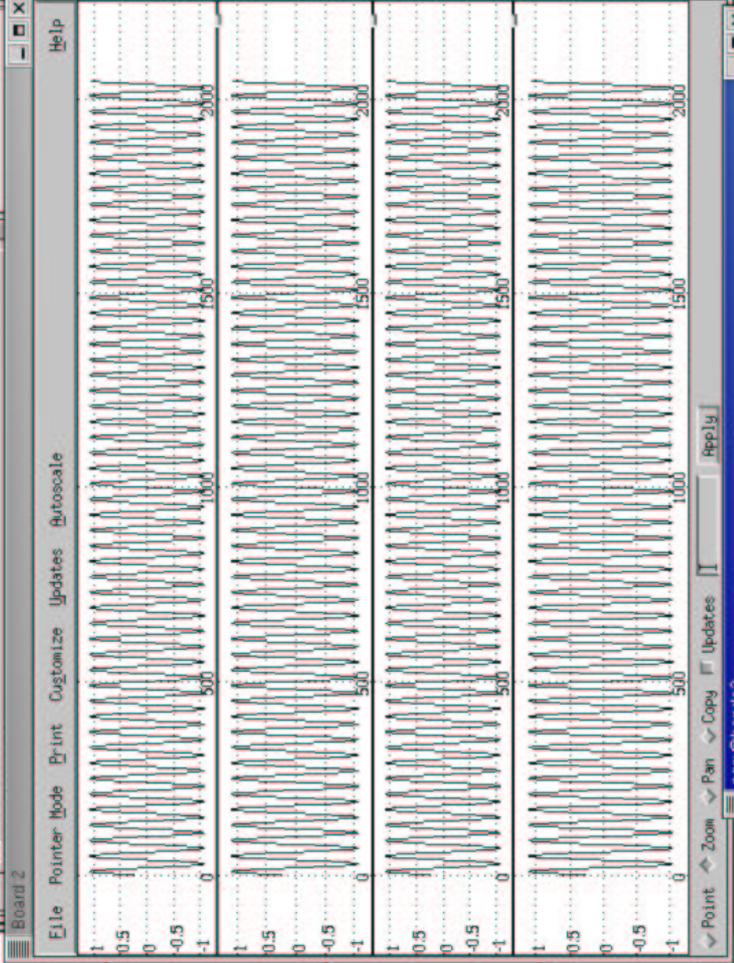
COPE3

g dt100rc

apture Complete

Repeat

Idle



pgm@hands3~

pgm@hands3 pgm]\$ pwd

/home/pgm

pgm@hands3 pgm]\$ xwd -root > mds-screen.xwd

Point Zoom Pan Copy Updates Apply

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***DWA Solutions Ltd***