



SMAD

Modular Data Acquisition System



SMAD overview

Technical characteristics.

- 24 bits digitizing, 130 dB dynamic range
- 4 mains channels, 5 auxiliary channels
- More than 300 days of recording
- Calibration (MLS, Pulse or Sine) (independent or simultaneous)
- GPS time stamp
- Station control (temperature, intrusion, battery level...)
- Controlled via RS232 / Ethernet
- CD1.1 Data format, Authentication (data and commands)
- Compatible with geophysical sensors e.g CEA/DASE sensors and STS2 (For STS2 sensor, an adaptation's Box is necessary)
- Certified IP-67
- Storage temperature : -30°C / +70°C

Applications:

- Teleseismic detection
- Broadband seismic studies
- Aftershock studies
- Infrasound studies

Description:

The SMAD digitizer is a data acquisition device specially dedicated to analog or digital geophysical sensor recording. It allows the acquisition up to 4 channels with an electronic noise below $1 \mu\text{V}/\sqrt{\text{Hz}}$ and a dynamic range up to 130 dB @ 50 Hz. The PPS board, thanks to a temperature correction table, allows very small drifts of time tagging even if the GPS is not available. A calibration board is embedded for on site or remote sensor calibration such as sine, impulse or MLS (up to order 15) signals. Auxiliaries' input allows 16 bit low frequency signals recording like meteorological sensors or vault temperature. Communication with the equipment is addressed through an Ethernet link or RS232 and CD1.1 data format is available.

SMAD is a product developed under CEA (Commissariat à l'Énergie Atomique) Contract.



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Specification:

Sensor inputs	
Dynamics range	> 130 dB @ 50 Hz
Resolution	24 bits / 5, 10, 20 or 40 Vpp
Effective Resolution	22 bits
Sampling rate	8, 20, 50, 100, 200 Hz
Input impedance	> 5 MΩ / 10 nF
Channel	1 to 4 1 MΩ / 10 nF input impedance
Calibration	Sine, pulse, MLS / 16 bit resolution
Auxiliary input	
Channel	Up to 4
Resolution	12 bits,
Sampling rate	up to 10 Hz
Calibration system	
Channel	Up to 4
Dynamic	0 to 48V
Resolution	16 bits
Sampling rate	1Hz to 5Hz
Calibration signal	Sinus, Pulse, PRB ou SWS (= MLS)
General specifications	
User Interface	2 serial interface and 1 Ethernet Laptop PC/real time visualization.
Data format	CD1.1
Authentication	DSA 1024 / FIPS 14062 compliant Internal with USB port.
Catch up	up to 14 days (including aux channels)
Waterproofing	IP67 compliant
Temperature	-20°C to +60°C IP 68 compliant
Power consumption	9-18 V DC 1W in serial mode/5W full option
Dimensions and Weight	H =15 mm, W= 330 mm, D = 450 mm, 12 kg
Timing synchronization accuracy	< 0.5 ms (drift without GPS: 0.02 ppm)
Station control	Meteorology sensors, intrusion sensors, battery Level...
Options	
ID	Identification Dongle.
INT	Intrusion detection's cable.
AUX	Auxiliary cable (Temperature, Hygrometry, Wind direction).
Monitoring	RS232 câble.
STS2 Adaptation's Box	