

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



Front View



Rear View

Outline

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.

Its modular architecture and industry standard interfaces offer high versatility, easy expansion, upgradeability, and long term availability of spare parts.

GeoDAS, a proven data logger and data analysis package developed by GeoSIG, is supplied with CR-6 providing a richly configured set of user-friendly capabilities, graphical and analytical tools.

The CR-6 continuously monitors the real-time data, which can be recorded based on event detection and continuously. The continuous ring buffer size, the pre-event and post-event time, trigger thresholds and many other parameters are fully user configurable.

In addition to the real-time display of the measured data from each channel the system can provide statistical data such as mean, max, min, and peak values.

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
up to 108 channels per one fully equipped CR-6

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)
Mounted at the front of the Digitiser Rack
up to 12 SiMs per one Rack

Channels: 3 channels per SiM
A/D Converter: 24 Bit $\Delta-\Sigma$ 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
Mounted at the back of the Digitiser Rack
up to 12 SiMs per one Rack

Channels: 3 channels per SiM
Input voltage: 10 VDC differential
2.5 VDC \pm 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 μ sec.

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,
230 VAC / 50 Hz or 115 VAC / 60 Hz
Solar Panels: 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
Optional various 19" rack solutions
Protection: IP54

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