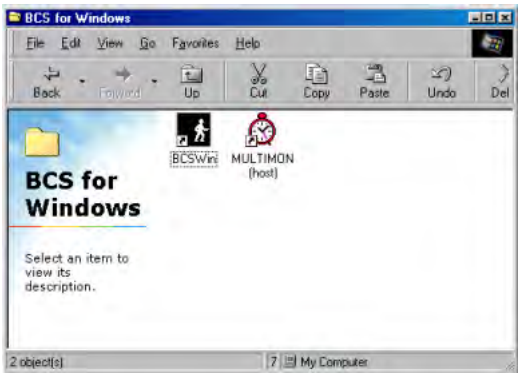
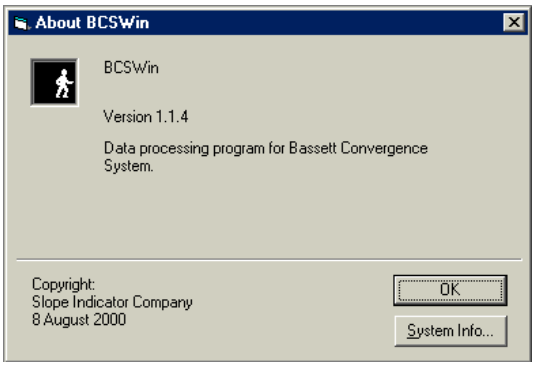
BCSWin – Data Processing Program for BCS
(not for Windows™ Vista or Windows™ 7)

BCS for Windows

BCSWin is a Windows-based program that processes data collected with Slope Indicator's Bassett Convergence System (BCS). The program has the following abilities:

- BCSWin processes, in real time, data from up to 99 BCS rings. The maximum number of sensors per ring is 25 pairs (each pair consists of a short arm sensor, a long arm sensor and two temperature sensors.) The program uses a database that is compatible with Microsoft's Access 97.
- BCSWin applies calibration factor to the sensor data and calculate the XY coordinates of every anchor points. Display the coordinates in graphical and table format in real time. Store the data and calculated coordinates in database for back analysis in graphical and tabulated forms.
- BCSWin can generate data files for use by Slope Indicator's MultiMon program, which provides additional functions such as alarm checking, off-line replay, and the ability to display data from other type of instruments on the same screen.

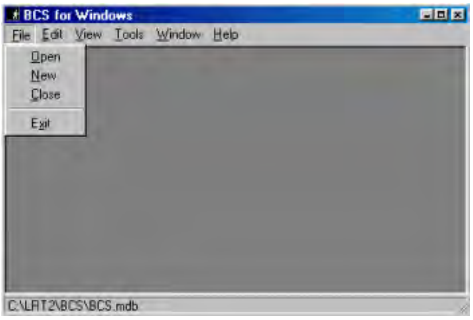




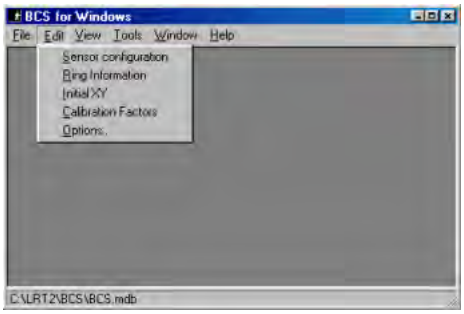
The current version of BCSWin is Version 1.1.4.

File Menu

On start up, BCSWin automatically loads the database that was used in previous session. If a short cut is placed in the Window's Startup folder, BCSWin will automatically start properly. This is useful in case of a power outage. BCSWin has a built-in function for creating a new database, as well.

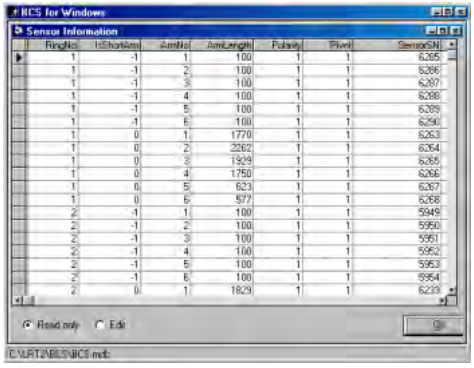


Edit Menu



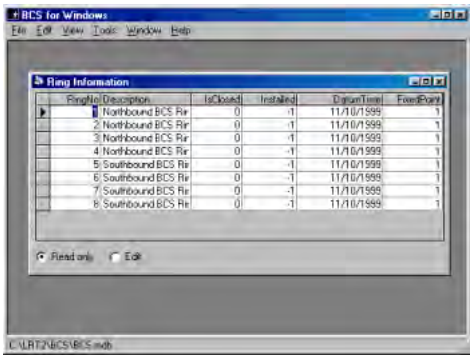
This is the place to define the sensor configuration, ring Information, initial XY coordinates, calibration factors and other output options.

Sensor configuration



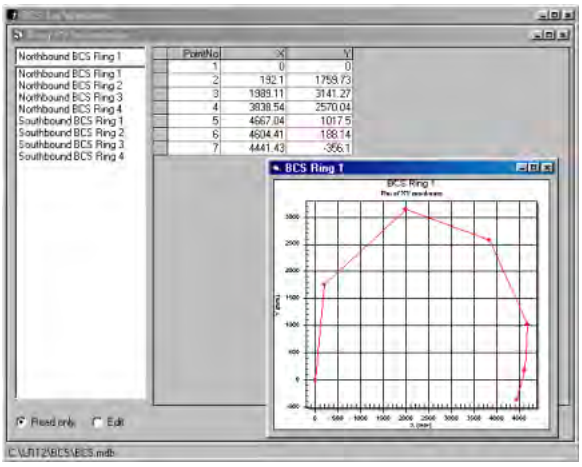
The function allows the user to specify "as installed" information. Every sensor in every ring is correlated the input data files by designating appropriate Information such ring number, type of arm, length of arm, polarity, pivot orientation, and the serial number of the sensor, etc. This information can be quickly imported from a text file in CSV (spreadsheet) format.

Ring Information



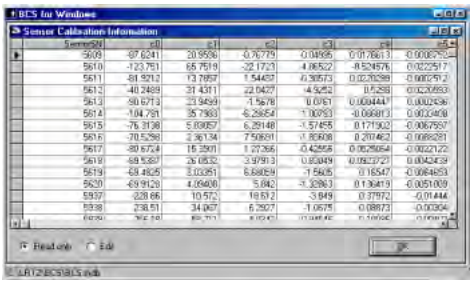
Using this menu, each ring can be given a meaningful title and its own datum date. Other information entered here includes whether the ring is fully closed and which point will be used as the fixed point. Finally, the user can tell the program whether the ring is fully installed and configured. This will start or stop the real time data processing for individual ring in the system.

Initial XY Coordinates



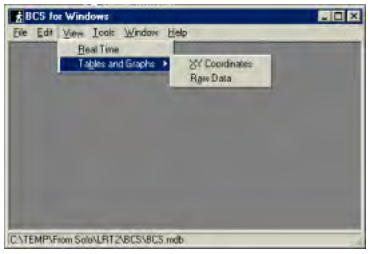
The initial X and Y coordinates of every fixing point of each ring are specified here. The validity of these coordinates can be checked in graphical form.

Sensor Calibration Factors



The calibration factors for each BCS sensor are specified here, including the factors for temperature correction. This information can be quickly imported from a text file in CSV format.

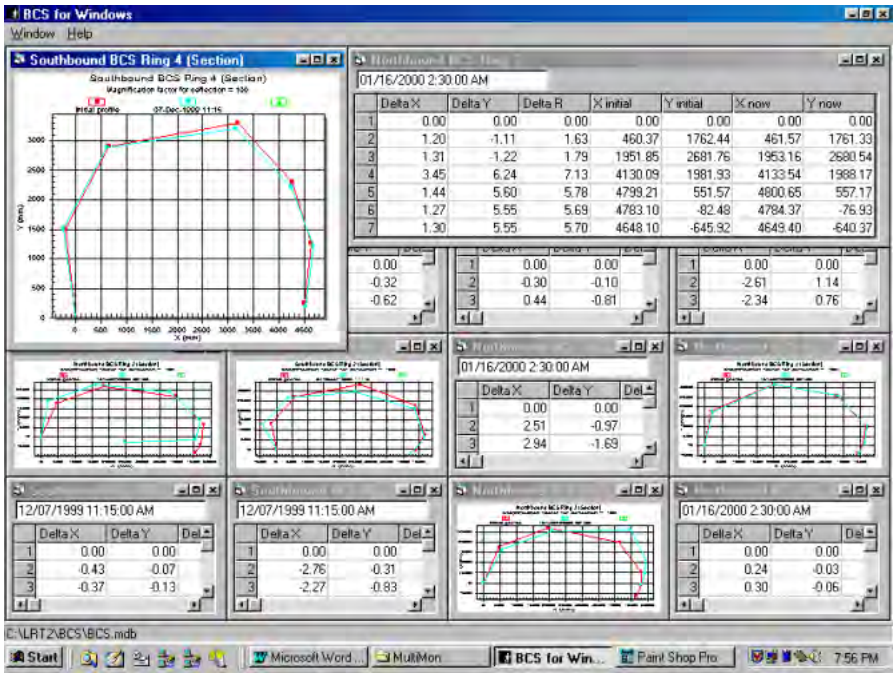
View Menu



BCSWin has built-in functions to provide the user to view the tunnel deformations as they occur (realtime view) or to view what has already occurred for back analysis (Tables and Graphs).

Real Time View

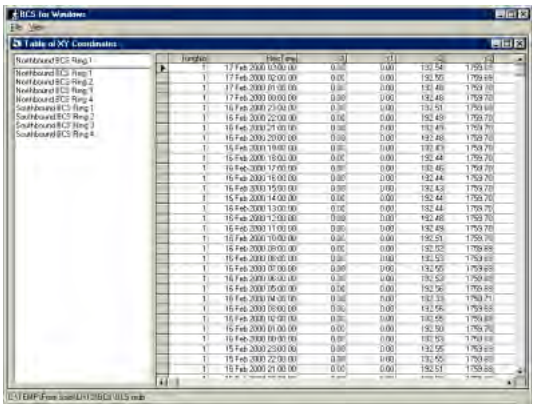
The results of the BCS calculations conducted in real time are displayed here in a multi-window view. Displayed in each window are the time at which the data are collected, the change in X and Y coordinates, the resultant of changes, the initial coordinates, the current coordinates and graphical representation of the original, the previous and the current profiles. The results will be refreshed as new data are being collected from the system into the PC and after being processed by the BCSWin.



Tables and Graphs

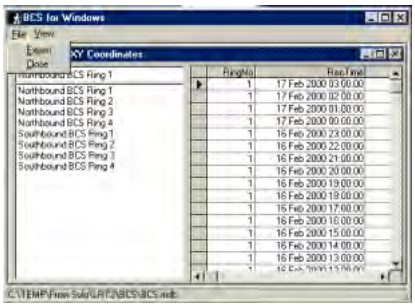
XY Coordinates

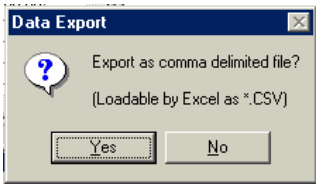
Select this menu option to display the XY coordinates of all anchor points for each BCS ring. The available rings are displayed on the left and the coordinates for the selected ring recorded at different time are displayed in the table on the right.



Export Coordinate Data

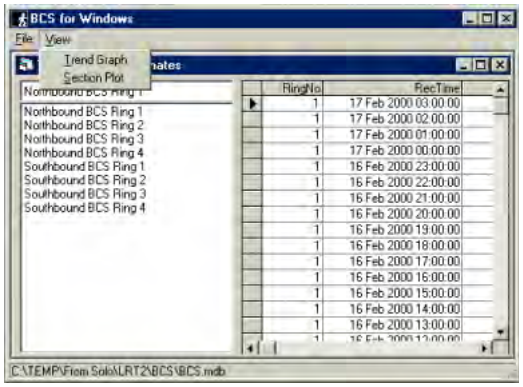
Select File-Export to send the coordinate data in the table to a cvs file for further processing by another program.

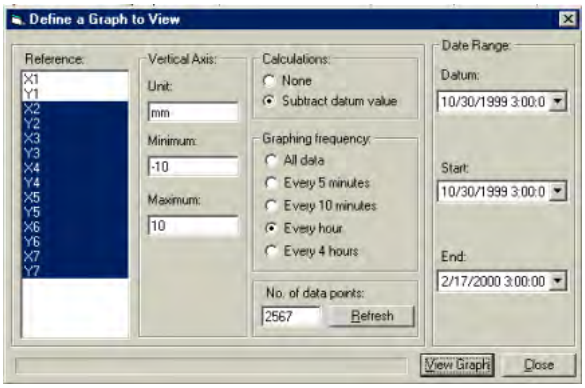


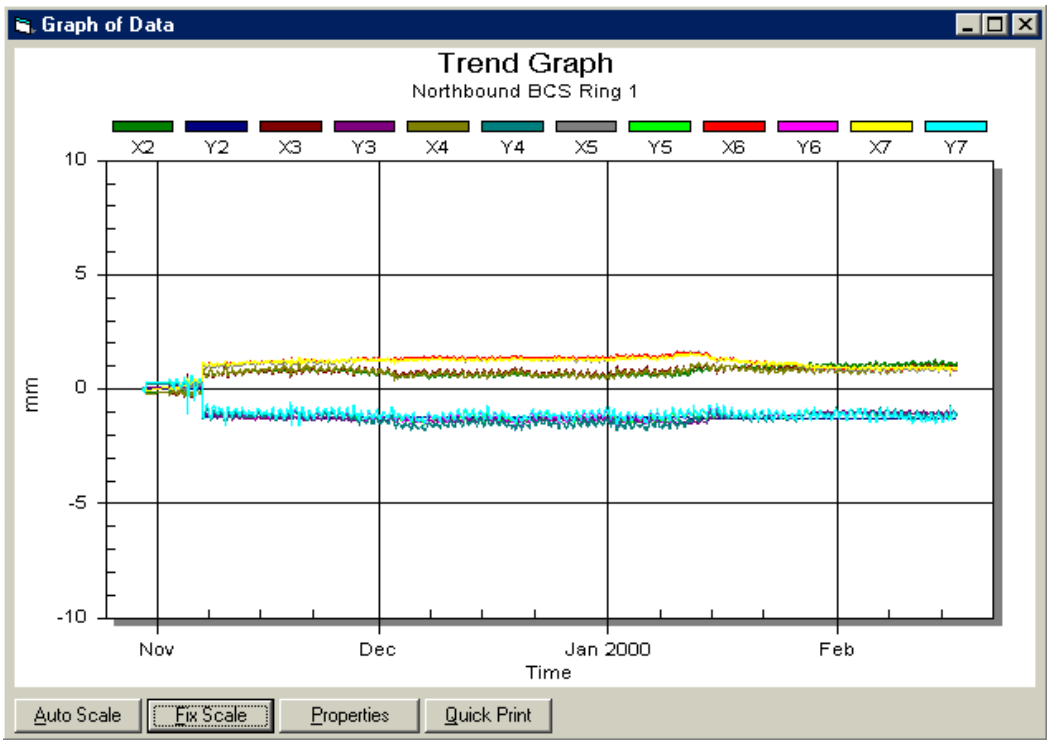


Trend Graph

Use this function to view the changes in tunnel deformation against time. The user can select all or just one of the anchor points for the trend graph.

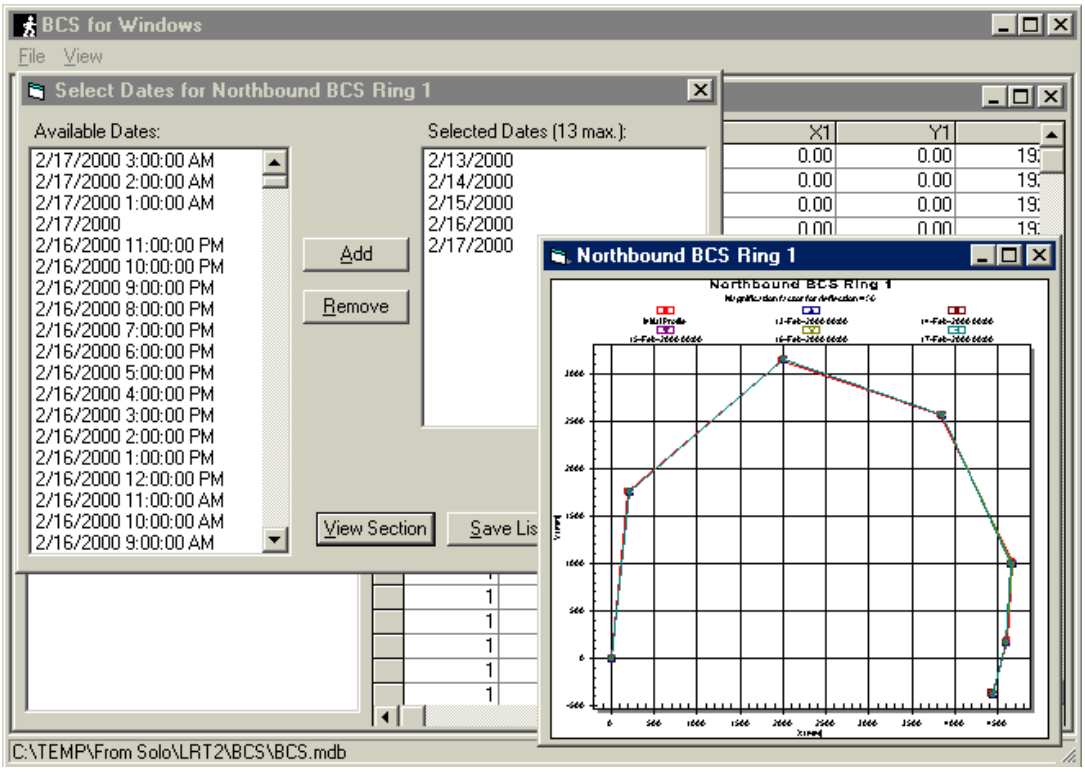




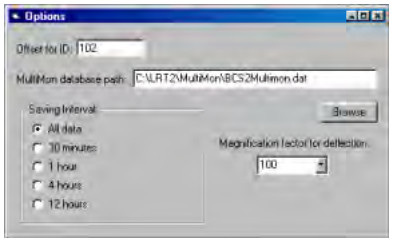


Section Plot

This function display, on the same graphical plot, up to 14 tunnel sections at various times selected by the user.

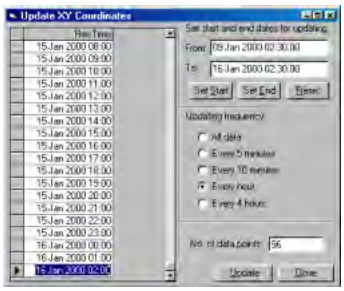


Output Options



Information regarding the interface between BCSWin and MultiMon is specified here. The user needs to specify how the ID of the data files is defined, where to send the data files and how often. Other option such as magnification factor for deflections in the profile plots is also defined here.

Update Coordinates



BCSWin is designed for real time operation. To achieve this, the data files from all installed BCS rings need to be automatically downloaded into the PC for automatic and continuous processing. However, in cases where the data files have to be collected manually in bulk, this function provides a means to process the data between two specified dates/times in one step.

MultiMon Display

MultiMon will process the data files generated by the BCSWin and display them as specified. An example of the display is given below. MultiMon allows up to 50 rings to be displayed simultaneously on one screen with real time update. Please refer to datasheet and manual of MultiMon for other functions of the MultiMon program suite.