KINEMETRICS

Advancement through Innovation

Pebble

Kinemetrics Quality Delivered in a Small and Cost-Effective Datalogger

Pebble is Kinemetrics' latest datalogger delivering the quality and ruggedness you expect from Kinemetrics products in a small, lightweight, and cost effective package. Based upon the time-proven Rock and Rock+ platforms, Pebble leverages advances from such trusted names as Basalt, Granite, Obsidian, and Etna2 wrapped in the most modern technologies.

Pebble maintains the operational flexibility of its predecessors, enabling its use in a wide range of applications: stand-alone recording or continuous telemetry, passive or active sensors, multiple data storage options, Ethernet, WiFi and USB interfaces, are all presented in one simple package.

The user-friendly Rockhound application software, accessible via any web browser using the Ethernet or the WiFi interface, provides complete control of Pebble. Additional software modules are also available a la carte to further extend the impressive capabilities of the Pebble datalogger.

FEATURES

- Small, lightweight, and rugged
- Three 24-bit channels
- Sensor Mass Position channels and Control Lines
- Built-in GPS/GNSS and PTP timing options
- WiFi interface for easy management in the field
- PoE support
- Built-in GPS antenna (optional external)
- Record and communicate multiple sample rates from 1 sps to 2,000 sps
- Power saving mode for stand-alone operation
- Parallel recording (mirroring) of data on external USB for redundancy
- Earthquake Early Warning low latency 0.1s packets ready
- Multiple telemetry protocols: Antelope ORB or public domain Earthworm and SeedLink
- Friendly Rockhound application software
- Streamlined Station Maintenance (SSM)
- State-of-health monitoring, including input and system voltages, internal temperature, communication link diagnostics, available storage
- IP Security through SSH and SSL
- Reverse voltage protection and self-resettable fuses
- System Status LEDs
- Surviving temporary immersion at 1 m depth (rated IP67)
- RoHS compliant and easy recycling
- Cost effective

Continued

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PEBBLE

SPECIFICATIONS

Data Acquisition

Channels:	Three 24-bit channels, bandwidth-optimized 32-bit data path
Dynamic range:	126 dB at 100 sps (defined as RMS clip to RMS shorted-input noise in the 0.1 to 40Hz bandwidth or 135 dB at 100 sps (defined as full scale peak to peak to RMS shorted-input noise in the 0.1 to 40Hz bandwidth)
Primary sample rates	1, 10, 20, 50, 100, 200, 250, 500,1000, 2000 sps
Secondary sample rates	A second lower sample rate can be selected from the primary sample rates above
Input Range	40 V peak-to-peak at Gain 1, differential
Gain	1, 2, 4, 8, 16, 32, 64, 128
Filtering Gain	Linear (acausal) or Minimum phase (causal) FIR
Sensor Control Lines	Calibration Enable, 3 General Purpose Control Lines
Auxiliary channels	3 Channels, +/-10V, single ended, 12 Bit, 1sps (for mass position or 'slow rate' sensors)
Acquisition Modes	Continuous, triggered and time window
Calibration and Test	Pulse, Pseudo-random signal, Sinewave

Trigger

Trigger selection	Independently selected for each channel
Trigger type	IIR bandpass filter (three types available)
Trigger threshold	Selectable from 0.01% to 100% of full scale
Trigger voting	Internal, external and network trigger votes with arithmetic combination
Additional trigger	STA/LTA, Time Window

Timing

Type	Oscillator digitally locked to GPS/GNSS or to PTP master
Accuracy	<1 microsecond of UTC with GPS/GNSS locked

Storage

Data storage	Removable High Reliability MLC microSDHC Card, 16 GB and/or USB thumb drive up to 128GB. File system: EXT4
System storage	Internal High Reliability SLC SDHC Card, 4GB
External storage	Optional: Data files offloaded automatically to removable thumb drive connected to the USB host port. Parallel recording (mirroring) of data files on an external USB 3.1 thumb drive. USB drive file system: VFAT
Data file format	MiniSEED, EVT, and ASCII. Other formats available

Interfaces

Type	1 x Ethernet 10/100BaseT 1 x WiFi (Access Point) 1 x USB 2.0 Host Port Removable microSDHC Card Removable USB flash drive
LEDs	WiFi On, Status, Media, Power, Ethernet Link an Data

Communications

Ethernet interface:	Real Time Telemetry (Multiple destinations TCP/IP Protocol), web server for parameter setup, event retrieval via FTP/SFTP; supports Point of Contact (POC) name service Cellular Modem Option
Protocols:	Real-time data streaming using ORB protocol to connect to Antelope and Rockhound platforms or using public domain SEEDLink and Earthworm protocols to connect to the respective servers
State-Of-Health:	Input voltage, time synchronization, internal temperature, available storage
Low latency	1s and 0.1s data packets i.e, for EEWS applications
Data visualization:	Waveform Viewer for continuous waveform display and File Viewer for triggered event display; consult factory for other support software

Power Requirements

Consumption:	<0.9W Power cycled, ~1.8W Continuous on
Input voltage:	11-28 VDC or PoE (Power over Ethernet)
Protections:	Reverse voltage, over/under voltage, self resettable fuses

Physical

Dimensions:	65 x 155 x 85 mm / 2.6 x 6.0 x 3.4 in
Weight:	0.7 kg/1.5lbs

Environmental

Temperature range:	-20° to 70°C operational
Humidity:	0-100% RH (non-condensing)
Enclosure rating:	IP67

*Specifications subject to change without notice

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