

AUTOMATED DEFORMATION MONITORING SYSTEM



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PRECISE ROBOTIC MONITORING SOLUTIONS

MONITORING IS USED TO DETERMINE THE MOVEMENT AND DEFORMATION OF ANY NATURAL OR MAN-MADE STRUCTURE. EARLY DETECTION OF SUCH MOVEMENT AND DEFORMATION WILL SERVE AS A WARNING TO CALL FOR RISK AND DISASTER MANAGEMENT.

It is one of the essential applications in Safety Engineering practices. Civil engineers and surveyors require highly precise and real-time deformation monitoring data in order to effectively analyse every engineering project. To meet such needs, Monitoring Solution Providers introduces the ultimate solution - Remote Automated Precise Intelligent Detector for Automated Deformation Monitoring System (RAPID ADMS).



MSP RAPID™ ADMS SUITE

The MSP RAPID™ Automated Deformation Monitoring System (ADMS) software suite is a simple to use application that is suited even for special projects requiring significant customisation, such as for the mining industry. With the MSP RAPID™ ADMS Suite, Manual Surveyors will no longer be burdened with an overload of information.

MSP RAPID™ ADMS Suite is a comprehensive system for monitoring the structural health of major infrastructure such as bridges, buildings, tunnels, viaducts, and dams on a periodic basis. It can be customised to meet the exclusive needs of individual projects. MSP RAPID™ ADMS Suite is flexible enough for any site situation and system infrastructure. MSP RAPID™ Monitoring Software (MSP RAPID™ PC (NET/MS/QS/IS) or MSP RAPID™ Mobile) provides automated real-time and continuous monitoring 24/7. Monitoring data are immediately sent to the Data Processing Center via GPRS/SMS/UHF. Data received are then processed and validated by MSP RAPID™ DataChecker. MSP RAPID™ StarPro provides an alert system that will be triggered as soon as an anomaly is detected. Early detection of deformation can minimise the impact of disastrous events by reacting immediately. An alert is sent out to the client's appointed contact person(s) via email notification or by short message service (SMS) to their mobile phone, once a pre-agreed trigger value is detected and verified.

For 24 hours every day, our automated total stations send back timely monitoring data to the MSP office for automatic processing by the MSP Data Processing Centre. Data collected are processed, and interpreted after which the updated results are made available online at MSP WebPro for the respective clients to view.

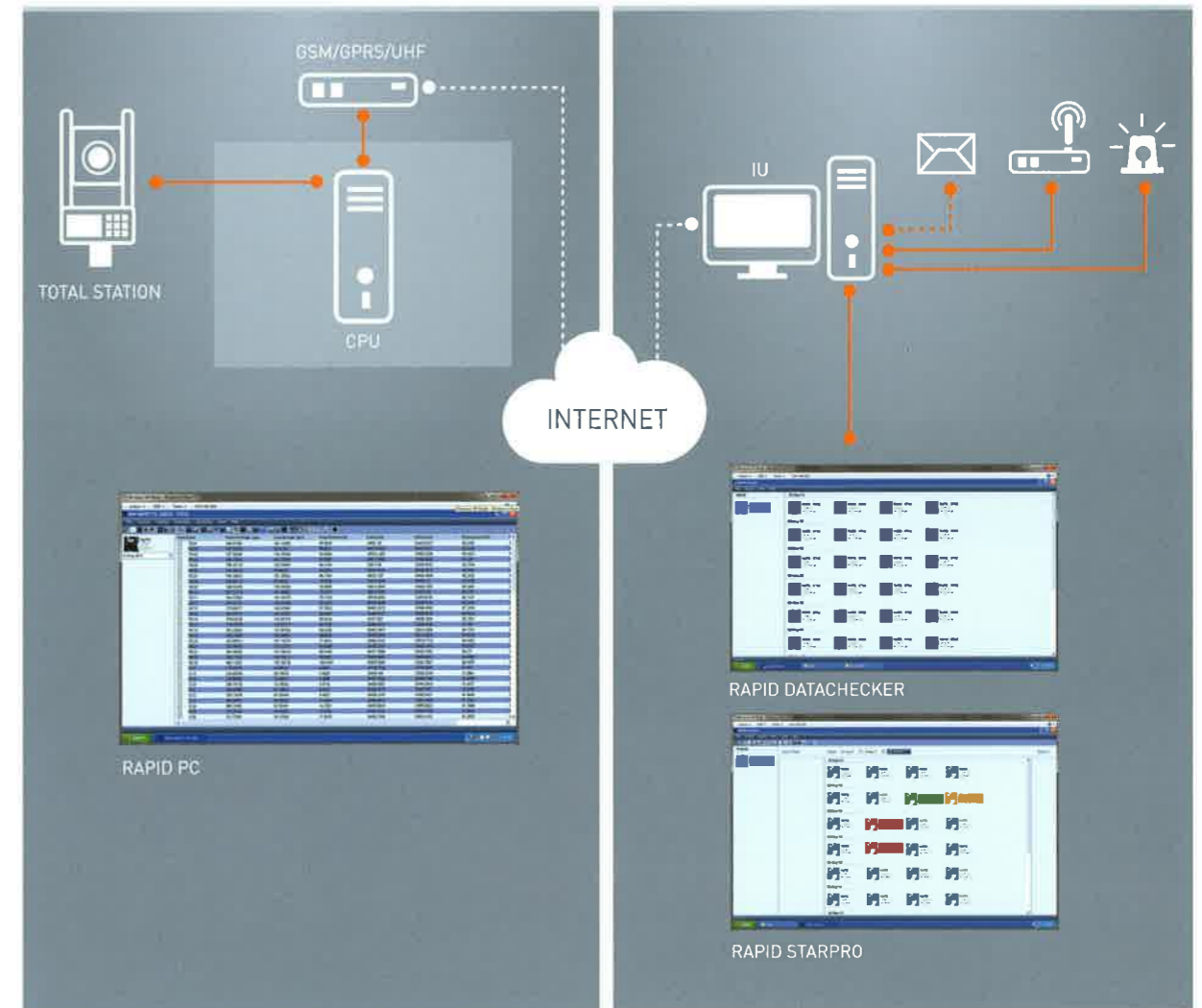
WORKFLOW SCHEMATIC FOR MSP RAPID™ ADMS SUITE



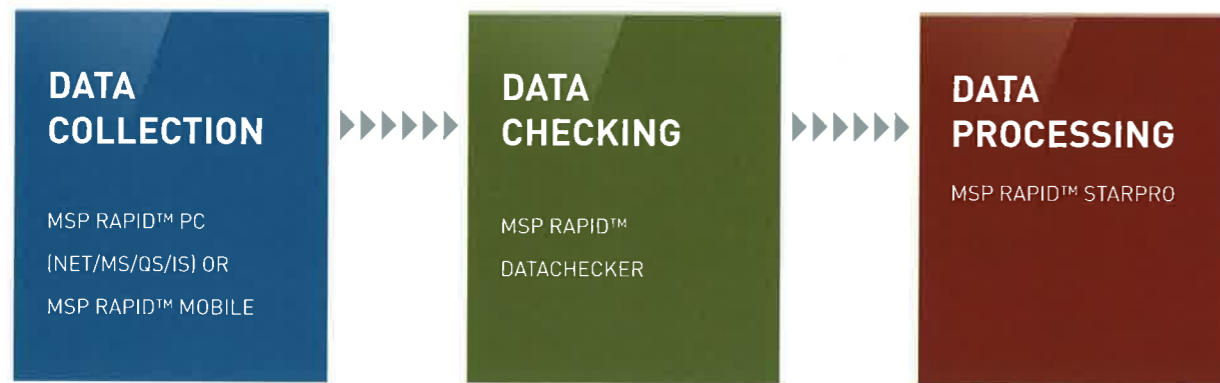
SITE MONITORING



PROCESSING SERVER



MAIN WORKFLOW FOR MSP RAPID™ ADMS SUITE



DATA COLLECTION



MSP RAPID™ PC (NET/MS/QS/IS)

- Core monitoring software of the MSP RAPID ADMS Suite
- Takes control of the instrument for entire monitoring process
- Capable of 24/7 Automatic Monitoring with cycle to cycle time interval
- Automatically train prism points using RAPID 2D Scan
- Dictate start and end time for monitoring, location and method to observe in accordance with user requirements
- Measured data is sent to the office server for processing and backup is stored on Site PC
- Capable of sending data via GPRS/GSM/UHF
- Captures images of the prism with no data - Topcon IS

MSP RAPID™ MOBILE

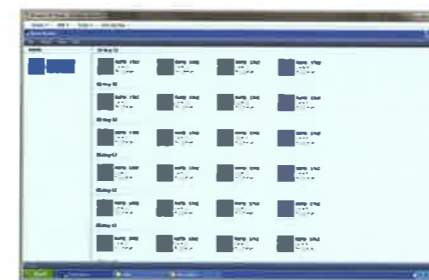
This monitoring software is the alternative for non-PC users. It is a mobile version of MSP RAPID™ PC for PDAs or handheld devices.

- Install on ruggedised Windows® Mobile PDA with built-in GPRS/GSM
- Takes control of measuring station throughout entire monitoring process
- Automatically train prism points using RAPID 2D Scan
- Dictate start and end time for monitoring, location and method to observe in accordance with user requirements
- Measured data is sent to the office server for processing and backup is stored on Site PDA

DATA CHECKING

MSP RAPID™ DATACHECKER

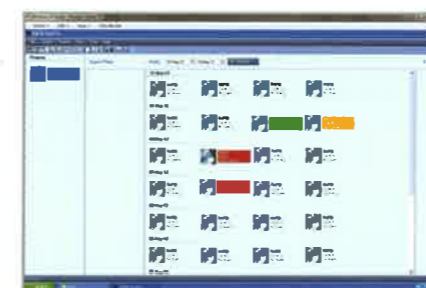
- Install on Office PC/Data Processing Server
- Auto-Scan data from "DataIn" folder
- Data filtering prior to execution by MSP RAPID™ StarPro
- Capable of receiving raw Measurement data from MSP RAPID™ PC, Receiving of data can be via GPRS/SMS/UHF



DATA PROCESSING

MSP RAPID™ STARPRO

- Install on Office PC/Data Processing Server
- Advanced processing of data using least square adjustment
- Process the Raw Measurement data into spreadsheet report
- Tabulate measurement data into graphical view
- Trigger the alarm if any data point value exceeds target limit set
- Send notification to nominated recipients via e-mail/SMS/siren



WEB REPORTS (OPTIONAL)

MSP WEBPRO

MSP WebPro is an 24/7 internet service provided by MSP with its host server located in Singapore. It allows the subscriber to download processed data, print reports and view data graphically. An alert will be sent to local representatives if the displacement value exceeds the trigger value for the project.

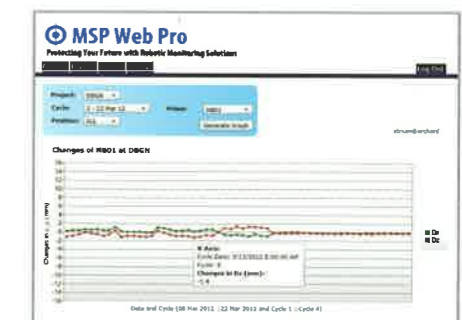
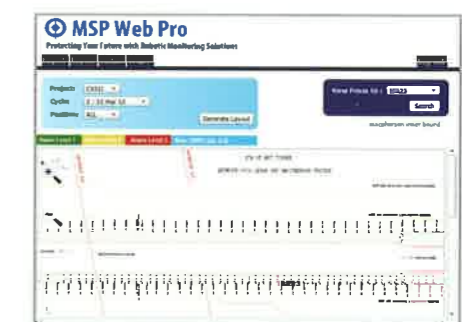
Profile Report - Download graphed and tabulated spreadsheet of the processed data with summary of the monitoring cycles per day

History Report - Download graphed and tabulated spreadsheet of the processed data with time of the monitoring cycles

Layout View - Full view of the monitoring zone, with plotted prism points

Section View - Full view of the positions of the prisms per each of the chainage

Graph View - Full view of the history in changes in dx, dy and dz for selected prism



MORE SOFTWARE SOLUTIONS

FOR MONITORING

We also have monitoring software solutions that can be installed on the Total Station itself – MSP RAPID™ On-Board and MSP Rapid™ MultiRound. Each software takes control of the instrument for the entire monitoring process, which includes dictating the start and end time for monitoring, location and method to observe in accordance with user requirements. Monitoring data can easily be transferred into flash drives for processing, and results are tabulated into easy-to-view readings.

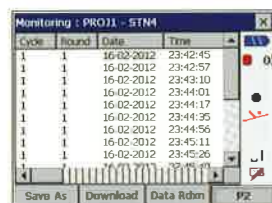
MSP RAPID™ ON-BOARD

- Install on any Robotic Total Station
- Capable of 24/7 Automatic Monitoring with cycle to cycle time interval
- Automatically train prism points using RAPID 2D Scan
- Import training file and monitor right away without any PC or data logger
- Download Raw Data on any USB drive or Compact Flash Card
- Generate Data Reduction 2D and 3D files



MSP RAPID™ MULTIROUND

- A manual monitoring software specially built for Surveyors
- Install on any Robotic Total Station
- Automatically train prism points using RAPID 2D Scan
- Import training file and monitor right away without any PC or data logger
- Download Raw Data on any USB drive or Compact Flash Card
- Generate Data Reduction 2D and 3D files



FOR DATA PROCESSING

MSP RAPID™ StarPro lite is a data processing software specially built to process monitoring data generated by MSP RAPID™ monitoring software such as MSP RAPID™ PC, MSP RAPID™ Mobile, MSP RAPID™ On-Board and MSP RAPID™ MultiRound. Unlike MSP RAPID™ StarPro, MSP RAPID™ StarPro lite processes data without implementation of Least Square adjustment. Users can immediately process single or multiple sets of data to get dE, dN and RL comparison results.

MSP RAPID™ STARPRO LITE

- Install on Office PC/Data Processing Server
- Allows a user to view the Raw Data collected by the MSP RAPID™ On-Board application
- Generate three kinds of reports for Raw Data (Daily Profile, Cycle Profile and History Reports)
- Reports generated will list the displacement in dE, dN, and dRL



COMPARISON TABLE

	MSP RAPID™ ADMS SUITE					MSP ON-BOARD PROGRAMME				MSP WEBPRO
	MSP RAPID PC (NET)	MSP RAPID PC (OS IS)	MSP RAPID MOBILE	MSP RAPID DATACHECKER	MSP RAPID STARPRO	MSP RAPID ON-BOARD (NET)	MSP RAPID ON-BOARD (OS IS)	MSP RAPID MULTIROUND	MSP RAPID STARPRO LITE	
AUTOMATIC MONITORING	●	●	●			●	●	●		
MANUAL MONITORING	●	●	●			●	●	●		
FULL CONTROL OF TOTAL STATION	●	●	●			●	●	●		
INSTALLED ON PC	●	●								
INSTALLED ON MOBILE DEVICE			●							
INSTALLED ON TOTAL STATION						●	●	●		
DATA SENDING (GPRS/SMS/UHF)	●	●	●							
ORIENTATION/ RESECTION	●	●	●			●	●	●		
RAPID 2D SCAN	●	●	●			●	●	●		
DATA REDUCTION	●	●	●			●	●	●		
BACKUP ALL FILES	●	●	●	●	●				●	
DOWNLOAD RAW DATA TO FLASH DRIVE	●	●	●			●	●	●		
AUTOMATIC PROCESSING					●				●	
GENERATE REPORTS (DAILY/CYCLE/ HISTORY)					●				●	
INSTALLED ON PROCESSING SERVER					●				●	
LEAST SQUARE ADJUSTMENT					●				●	
ALARM NOTIFICATION (EMAIL)					●					
ALARM NOTIFICATION (SMS)					●					
ALARM NOTIFICATION (SIREN)					●					
PROFILE REPORT										●
HISTORY REPORT										●
LAYOUT VIEW										●
SECTION VIEW										●
MULTIPLE PROJECT ACCESS										●
ASSIGNED USERNAME/ PASSWORD										●
RECEIVE DATA TRANSMISSION (GPRS/SMS/UHF)				●						
AUTOMATIC DATA CHECKING				●						
DISPLACEMENT LIMITS				●						
AVAILABLE IN DEMO	●	●	●							