



ULTRALOW POWER 24-BIT STRONG MOTION DATA LOGGER

SMLA6501

SML6501-xx



The PMD **SML6501-xx** (where $-xx$ is the number of input channels) is a *rugged, ultra low power, high-performance, versatile 24-bit resolution modular multi-channel strong motion recording system*.

The modular design allows channels to be added in groups of four up to 16 channels. A four-channel **SML6501-04** with built-in force balanced accelerometers **CLA100** or **CLA200** is designated **SMLA6501**.

The eight-channel unit can include internal **CLA100** or **CLA200** accelerometers and external rotational seismometer **RSB20** to record all six degrees of freedom. The multi-channel units (12 and 16 channels) are suitable for large structure monitoring. All models include

differential sensor inputs to allow long sensor runs in noisy building environments. Multiple sensor inputs can optionally be connected via Euro Block style connections thru environmentally sealed cable grips.

All models include GPS timing, and “smart” timing software. Data sampling is precisely synchronized with the internal time so all channels have the exact number of samples within all time periods. Re-indexing of data is never required.

All models include an internal PC-104 format single-board computer which allows for a wide range of options and peripherals such as hard disks, compact flash cards, and Ethernet and wireless LAN cards. The PC-104 uses a standard operating system (DOS or Windows), which enables the user to add analysis, custom triggering, or other software features. This ensures flexibility for future uses of data, further eliminating the risk of obsolescence.

SML6501 SPECIFICATIONS:

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 12; Differential <i>or</i> 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: $\pm 2.5, \pm 10, \pm 20$ V
Input Impedance	± 2.5 V – 1M Ω ; $\pm 10, \pm 20$ V – 300k Ω
Overvoltage Prot.	± 40 V
State-of-Health Channels:	24-bit resolution
Static RAM Buffer:	Up to 16MB

TIMING SYSTEM

Type:	PLL controlled, GPS-referenced
Max. Accuracy (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)

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

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USER INTERFACE

Display Type:	Backlit 7" VGA LCD display
Keypad:	12 (numerical + function) keys; optional PC keyboard
User Control:	Menu-driven; state-of-health messaging
Data display:	Up to 3 channels simultaneously
Master Computer	Fully PC Compatible, single-board
Remote PC:	RS232 or Ethernet

MASS STORAGE

Miniature Hard Disk	CFC up to 4GB; opt. HDD to 30GB
Disk Compatibility:	Any PC
Temperature Range:	+5 to +50C; optional -30 to +50C
Data Formats:	Mini-SEED w/Steim-2 compression CSS 3.0: long integer; separate data description in ASCII

COMMUNICATION

Continuous Data Retrieval:	via RS485 DSP port (up to 1km)
Dial-up Phone Access	RS232; optional internal modem
Ethernet	Optional LAN card

ENVIRONMENTAL

Housing	Steel. Opt. Stainless Steel
Waterproofing	NEMA6
Operating T° Range	+5 to +50C; optional -30 to +50C
Humidity	100%
Storage T° Range	-40 to +60°C
Size	10"x12"x6" (254x205x150mm)
Weight	~7 kg

CONNECTORS: SIDE PANEL, WATERPROOF

Power	3-pin circular
Data Channels (3) and sensor power ³	14-pin Circular
Auxiliary Channels	10-pin Circular
RS485 port, Ethernet LAN	RS485/10-pin Circular; Weatherized Circular/LAN
GPS	6-pin Circular

CONNECTORS: MAIN PANEL

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

³ Without internal accelerometers

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