

CHC MINING DEFORMATION MONITORING SOLUTION





Safety is first in mining. CHC offers solutions designed to improve safety for personnel on the ground and in the cab with 24/7 precision positioning for automatic stability monitoring to detect dangerous slope conditions. Increasing efficiency and controlling operating costs are major factors in mining property. Accurate and reliable geospatial information to improve efficiency, reduce rework, increase safety and implement autonomous technologies helps mine managers reduce operating costs to meet profitability goals.



INCREASING SAFETY AND PRODUCTIVITY OF MONITORING SOLUTIONS REDUCES RISK AND COST

INCREASE SAFETY

Early detection of deterioration of structure can prevent damage to infrastructure, injury to people or loss of life. Monitoring deformation will allow the increase of safety margins without giving any negative effects to structures on the job site.

REDUCE COSTS

Monitoring deformation cuts down the costs associated with visual inspections, repairs or replacement based on subjective assessments of mining site. Also, the monitoring will reduce short-term and long-term maintenance costs. A comprehensive monitoring can decrease costly insurance premiums resulted by damages caused by unexpected structural or terrain failures.

RISK MANAGEMENT

The continual monitoring of progress of construction work allows owner of mine or contractors to take proactive measures before any unpredictable disasters can occur.

INCREASE PRODUCTIVITY

The ability to acquire real-time monitoring data through 24 hours and 7 days from a remote location exponentially improve efficiencies and reduces downtime necessary for inspection and repair. In open-pit mining, precise data analysis optimizes productivity as deeper excavation goes without compromising safety.

SYSTEM OVERVIEW

CHC RAPID ADMS (Remote Automatic Precise Intelligent Detector Automatic Deformation Monitoring System) is a comprehensive system for monitoring the structural health of mining site. It is equipped with the ability to be customized to meet the exclusive needs of individual projects. It provides automated real-time and continuous monitoring around 24 hours and 7 days.

ON-SITE

N71

- GNSS Positional Monitoring Sensor



Designed for seamless integration, the CHC N71 is a powerful multi-application GNSS sensor which delivers state-of-the-art positioning features in a rugged enclosure. The CHC N71 GNSS sensor provides a cost-effective answer to demanding applications such as deformation monitoring, geodetic reference station, marine survey, dredging or any machine guidance when high performances and reliability are required.

The CHC C220GR antenna is ideal for control work. The C220GR incorporates a large Trimble Stealth™ Ground Plane, which literally burns up multipath energy using technology similar to that used by Stealth aircraft to hide from radar. The C220GR antenna's quality performance and extreme accuracy are achieved through sub-millimeter phase center repeatability, robust low-elevation tracking and significantly reduced ground-based multipath. The C220GR is extremely rugged. It is protected by weather-resistant materials and a low profile design, so when the antenna is used for a permanent installation, you can count on many years of continuous operation.

C220GR

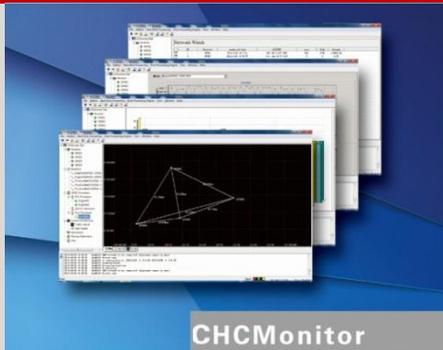
- GNSS Choke Ring Antenna



CHC MONITORING SOLUTION

Data collected, processed and interpreted, can be remotely accessed via web-based system. An alert system will be triggered as soon as an anomaly is detected. Early detection of deformations can minimize the impact of disastrous events by addressing the potential problems immediately.

OFFICE PC / SERVER



CHCMONITOR

- Office-based components installed in office environment
- Check and filter incoming data
- Process raw data and compute any positional displacement

CHCMAS

- Tabulate measurement data into graphical view.
- Trigger alarm if any data point values exceed pre-defined trigger levels.
- Send notification to nominated recipients via e-mail/SMS.
- Generates kinds of report for data.
- Reports generates list of the displacement.



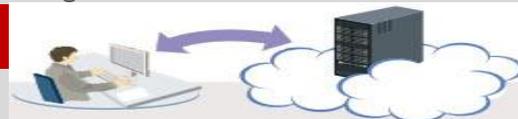
CHCSIM

- Reports generates list of the displacement.
- Preserve the coordinate of each monitoring point and data from other geotechnical sensors.

WEB

CHCMAS

CHCMas allows the subscriber to download processed data, print reports and view data graphically. With a CHCMas internet service subscription, the user does not require CHCMonitor and CHCSim modules. CHCMas services include monitoring data analysis, customized report generation and technical support for RAPID ADMS Software via e-mail. All alerts will be sent to any nominated recipients if any displacement values exceed pre-defined trigger levels.



KEY FEATURES OF CHC DEFORMATION MONITORING SOLUTIONS

Effectively performs displacement and deformation monitoring using the most advanced automated measurement technology available.

■ TRULY REAL TIME

Sampling interval 1S on every monitoring point provide automated real-time and continuous monitoring around 24 hours and 7 days.

■ NO WEATHER RESTRAINT

The system can operate well in extremely weather condition, like in heavy rain, snowy, thick foggy and dusty day.



■ HIGH ACCURACY

- Real Time Kinematic Monitoring
 - Horizontal: 8mm
 - Vertical: 15mm
- Post-Process Static Monitoring
 - Horizontal: 3mm
 - Vertical: 5mm

■ SUPPORT MULTI-CONSTELLATION SYSTEM

- GPS: Simultaneous L1C/A, L2E, L2C, L5
- GLONASS: Simultaneous L1C/A, L1P, L2C/A (GLONASS M Only), L2P
- SBAS: Simultaneous L1C/A, L5
- Galileo: Simultaneous L1BOC, E5A, E5B, E5AltBOC1
- BeiDou: B1, B2
- QZSS: L1 C/A, L1 SAIF, L2C, L5



N71 GNSS POSITIONAL MONITORING SENSOR

■ TECHNICAL SPECIFICATIONS

GNSS Characteristics	
220 channels with simultaneously tracked satellite signals	GPS: Simultaneous L1 C/A, L2E, L2C, L5
	GLONASS: Simultaneous L1 C/A, L1 P, L2 C/A (GLONASS M Only), L2P
	SBAS: Simultaneous L1 C/A, L5
	Galileo: Simultaneous L1 BOC, E5A, E5B, E5AltBOC1
	BeiDou: B1, B2
QZSS: L1 C/A, L1 SAIF, L2C, L5	
Advanced multipath mitigation technology	
Low noise carrier phase measurement with <1mm precision	
Performance Specifications	
Real Time Kinematics (RTK)	Horizontal: 8 mm + 1 ppm RMS
	Vertical: 15 mm + 1 ppm RMS
	Initialization time: typically < 10 s
	Initialization reliability: typically > 99.9%
Post Processing Static	Horizontal: 2.5mm + 1ppm RMS
	Vertical: 5mm + 1ppm RMS
	Baseline Length: ≤ 300 km
Communications	
1x LAN port	
1x Lemo 10 pin 1 shell, 3 wire serial with power input, 1 USB 4 wire	
Integrated GPRS modem	
Optional radio modem	
Physical	
Size (LxWxH)	195 x 145 x 51 mm (7.7 x 5.7 x 2.0 in)
Weight	1 kg (35 oz)
Operating temperature	-40 °C to +65 °C (-40°F to 149°F)
Storage temperature	-55 °C to +75°C (-67°F to 167°F)
Humidity	100% condensation
Waterproof and dust proof	IP67 and MIL-STD 810F
Shock	survives a 2-meter drop on to concrete
Electrical	
Power consumption	< 4 W nominal, dependent on user settings
External power input	9-13.5 VDC
User Interface	
PC Control Utility via Serial	
Web User Interface	

CHC – Shanghai HuaCe Navigation Technology Ltd.
599 Gaojing Road, Building C, 201702 Shanghai, China
Tel: +86 21 542 60 273 | Fax: +86 21 649 50 963
www.chcnv.com

Specifications subject to change without notice.
©2014 Shanghai HuaCe Navigation Technology Ltd. All right reserved.