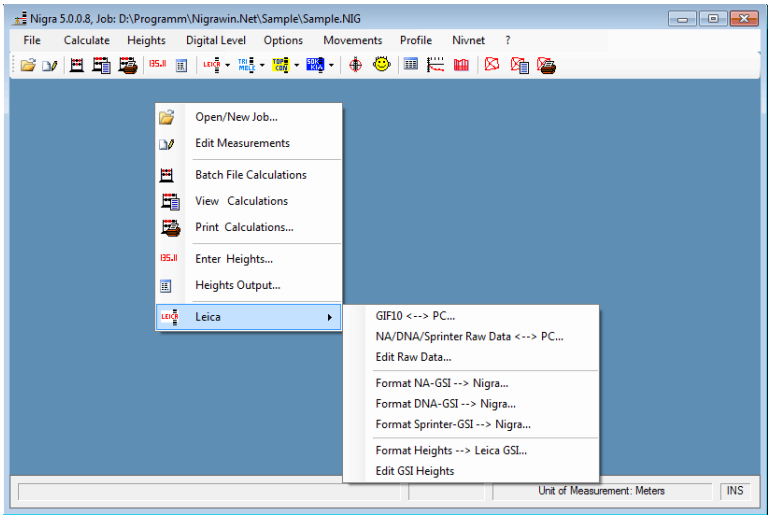
NIGRA FOR WINDOWS

THE SOFTWARE FOR YOUR LEVELLINGS - NIGRA!

Nigra for Windows processes data from all levels - especially data, which are measured and registered with the digital levels

- **Leica LS10/LS15/DNA03/DNA10/NA2000/2002/3000/3003, Sprinter 100M/150M/200M/250M**
- **Geozone Geomax ZDL700, Stonex D2**
- **Trimble DiNi 10/11/12/20/21/22 (10T/11T/12T in levelling mode), 0.3 mm, 0.7 mm**
- **Topcon DL-101/102/101c/102c, DL-501, DL-502, DL-503**
- **SOKKIA SDL1X, SDL30, SDL50**

Nigra includes the data transfer for the preceding listed digital levels (Leica levels NA2002/3003 since software version 3.2), editing of raw data, reformatting of raw data in the Nigra measurement file, height database or a special profile file (profile file not for SOKKIA SDL30/50), alphanumeric header data (e.g. date, observer, order, etc.), alternative coding of header data at the measuring time, correction of the readings with mean staff meter, linear coefficient of extension and staff offset (e.g. if using staff lengthening - not for SOKKIA SDL30/50), alphanumeric point number extensions to max. 14 characters, creating the raw data for setouts.



Additional Features:

- **Manual data input (with editor)**
- Additional **data transfer** for Zeiss Dac 10 and Leica Gif10 and all devices which need no producer special transfer dialog (e.g. Zeiss Dac E, Leica NA 2002/3003/DNA03/DNA10/Sprinter 100M/150M/200M/250M).
- **Calculations** for levellings with side shots, height differences, line adjustments and instrument checks, creation of a net file for the network adjustment **Nivnet** inclusive calculation of standard deviation for 1 km double levelling.
- **Printer output in many different languages**: The text for outputs can be customized by the user. With this function it is possible to realizes printer outputs in many languages. Files for German and English are supplied with Nigra.
- Output of calculations, movement lists and other ASCII files in **PDF** (for Acrobat Reader) or **HTML** format.
- Calculations and height outputs in the **units of measurement Meters, Feet and Inches.**
- **Microsoft Access compatible height database** for a great number of points. Data fields: maximum of 14 characters for alphanumeric point number, height, X-, Y-coordinates, date, calculation number, mean value difference, remark. Output of heights as text file (ASCII standard format und **free customizing ASCII formats**), import of heights from various column formatted ASCII-files into the Nigra height file. (Via this interface it is also possible to import ASCII-heights from DELTA/DOS.)
- **Internal text editor** for large files.
- **Movement measurements:** Creation of movement lists for a maximum of 9999 measurement periods directly from the height file with the following v*ariants:*

- Reduction to point of origin, for example for the determination of the tilt behaviour of a building.

- Reduction to a reference point or a reference height.

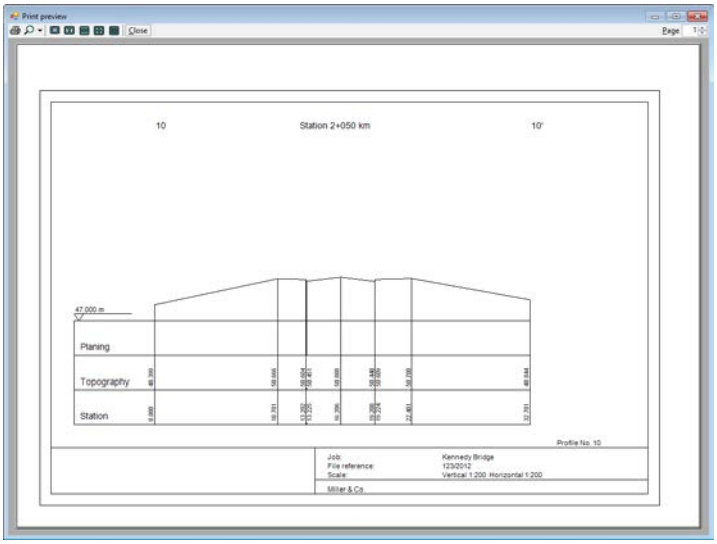
- Comparison of theoretical - actual height and actual - theoretical height.

```
Miller & Stanton Company
NigraWin - Levelling, Version 5.0            05-08-2012    Page: 1
Job: Sample

Test Levelling
Calculation No.:  1
Location          Sankt Augustin
Order             12. Movement Measurement
Line              12/95               Date            01-08-2012
Weather           sunny               Observer        Miller
Level             Leica NA3003 345678 Staff           Nedo 5416
Staff graduation 1 cm                 Reading sequence BF BF(S)
Comments          Levelling with side shots
Calculation of Mean Values: new - calculated height is inserted

Misclosure =        1.6 mm        Max. error E (3) =   3.6 mm

Distance   Back        Side        Fore          Height      Point No.
 25.26     1.4235                                49.24200         1503
 15.47                 2.9007                    47.76507       1503.5
 15.47                 2.9017                    47.76407       1503.5m
 15.47                 2.0000                    48.66577          200n
 26.15                             0.0279        50.63814         1504
 31.59     1.2622
 30.99                             0.0011        51.89991         1505m
 18.54     1.5197
 12.43                -0.1052                    53.52500         1506
 18.44                             2.600         50.82000         1560

Sum total distances     =    150.97 m   Delta-H=     1.57640 m
Sum backsight distances =     75.39 m
Sum foresight distances =     75.58 m
```

Nigra Calculation Output

Graphic functions:

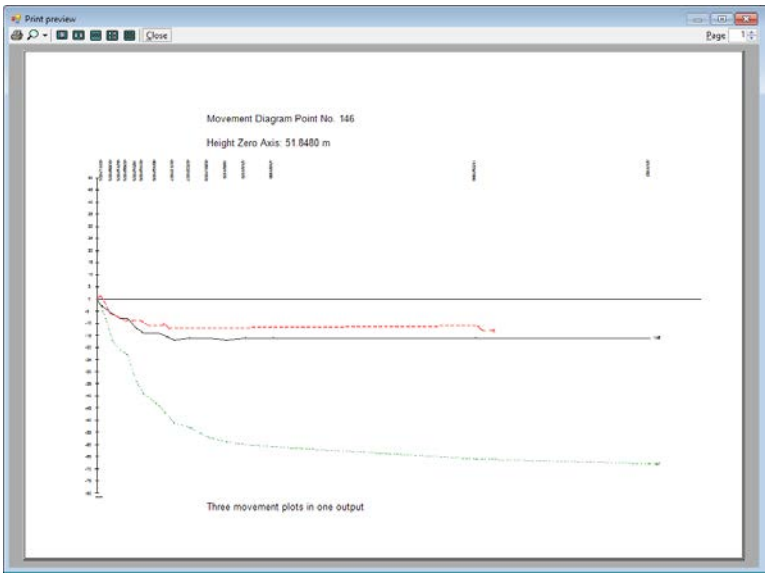
Longitudinal and **cross sections** creation from **levellings** and **X,Y,Z-coordinates** of tacheometric surveys. Distances and heights are placed so that they are not overwritten, even if follow each other very closely.



Creation details: Many scales for heights and distances, many paper formats, 0 - 3 decimal places for heights and distances, raising the profile base, reduction of distances to any point of profile, addition of a start distance (e.g. for longitudinal profiles), variable text for the lines *Planning, Topography and Distance*, calculation of profile areas. In addition to the topographic profile it is also possible to create profiles from planning heights.

Furthermore, **Nigra** allows the creation of movement plots as *time-movement curves* from the data of the heights file. The scales for the time axis and movements can be chosen, also various line types, plotter pens or layers. Several movement curves can put together to one output.

The graphic files are created in the **HPGL and DXF format**. So that the output to a HPGL/HPGL2 plotter and the import to most of the CAD software is guaranteed. Nigra shows the HPGL files on the screen and prints them on the Windows printer.



• Network Adjustment Nivnet - sales finished

by Prof. Dr.-Ing. Fröhlich/Sankt Augustin. The network files for Nivnet are created by Nigra from the measurement data and the heights in the Nigra height file. **The Nivnet software is only available in German Language**. Units of measurement are meters and feet.

Calculation limits: A maximum of 200 points (new and connecting points) and a maximum of 1000 observations (Nivnet200) or 1000 points and 3000 observations (Nivnet1000).

Methods:

Constrained network adjustment (principle of least squares), free network adjustment, free network adjustment with transformation. Integrated is also a network solvability, which simplifies error detection in case of net defects.

Nivnet-x as additional software for preprocessing (mean value), L1-Norm and automatic minimal-looping

Please note: Nivnet has been successfully tested on Windows to version 8. Nivnet is however no longer being developed, so the use in future versions of Windows cannot be guaranteed.

System Requirements: PC with operating system Microsoft Windows 7/8/8.1/10.
Nigra comes on CD-ROM with printed short reference **Getting Started Guide**. Pricing for the first license:

Products	Euro	Order No.
Nigra	485,00 EUR	50002
Nigra for Leica Sprinter/Geozone Geomax ZDL700/Stonex D2*)	250,00 EUR	50005
Upgrade of Delta/DOS to Nigra	Ask for special offer	50091

EGM countries (only if the VAT ID is missing): All prices plus 19% sales tax. Shipping and handling costs are 10,00 EUR for each shipment. Changes of costs and technical equipment are reserved.

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Web: https://www.trukksoft.de

*) In Nigra for Leica Sprinter the following modules are not available: Support of digital level Trimble (Zeiss), Topcon, Sokkia, Leica DNA und NA, evaluation of movements measurements, creation of profiles, creation of network files.

Nigra measuring data file

```
RTower Brigde
x234567890123456789012345678901234567890123456789012345678901234567890123456789012
x        1         2         3         4         5         6         7
xDistance<--- Back    Side    Fore ---><--- Point Number -->
C1
HSankt Augustin      Location
H                    Location
H12. Movement Measur Order
Hement               Order
H12/05               Line
H01-16-2013          Date
Hsunny               Weather
HMiller              Observer
HLeica NA3003 345678 Level
HNedo 5416           Staff
HLevelling with side Comments
H shots              Comments
H00                  2.Col.:0=Side,1=no Side,4=Line, 5=Level test
*                    3.Col.:0=BF,BBFF,2=BFFB,4=BFBF,5=FBBF,4.Col.:a=altern.
H1                   Number of staff scales
H0                   Scale constant for 2 staff graduation
H3                   Difference tolerance between scales
H1                   Staff graduation 1=cm,foot,inch, 0.5=1/2cm
H1                   With distances, 1=yes, 0=no
H3                   Decimal places for heights in calculations
H3                   Decimal places for readings in calculations
E13m                 E/Mean value/Error class/Unit of measure
D   25.26 b1.423                                  1503
D   15.47           s2.900                      1503.5
0   15.47           s2.901                      1503.5
2   15.47           s2.899                      1503.5
D   15.47           s2                             200
D   26.15                     f0.022              1504
D   31.59 b1.262                                  1504
0   30.99                     f.001               1505
D   18.54 b1.520                                  1505
D   12.43           s-.105                      1506
D   18.44                     f2.6                1560
E
```

Nigra calculations output

```
       Miller & Stanton Company
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       Job: Sample

       Tower Brigde
       Calculation No.:  1
       Location         Sankt Augustin
       Order            12. Movement Measurement
       Line             12/05               Date             01-16-2013
       Weather          sunny               Observer         Miller
       Level            Leica NA3003 345678 Staff            Nedo 5416
       Staff graduation 1 cm                Reading sequence BF BF(S)
       Comments         Levelling with side shots
       Calculation of Mean Values: new - calculated height is inserted

       Misclosure =       -4.0 mm        Max. error E (3) =   4.2 mm

       Distance   Back        Side        Fore          Height      Point No.
        25.26     1.423                                 49.242          1503
        15.47                 2.900                     47.764        1503.5
        15.47                 2.901                     47.763        1503.5m
        15.47                 2.899                     47.765        1503.5o
        15.47                 2.000                     48.664           200
        26.15                              0.022        50.642          1504
        31.59     1.262
        30.99                              0.001        51.901          1505m
        18.54     1.520
        12.43                -0.105                     53.525          1506
        18.44                              2.600        50.820          1560

       Sum total distances     =    150.97 m   Delta-H=     1.58200 m
       Sum backsight distances =     75.39 m
       Sum foresight distances =     75.58 m
```