CR-6 Multichannel Central Recording System

Features

- 137 dB dynamic range
- Up to 108 channels
- Individual 24-bit Δ-Σ ADC per channel
- Up to 500 sps adjustable sampling rate
- Wired ethernet and serial links
- TCXO time base with GPS synchronisation
- Enhanced connectivity via landline modems, 3G cellular devices and satellite links
- Simple and secure communication over internet or intranet with full remote management
- Continuous and trigger based recording
- Recording on large capacity harddisks
- USB interface for external storage and communication devices
- Simultaneous data streaming to several clients
- On board data processing and evaluation
- Drop-in replacement for CR-4 Digitiser
- Connection of sensor cables on terminals
- 3 fully independent alarms
- Extremely compact and modular

Applications

- Structural Health and Response Monitoring
- Earthquake Monitoring
- Ambient Vibration Testing
- Induced Vibration Monitoring and Notification
- Building Code Compliant Instrumentation
- Seismic Alarm and Safe Shutdown

CR-6 is a modern multichannel central monitoring and recording system providing engineers with a valuable tool to fully understand and analyse the dynamics of structures in the operating environment.

Its design is based on years of experience in monitoring civil engineering structures such as dams, nuclear power plants, pipelines, tunnels, bridges, tall buildings and unique structures all over the world.

With a CR-6 system, data from acceleration, velocity, displacement, strain, temperature, wind speed, wind direction, stress and pressure sensors can be monitored and recorded with superior data quality.

Connection of the sensor cables is extremely easy and fast with the versatile cable screw terminal design.

All inputs and outputs of the CR-6 are protected with a field proven over voltage protection (OVP) system.

CR-6 can compare the measured data to three fully independent alarm trigger criteria.
Specifications

Configuration
CR-6 is a highly modular and scalable system designed to provide the user with optimal flexibility, performance and reliability. It consists of various 19” Rack Modules and Slot-in Modules (SiMs). Each SiM is inserted into the respective vertical slot within the relevant Rack Module. Each CR-6 system is expandable up to 108 channels and by combining several CR-6 systems, hundreds of channels can be monitored. System parameters of the CR-6 are stored in the non-volatile system memory to allow automatic recovery.

Digitiser Rack
Configuration: Up to 3 Digitiser Racks, one CR-6-BASE and two CR-6-EXT, can be used per one CR-6, to include various SIM modules:
- CR-6-COM communication SiM,
- CR-6-OVPB or CR-6-OVPE OVP SiM,
- CR-6-WDB or CR-6-WDE watchdog SiM,
- CR-6-DM or CR-6-DS digitiser SiM
- CR-6-OVPS sensor interface SiM
Channels: up to 36 channels per Rack
Power supply: 12 VDC, optionally 24 VDC
Consumption: 0.7 W
Dimensions: 19” rackmounted module, 3 HU per Rack

Digitiser SIM
Configuration: CR-6-DM (master) or CR-6-DS (slave)
Channels: 3 channels per SIM
A/D Converter: 24 Bit A-Σ per channel
Dynamic range: 146 dB (per bin @ 1 Hz rel. full scale rms)
137 dB @ 50 sps
Sampling Rate: Up to 500 SPS
Bandwidth: 40% of Sampling Rate
Consumption: 0.25 W per channel

Sensor Interface SiM
Configuration: CR-6-OVPS
Channels: 3 channels per SIM
Input voltage: 10 VDC differential
2.5 VDC ± 2.5 VDC single ended
0 - 20 mA current loop
Power supply: none required

Recorder Rack
CPU module: Multi-core processor
2 GB RAM, 80 GB HDD
USB, Ethernet and CR-6 communication ports Specifications as above or better
Operating system: Microsoft Windows XP or newer (English)
Software: GeoDAS
Dimensions: 19” rackmounted module, 1 to 3 HU
Power supply: 12 VDC, optionally 24 VDC
Power consumption: Depending on CPU module, from 25 W.

Sensors
The CR-6 offers the most flexible sensor connectivity options to cater for the needs of structural engineers or any other measuring requirements. Any type of sensor can be connected to the system through the CR-6 screw terminals.

Timing
Standard clock accuracy: 1.3 ppm free running, based on a TCXO
External time interfaces: GPS System accuracy < 1 µsec

Communication Channel
Standard: Ethernet TCP/IP
Optional: Internal landline modem
External GSM modem
External Satellite modem
External GPRS modem
External UMTS/3G modem

User Interface
All features of the CR-6 system can be accessed utilising a network based link using a Remote Desktop Connection. Optionally direct access is also possible using a computer display, a keyboard and a mouse.

Network based link allows the user optionally to interact with the unit over the Internet, from anywhere around the world.

Data Recording
Type: Continuous and/or event based

Triggering
Type: Level or STA/LTA trigger
Pre-event-Time: freely adjustable per channel*
Post-event-Time: freely adjustable per channel*
Maximum event duration: freely adjustable per channel*
Filtering: User configurable lowpass, highpass or bandpass

Data Analysis
GeoDAS software provides various analysis functions like filtering, FFT, response spectra, etc. Most commercially available evaluation software packages may alternatively be used.

Self Test
Sensor test: Periodical square pulse to sensor

Power Supply
DC Power: 12 VDC, optionally 24 VDC
AC Power: AC/DC Power supply,
Solar Panels: 230 VAC / 50 Hz or 115 VAC / 60 Hz
Available on request.
External battery: Rechargeable, 12 VDC, 24 to 100 Ah

Power management: Battery protection in case of low battery condition with automatic restart after AC power is restored.

Environment / Housing
Operational temperature: -20 °C to +70 °C
Storage temperature: -40 °C to +85 °C
Humidity: 0 % to 100 % (non condensing)
Type: Painted steel housing
Protection: Optional various 19” rack solutions

*: Any value is freely useable, as long as it does not lead to data loss because of incorrectly configured or conflicting parameters.

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