PMD SCIENTIFIC, INC

LOW POWER ROBUST COMPACT ECONOMICAL 24-BIT DATA LOGGER FOR SEISMIC NETWORKS

DAS6501c

DAS6501c is a member of 6500 series of ***ultralow power, robust, high-performance, extremely versatile 24-bit seismic data recorders and digitizers***.

The 6500 family of products includes: a rugged, autonomous field system DAS6501, a strong motion data logger with built-in (SMLA6501) or external (SML6501-xx) force-balanced accelerometers (CLA100 or CLA200), a compact recorder for ocean bottom applications (6502), and a robust sensor digitizer SD6503 – stand-alone or built into one of the PMD seismometers. The strength of the 6500 family lies in the efficient combination of state-of-the art components:

- A very low-power, high-performance DSP (Texas Instrument's TMS320VC5419) that controls the data acquisition, real-time digitization and filtration, and stores the data temporarily in the micropower, large capacity (up to 16MB) CMOS static RAM.
- A powerful, fully featured single-board PC that controls the data transfer to disk and communication functions. It is active only when the SRAM is full, typically a few minutes every several hours.
- PMD's proprietary True Real Time™ system, controlled by the DSP that maintains extremely accurate time with only occasional calls to the GPS receiver.

In such a configuration, the more power hungry components (PC, disk, GPS) operate on an extremely low duty cycle, allowing the system to use ***less than ¾ Watt*** of power. The presence of a powerful PC (a single board PC/104 format), however, opens a wide range of options to the user. While the basic DAS6501 application uses DOS, the PC/104 can be configured with more advanced operating systems, such as WINDOWS. Also, the industry standard PC/104 allows the use of many peripherals in a modular, stackable format, *e.g.*: Ethernet cards, wireless LAN cards, satellite communication hardware, *etc*.

The '6501c' recorder is a economical version of the DAS6501 data logger. While it shares all major characteristics with the full system, it has neither an LCD display nor a keypad. This not only reduces the cost of the instrument but also allowed placing it in a more compact enclosure. Such recorders are well suited for an autonomous work in multi-point seismic networks. PMD offers its portable Display-Keyboard Unit (DKU6000) for use by service personnel. DKU6000 connects directly to DAS6501c taking power from the latter and providing full PC-type user interface. Therefore just one or two DKU6000 are necessary per many local many stations that allows for a significant cost reduction. The large size LCD display provides additional convenience for the service personnel.

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DIGITIZER

Converter Type:	24-bit Δ-Σ; 320 kHz Base Rate
Dynamic Range:	>130 dB @ 200 sps (rms to FS)
Data Channels:	3 (4)[1]; opt. up to 16; Differential *or* Single-Ended
Sampling Rates:	0.1, 1, 10, 20, 40, 80, 100, 200, 500, 1000, 2000, 4000 sps[2]
CMR @ 50, 60 Hz	120dB
Analog Anti-Aliasing Filter:	>100 dB @ primary sampling rate
Digital Filter (@ output Nyquist):	>140 dB @ 200 sps (FIR or opt. IIR)
Programmable Gains:	1,2,4,8,16,32,64
Differential Input Signal Range:	Programmable: ±2.5, ±10, ±20 V
Input Impedance	±2.5V – 1MΩ; ±10, ±20 V – 300kΩ
Overvoltage Prot.	±40 V
State-of-Health Channels:	4 multiplexed inputs; 24-bit resolution
Static RAM Buffer:	Up to 16MB

TIMING SYSTEM

Type:	PLL controlled, GPS-referenced
Max. Accy (Software Selectable):	<1msec
Crystal Frequency Correction Resolution	0.016 ppm
GPS Duty Cycle (User Selectable):	Once every 18 hrs to achieve <1msec accuracy

EVENT DETECTORS

Type:	STA/LTA, up to 6 independent detectors in frequency domain
Pre-filter	Up to 6 passbands
Pre-event data buffer	up to 90 seconds (@100 sps)
Trigger channels	May be controlled by one, several or all 6 detectors associated with any physical or virtual acquisition channel

POWER

Voltage:	6 – 16 Vdc
Overvoltage protection:	±60 V
Power consumption	~0.75W (4 channels, 100 sps)

USER INTERFACE

User Control:	Menu-driven; state-of-health messaging
Data display:	Up to 3 channels simultaneously on external monitor or **DKU6000**
Master Computer	Fully PC Compatible, single-board
Remote PC:	RS232 or Ethernet

MASS STORAGE

Miniature Hard Disk	Up to 30 GB, Hot-swappable EIDE Or CFC card up to 8GB
Disk Compatibility:	Any PC
Disk cartridge	80x140x22mm; 190g
Temperature Range:	-30 to +50°C (with industrial grade CFC or opt. built-in heater for HDD)
Data Formats:	Mini-SEED w/Steim-2 compression CSS 3.0: long integer; separate data description in ASCII

COMMUNICATION

Serial Port	RS232 PC/104 port or RS485 DSP port (up to 1km)
Dial-up Phone Access	RS232; optional internal modem; Optional radio modem
Ethernet	Optional LAN/wireless LAN card

ENVIRONMENTAL

Housing	Reinforced Plastic
Waterproofing	Fully Submersible to 1m depth
Operating T° Range	-30 to +50°C (with industrial grade CFC or opt. built-in heater for HDD)
Humidity	100%
Storage T° Range	-40 to +60°C
Size	250x225x175mm
Weight	~3.75 kg

CONNECTORS: REAR PANEL, WATERPROOF

Power	3-pin circular
Data Channels (3) and sensor power	14-pin Circular
Auxiliary Channels	10-pin Circular
To **DKU6000**	19-pin Circular
Ethernet	Special Circular Weatherproof
RS/232RS485 port	Optional 6-pin Circular
GPS	6-pin Circular

CONNECTORS: MAIN PANEL

To PC Keyboard	PS/2 Mini-DIN
To PC Monitor	DB15
To external PC	RS232 (DB9)

[1] Fourth channel may be used as state-of-health channel or function as fully featured data channel

[2] The sampling rate of 4000sps is sustainable for max 5 channels; 2000 sps – for up to 10 channels, and 1000sps – for up to 16.

Specifications subject to change without notice 01/06

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