

GR-5-O PC Based Central Recording Monitoring System



- PC based central recording system
- Up to 128 dynamic & > 500 static channels
- 16 Bit resolution (24 Bit Optional)
- Sampling rate 10 - 1000 SPS
- Power autonomy >24 hours
- Real-time display of dynamic channels

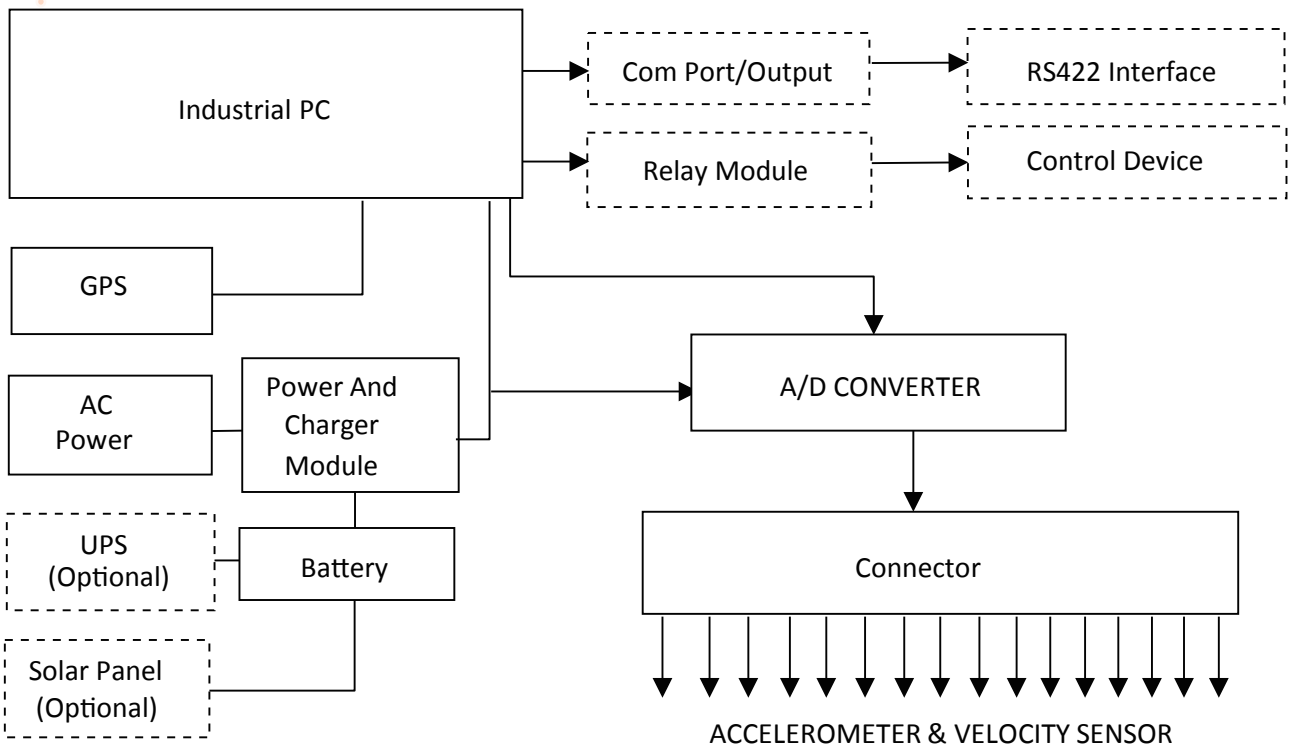
Product Outline

The GR-5-O was developed out of years of experience in monitoring civil engineered structures such as dams, power plants, pipelines, tunnels, bridges, tall buildings and unique structures. This modern multichannel central recording monitoring system provides engineers with a valuable tool to fully understand and analyze the dynamics of structures in the operating environment.

Dynamic channel sample rates of 50, 100, 200, 500 and 1000 SPS is provided. The system bases on synchronize multi-channel A/D converters. After hardware anti-aliasing filtering the signals is digitized using the over-sampling and decimation technique resulting in superior data quality.

The heart of the GR-5-O software is GeoDAS & GeoAuto, a proven data logger and data analysis package. GeoDAS & GeoAuto is frequently used in large seismic networks. GeoDAS & GeoAuto integrated into the GR-5 central recording monitoring system provides a richly configured set of user-friendly capabilities, displays and analytical tools running under Windows operating system.

In addition to the near real-time display of the dynamic channels the system provides static data like mean, max, min, and peak values. The GR-5-O monitors the real-time data generated by each of the sensors attached to the system and compares the measured data to five fully independent alarm trigger criteria. The ring buffer size, the post event time, trigger thresholds and relay alarm on/off times may be selected by the customer.



Specifications

Set-up and Configuration

All the necessary parameter and configuration settings are selectable using the GR-5 software interface. The configuration of the GR-5-O stored in non-volatile system memory to allow automatic restart in case of a system failure, watchdog 5 minutes timeout or manual hard reset.

Data Analysis

The GeoDAS & Geotech program provides extended time history data evaluation. Once an event file has been opened the analysis menu is available for analysis functions like FFT, response and terzband spectral, etc. for determination of mode and natural frequencies of structures. Any customary in trade evaluation software package can of course be used as well using the available ASCII files.

Digitizer

A/D Converter:	16 Bit (synchronised) 24 Bit (Optional)
A/D Sampling rate:	250 kSPS / 16 channels (over sampling)
Noise:	<1 LSB (Peak) <0.4 LSB (RMS)
Effective Bits:	16 (24 Optional)

Non-linearity:	±0.004%F.S
Sampling Rate:	10, 20, 50, 100, 200, 500, 1000 sps standard
Selectable Gain each Channel:	1, 2, 4 ,8, 16, 32, 64 ,128x
Range of measuring frequency:	DC to 33Hz
Recording:	Auto(trigger, schedule), Manual
Data Format:	XML, TEXT
PC Based Recording	
Computer (min. performance):	Pentium IV 1.7 GHz 512 MByte RAM, 200 GByte HD 650 MByte writable CD, USB, Com and LPT PS/2 Mouse*, PS/2 Keyboard* VGA display* *not required for normal operation
Data Logger Software:	GeoDAS and GeoAuto
Remote Acquisition System	
Remote enclosure with A/D converter	
Baud rate:	9600 bps (static), 19'200 bps dynamic 100 sps, 38'400 bps dynamic 200 sps
Data Recording	
Pre-event-Time:	1 to 100 seconds
Post-event-Time:	1 to 100 seconds
Data Storage	
At least 1,000,000 events can be stored for 200GB HD.	
Triggering	
Level Triggering:	
Lower band limit:	0.2 Hz (20 dB / decade)
Upper band limit:	100 Hz @200sps (20 dB / decade)
Judgment level:	0.01% to 9.99% of FS

STA/LTA Triggering:

STA-Base:	0.1 to 5 seconds
LTA-Base:	5 to 100 seconds
STA/LTA-Ratio:	1 to 60 dB

Others:

Able to prefer logic trigger by application software. (Example or-any channel triggering / 2and- any 2 channel triggering / and- all channel triggering)

Power Supply

AC Power:	230VAC/50Hz or 115VAC/60Hz std.
Solar Panels:	Optional
UPS:	At least 2 hour (Optional)
Internal battery:	1 Rechargeable, 12 VDC, 115 Ah Lead battery std. 2nd optional
Autonomy:	1 day
DC voltage:	12 VDC
Power consumption:	40 W with full rack without sensors

Time Base

Standard clock accuracy:	20ppm (10 min/year @ -10 to +50)
External time interfaces:	GPS

Communication

Serial ports:	2(1 for communication, 1 for GPS)
Baud rates:	1200, 2400, 4800, 9600, 38400, 57600, 115200
Protocol securities:	Checksum and software handshaking
Communication:	PC/RS-232 port or modem
Modem operations:	Auto Dial
External interfaces:	Ethernet (100BASE-Tx)

Network functions	
<p>FTP server (download recorded files) e-mail function (earthquake information, recording data) NTP client (for time adjustment) telnet server (for settings) alarm function(automatic delivery of earthquake information data) RTD(real-time data sending)</p>	
Environment / Housing	
Operational temperature:	- 20 °C to + 60 °C
Storage temperature:	- 40 °C to + 90 °C
Humidity:	0 % to 100 % (non-condensing)
Type:	Aluminum cabinet
Protection:	IP66, EMI & Earthquake resistant
Self-Test	
Sensor test:	Square pulse
DSP:	LED indicators of communication with PC
System Status:	<p>Checked every 6 hrs & reported to central</p> <p>AC power, battery voltage & # of events</p>
System Protector:	With Watchdog Timer
Sensor	
<p>The GR-5-O offers the most flexible adaptation of sensors to meet the needs of structural measuring. More than 120 dynamic and 500 static channels may be logically configured. Suitable for Accelerometers and Velocity Sensors. The sensors offered but not limited to are:</p>	
Standard GTV-3	
Full Scale Range	±10 kine
Dynamic Range	>96 dB or better
Linearity	<0.3% of full scale
Cross Axis Sensitivity	<0.1% of full scale
Frequency Response	1 to 315 Hz

Index of Protection	IP 66
Temperature Range	-25 to 85°C(operating) -40 to 100°C(storage)
Standard GTA	
Type:	Force Balance Accelerometer
Full Scale Range	± 2 g
Dynamic Range	>120 dB effective at ± 3 g full scale
Nonlinearity:	< 0.1 %
Hysteresis:	< 0.01 %
Cross Axis Sensitivity:	< 0.2 %
Bandwidth:	DC to 100 Hz
Damping	0.7 critical