

A new PC control software for ZLS-Burris gravity meters

H. Richard Schulz, Rosengarten

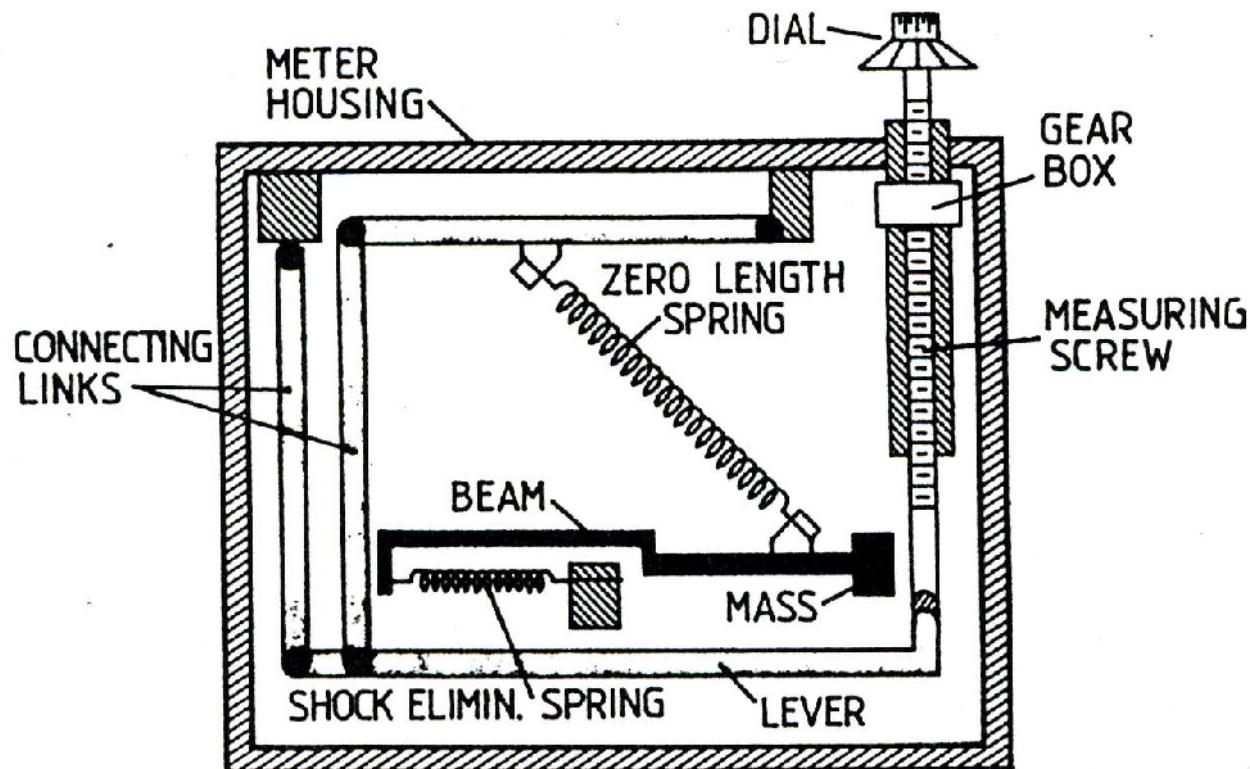
Karin U. Kessler-Schulz, Rosengarten

Structure of the presentation

- Overview of the ZLS-Burris gravity meter
- Why a new control software for the ZLS Burris gravity meter?
- Properties and overview of the software AGESfield
- Short summary of the main parts of AGESfield
- Optimised control circuit

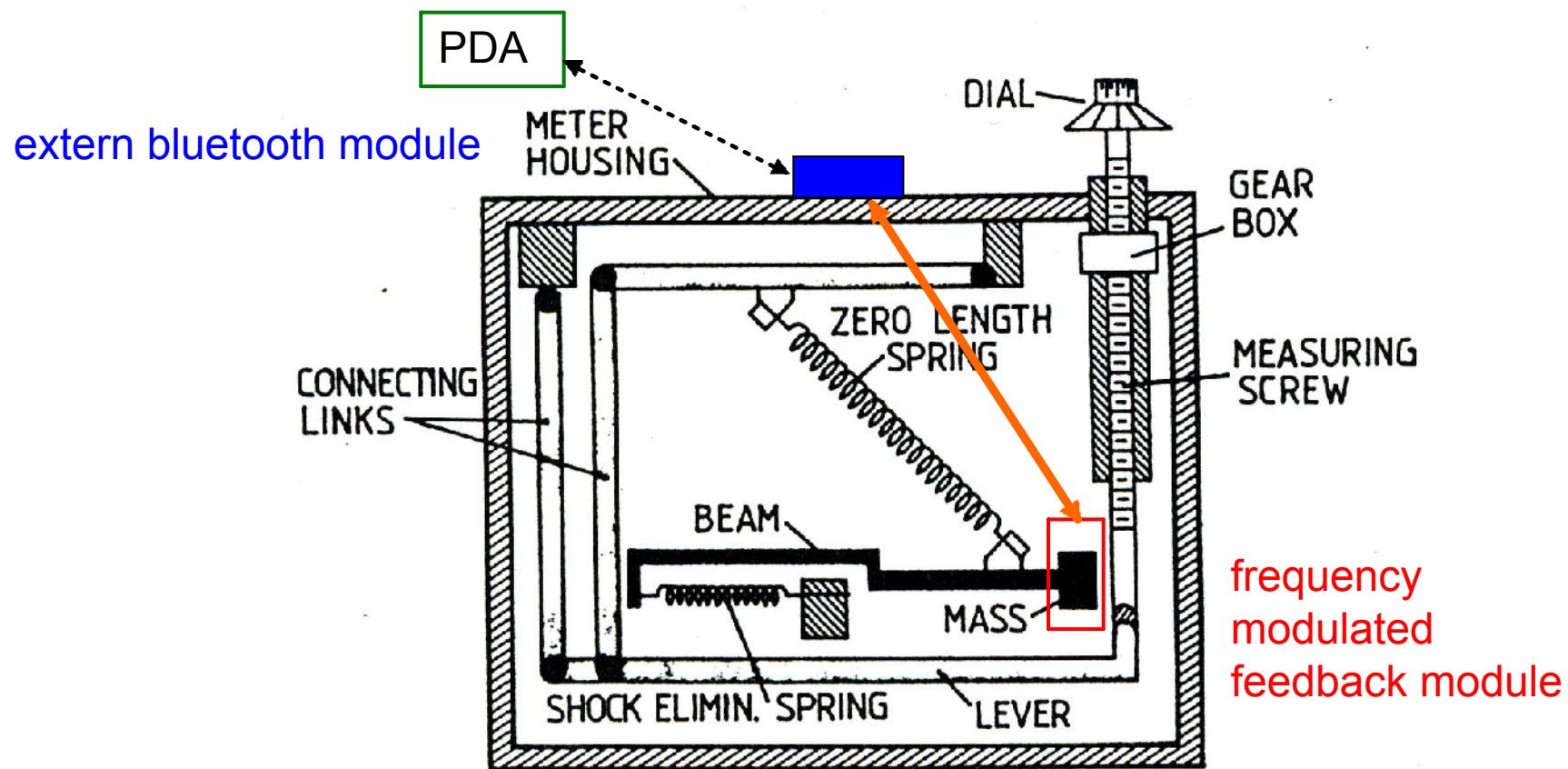
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Torge, 1989

well known principle of the LaCoste&Romberg (LCR) gravity meter

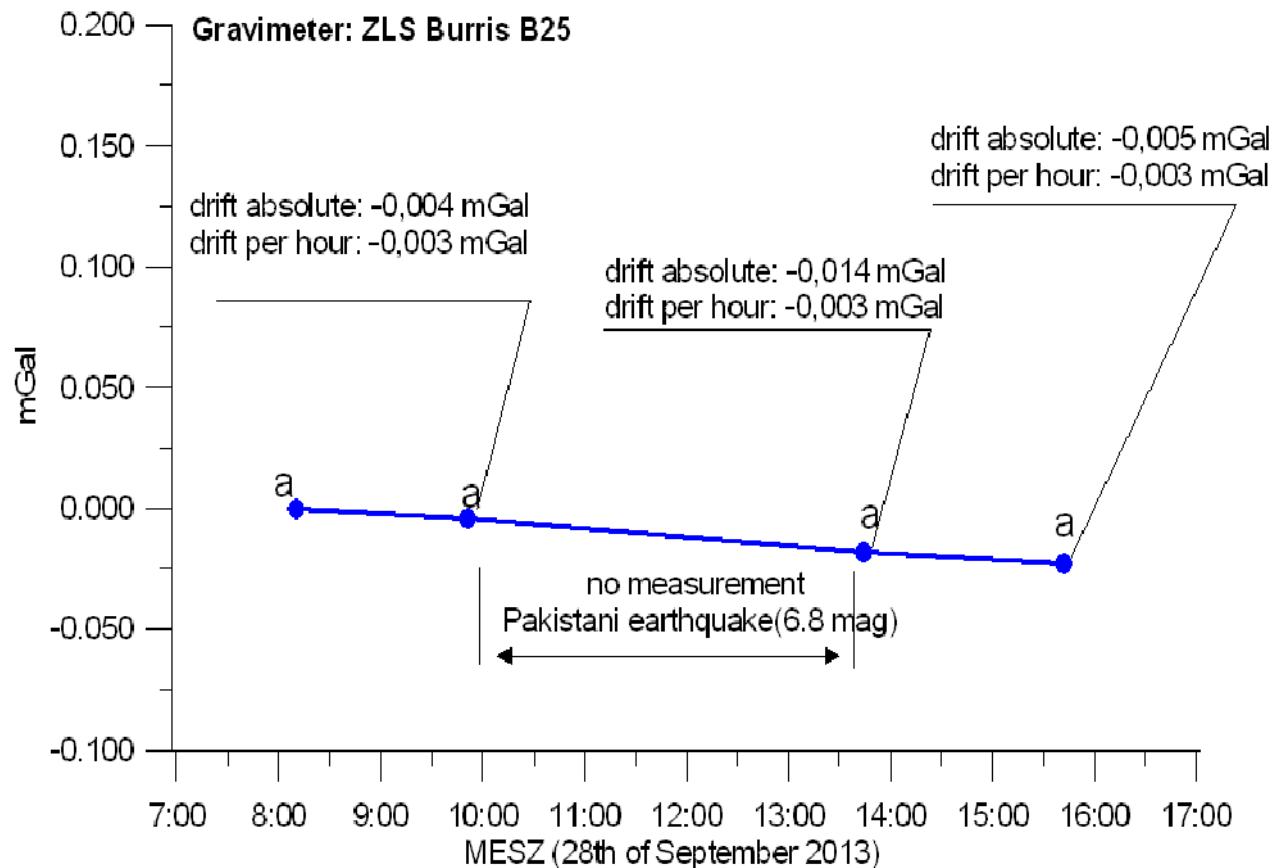


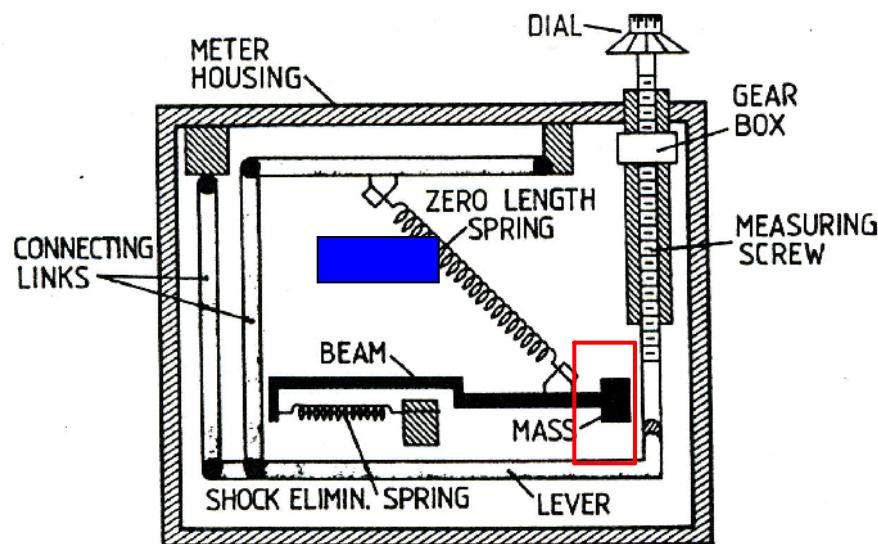
ZLS Burris gravity meter is similar to the LCR (Jentzsch 2007)

modified Torge, 1989

Not only the construction is similar also the low drift rate (ideally continuous)

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modified Torge, 1989

Difference between ZLS Burris standard and LCR:

The calibration is performed every 50 counter unit (CU)

To use the calibration the dial must stay at a multiple 50 CU

The area between the calibration points is covered by the feedback.

Feedback range minimum 50 mGal

Software controlled

ZLS Burris gravity meter is similar to the LCR (Jentzsch 2007)

PDA



gravity meter



ZLS Burris model B25

- microprocessor controlled
- 50 mgal feedback
- extern bluetooth
- dial motor



newer ZLS Burris models

- no dial motor
- intern bluetooth
- levelling is integrated
- the box is smaller
- the weight is reduced
(Lithium batteries)





ACEECA PDA

international protection marking IP 65

OS: Palm system

UltraGrav control software by ZLS



Positive points:

The separation of the gravity meter and the control unit is sensible.

The data are displayed in mGal

No disturbance of the gravity meter by the observer.

Simple display.

Easy to use.

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Problematic points:

The station name is not displayed.

Not all parameters are displayed

Not all data are stored.

No exact clock.

Data loss by empty batteries.

Small station and observer administration (7 parameters)

Data transfer sometimes with problems

Unusual Palm System

Blackbox.....

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Properties:

- user orientated (not everybody is allowed to do all things)
- client and project administration with parametrisation
- multiple import-possibilities of station data
- extensive station properties (up to 25)
- easy maintenance
- several extra features
- gravity meter management (more than one gravity meter is possible)
- modular structure
- three packages (basic, advanced and professional)

data security

- all basic data (calibration table and control parameter) of the gravity meter are cryptographically secured and not accessible
- exact multitasking guarantees no time problems with the control circuit
- PC time must be UTC without summer time conversion
- redundant storage of the measured data on stick or SD-Card (extra module)
- complete documentation of a measurement is possible (extra module)

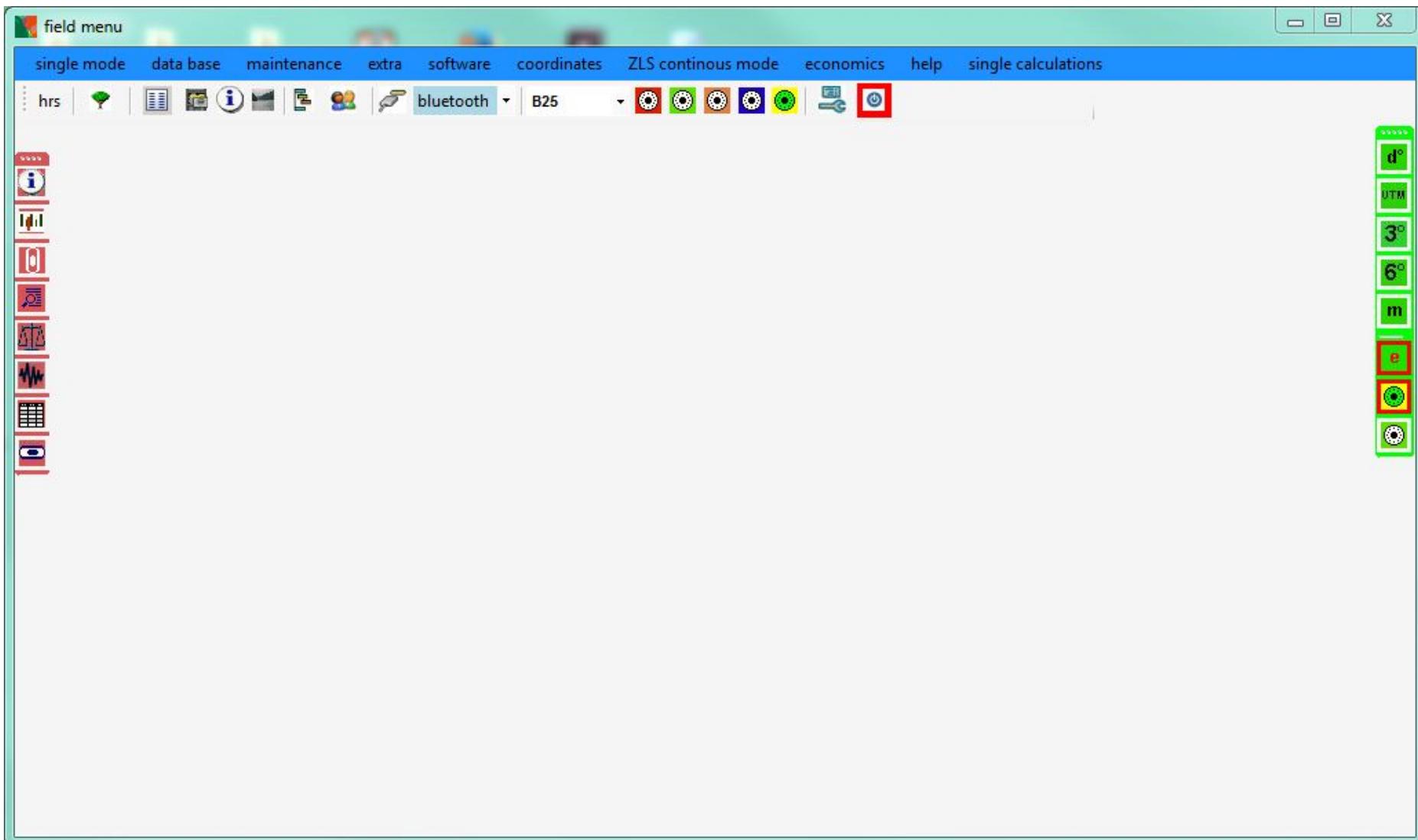
hardware requirement

- operating system Windows 7 with 32 bits or 64 bits
- minimum screen size 1024 x 600 (better 1024 x 768)
- any PC with Toshiba bluetooth stack (I recommend Panasonic Toughbook CF-19 Mk 4 and upper)

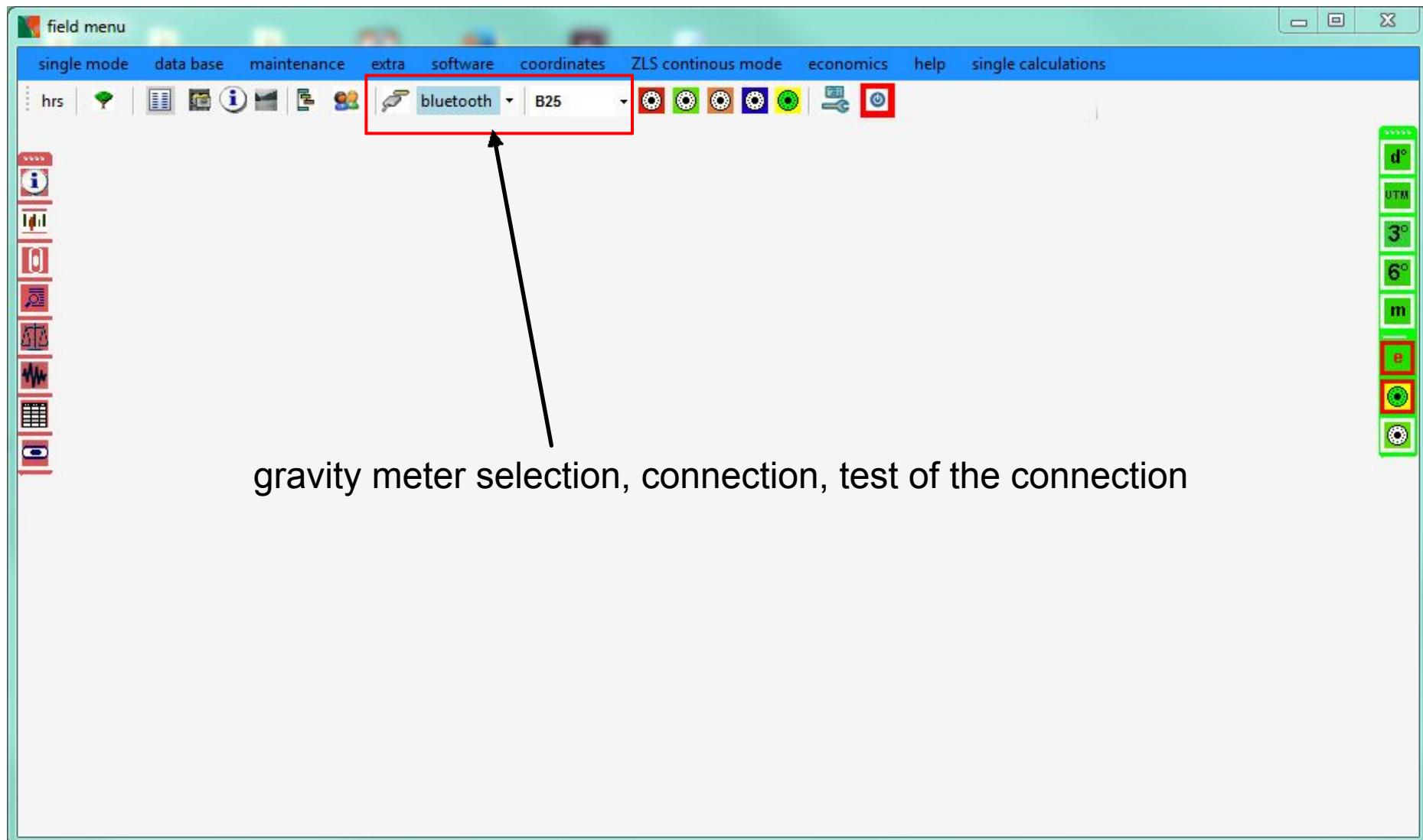
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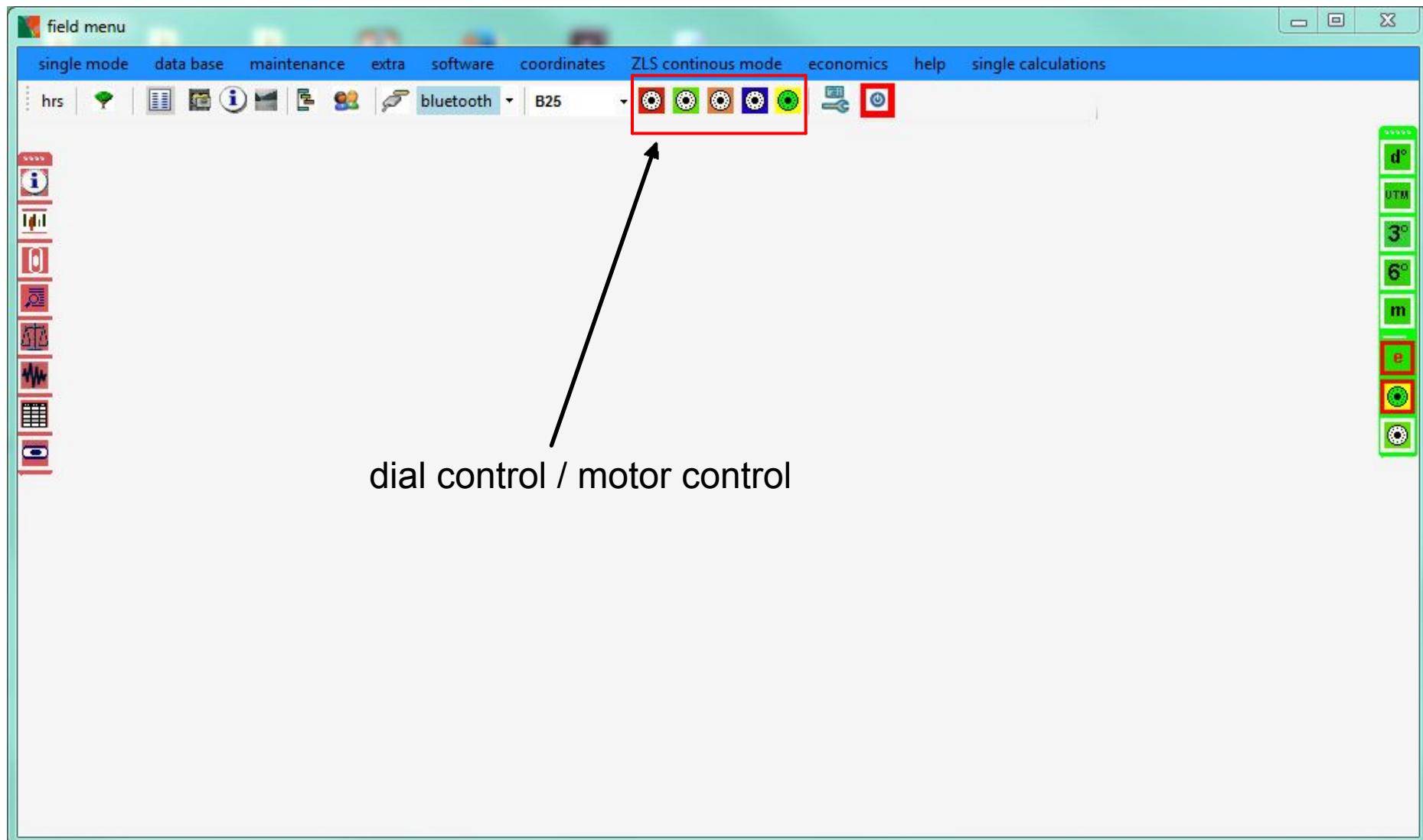
The following screenshots show the software with all modules.

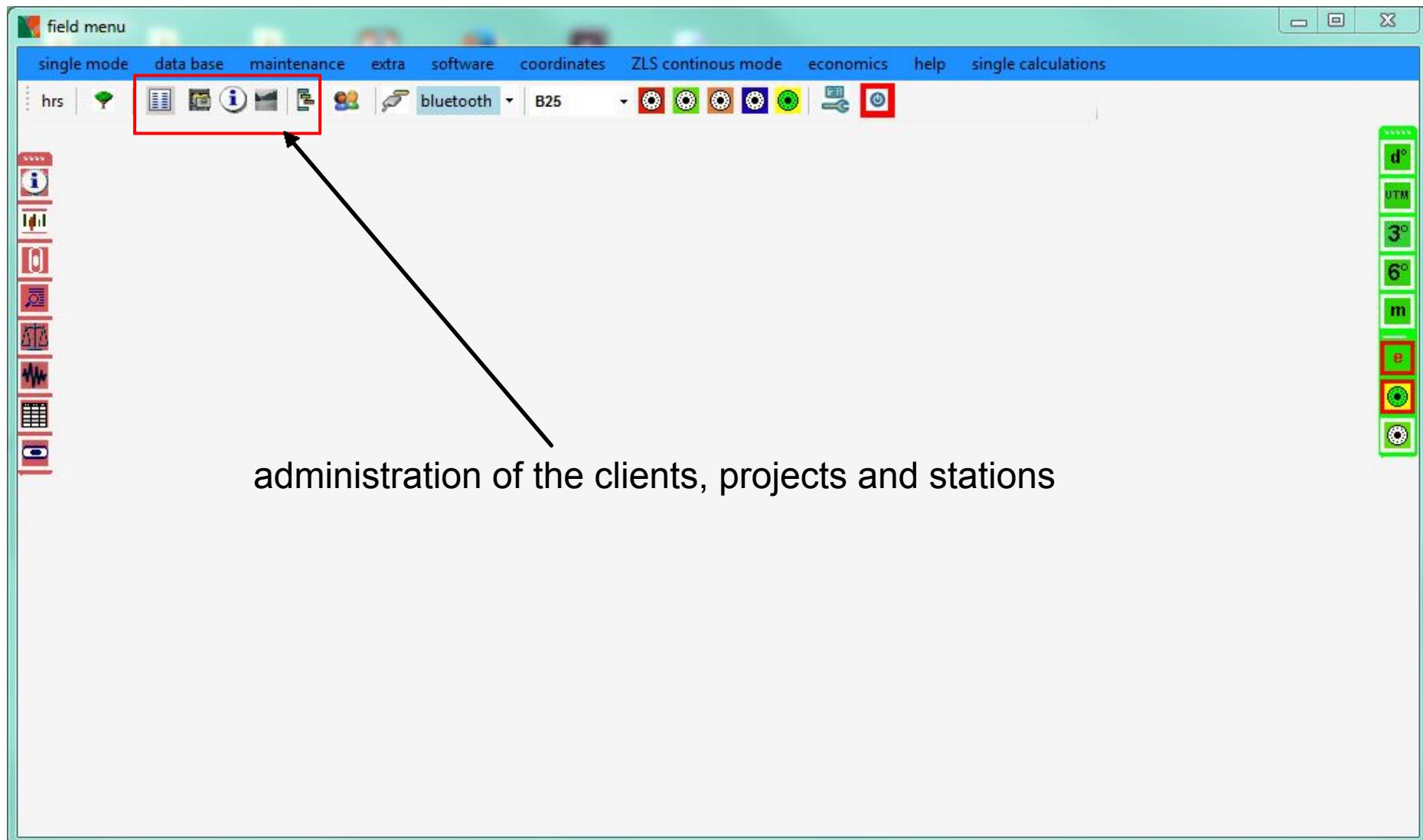


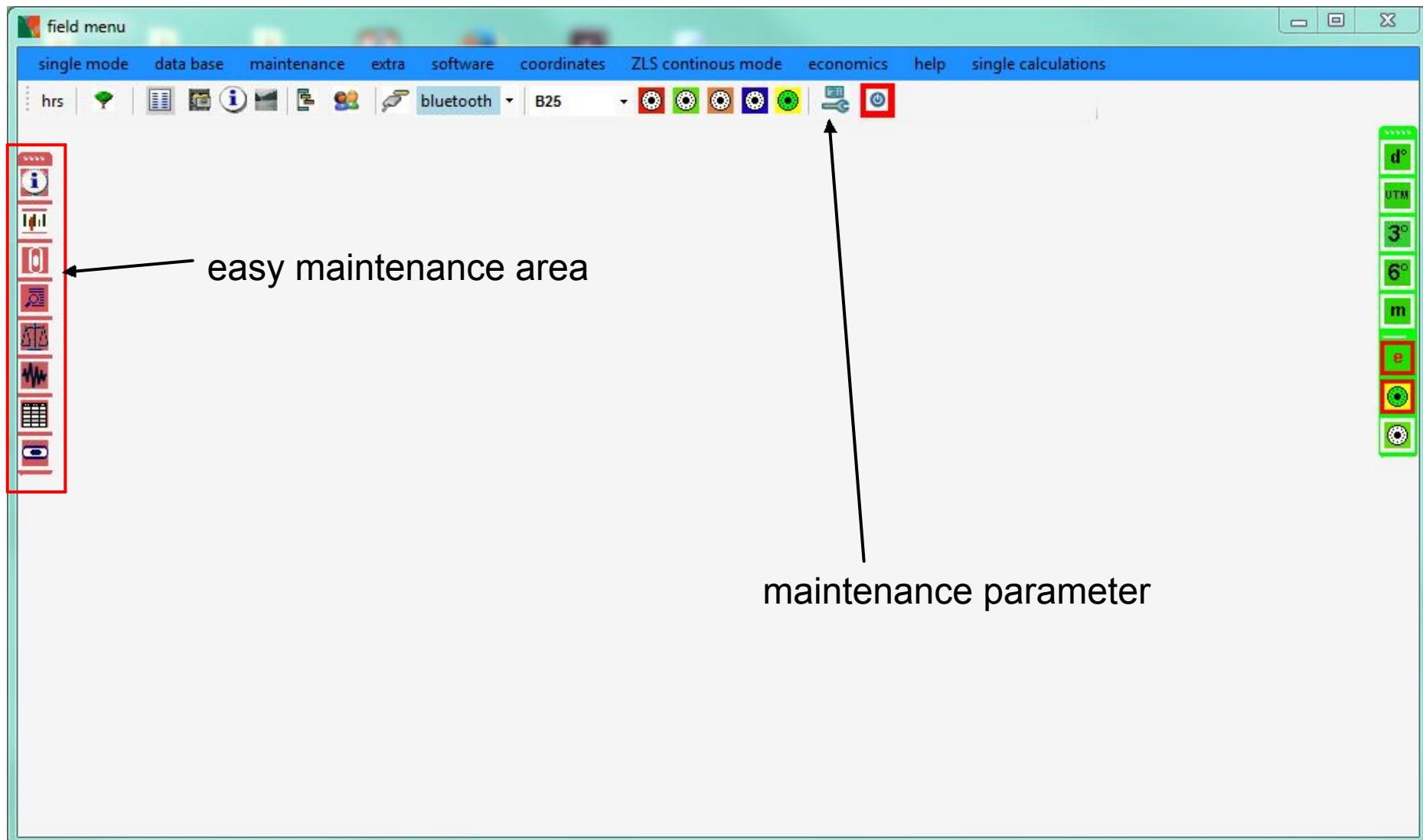
main menu

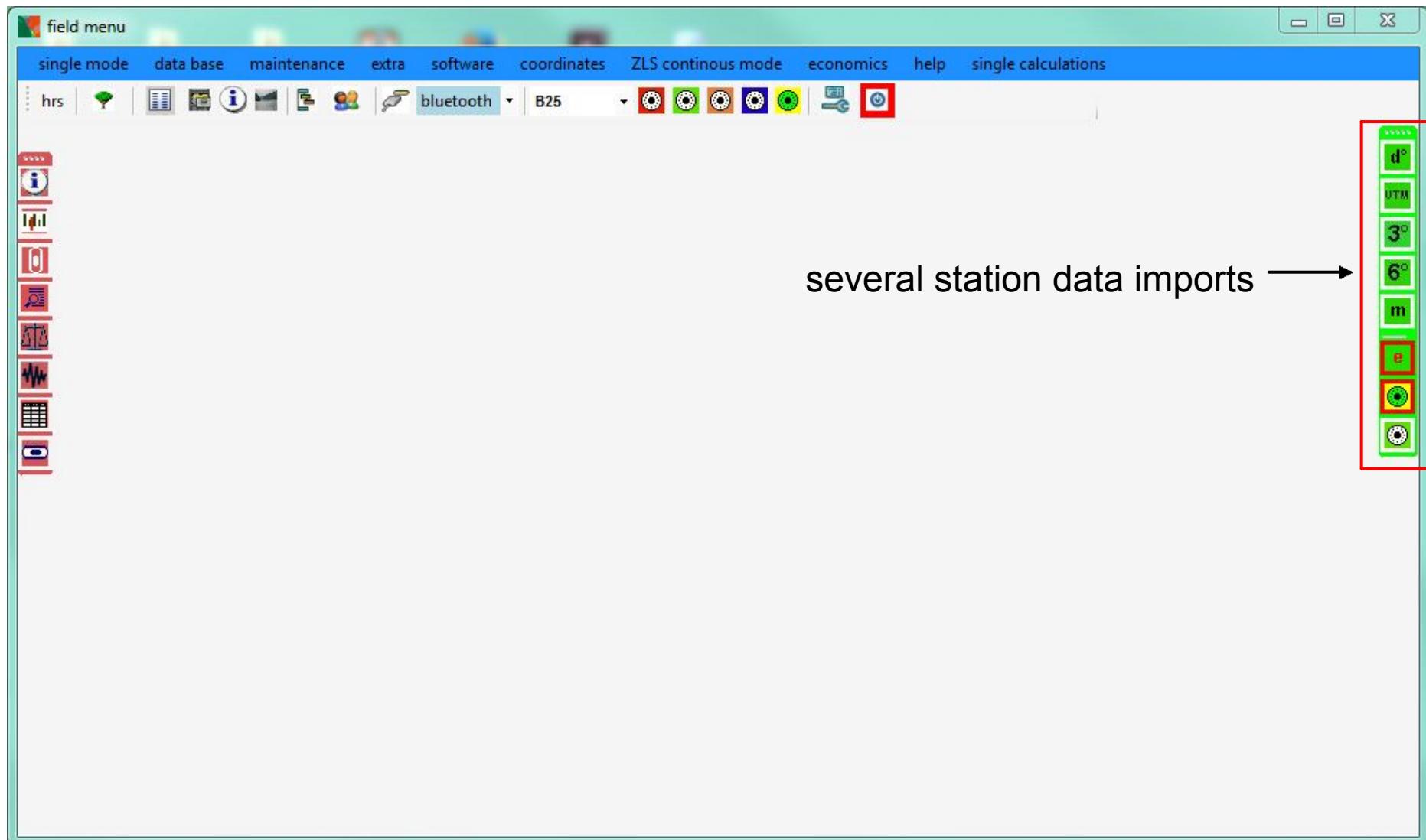


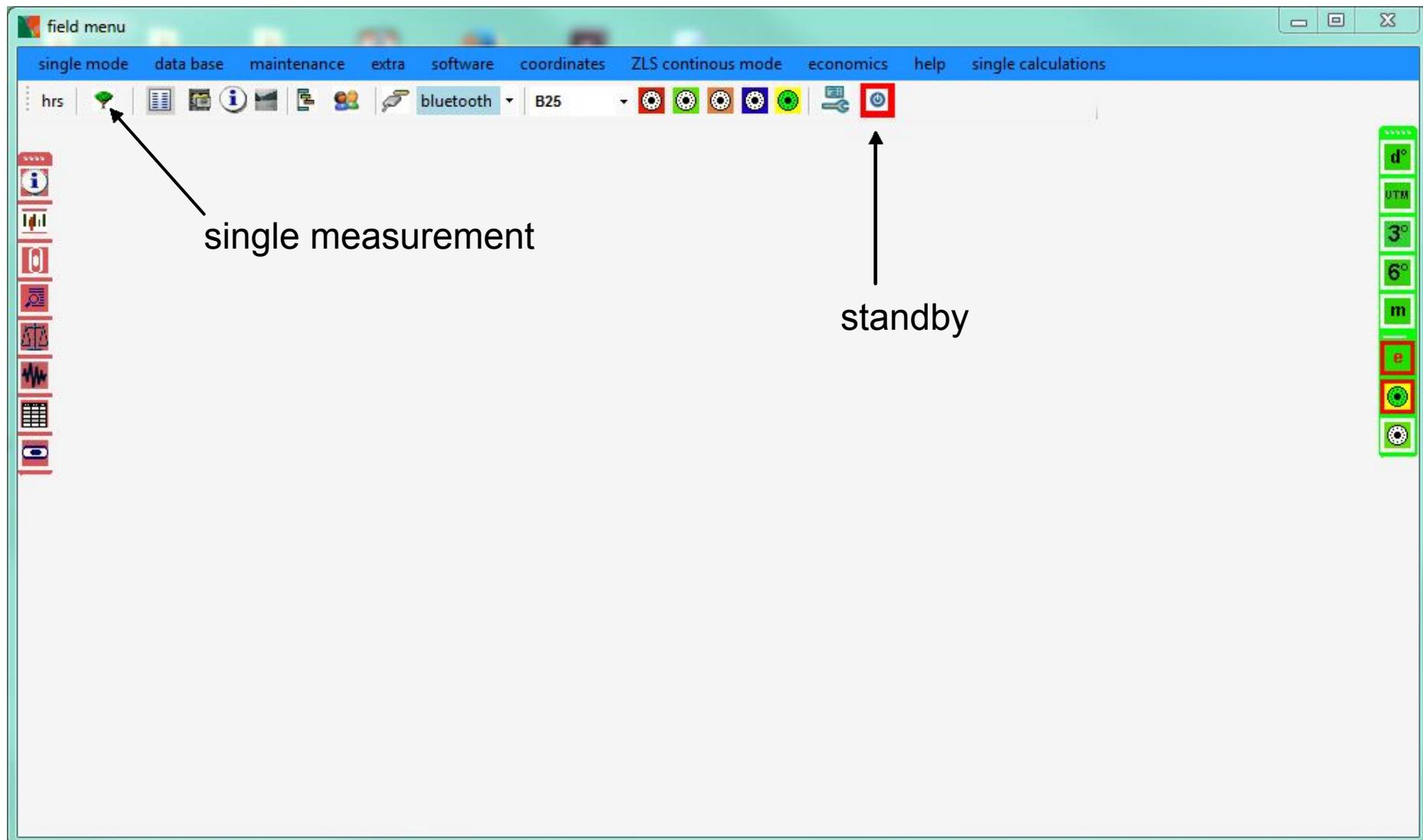
gravity meter selection, connection, test of the connection











stations coordinates in decimal degree and elevation in meter and rectangle coordinates to decimal degree

Hohenlohe
Langenburg
Michelfeld
Sportplatz
Original1
Testen
Wir

search station: elipsoid: GRS80

data set no.: 4/22

station latitude N/S longitude W/E elevation picture

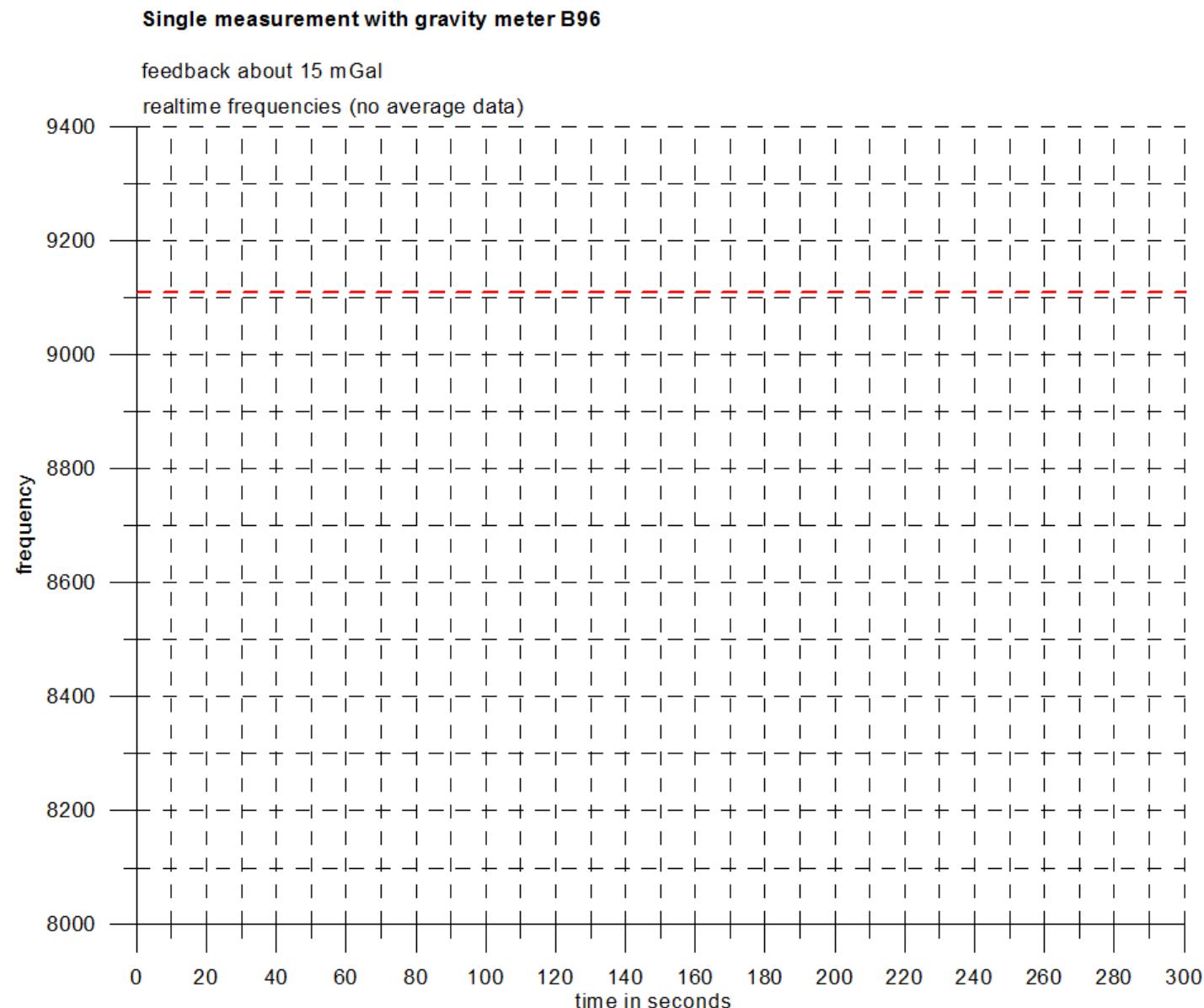
station	latitude	N/S	longitude	W/E	elevation	picture
BASESTATION	49.099753012	N	9.664818741	E	373.614	C:\Users\Richard\Pictu...
MAINTENANCE	49.099753012	N	9.664818741	E	373.614	C:\Users\Richard\Pictu...
NEU1	49.396065288	N	1.122690884	E	0.000	----
NEU2	49.395995554	N	1.126935661	E	0.000	----
NEU3	49.395896352	N	1.131270093	E	0.000	----
NEU4	49.395785003	N	1.136823916	E	0.000	----
NEU5	49.395710738	N	1.141475109	E	0.000	----
NEU6	49.395485177	N	1.147026244	E	0.000	----
NEU7	49.395286887	N	1.152668310	E	0.000	----
NEU8	49.393354629	N	1.152532751	E	0.000	----
NEU9	49.393804499	N	1.158731856	E	0.000	----
NEU10	49.391809517	N	1.159181803	E	0.000	----
NEU11	49.390880882	N	1.152520028	E	0.000	----
NEU12	49.390624747	N	1.146822726	E	0.000	----
NEU13	49.390667672	N	1.142487480	E	0.000	----
NEU14	49.391524201	N	1.139255101	E	0.000	----
NEU15	49.392397516	N	1.137197439	E	0.000	----
NEU16	49.392580019	N	1.133091104	E	0.000	----
NEU17	49.392062853	N	1.130730339	E	0.000	----
NEU18	49.391771320	N	1.128555477	E	0.000	----
NEU19	49.392062853	N	1.122110518	E	0.000	----

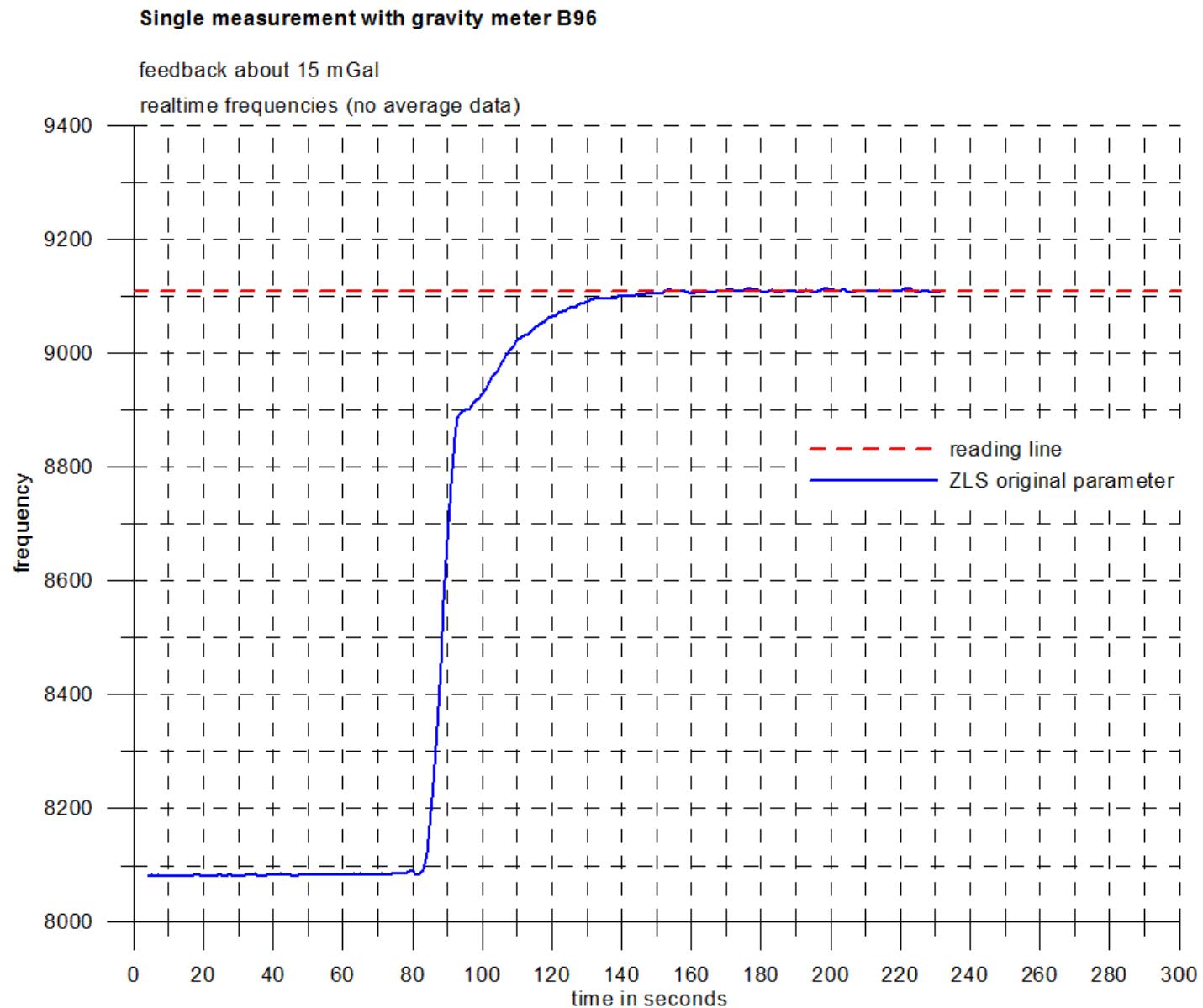
manual station data input

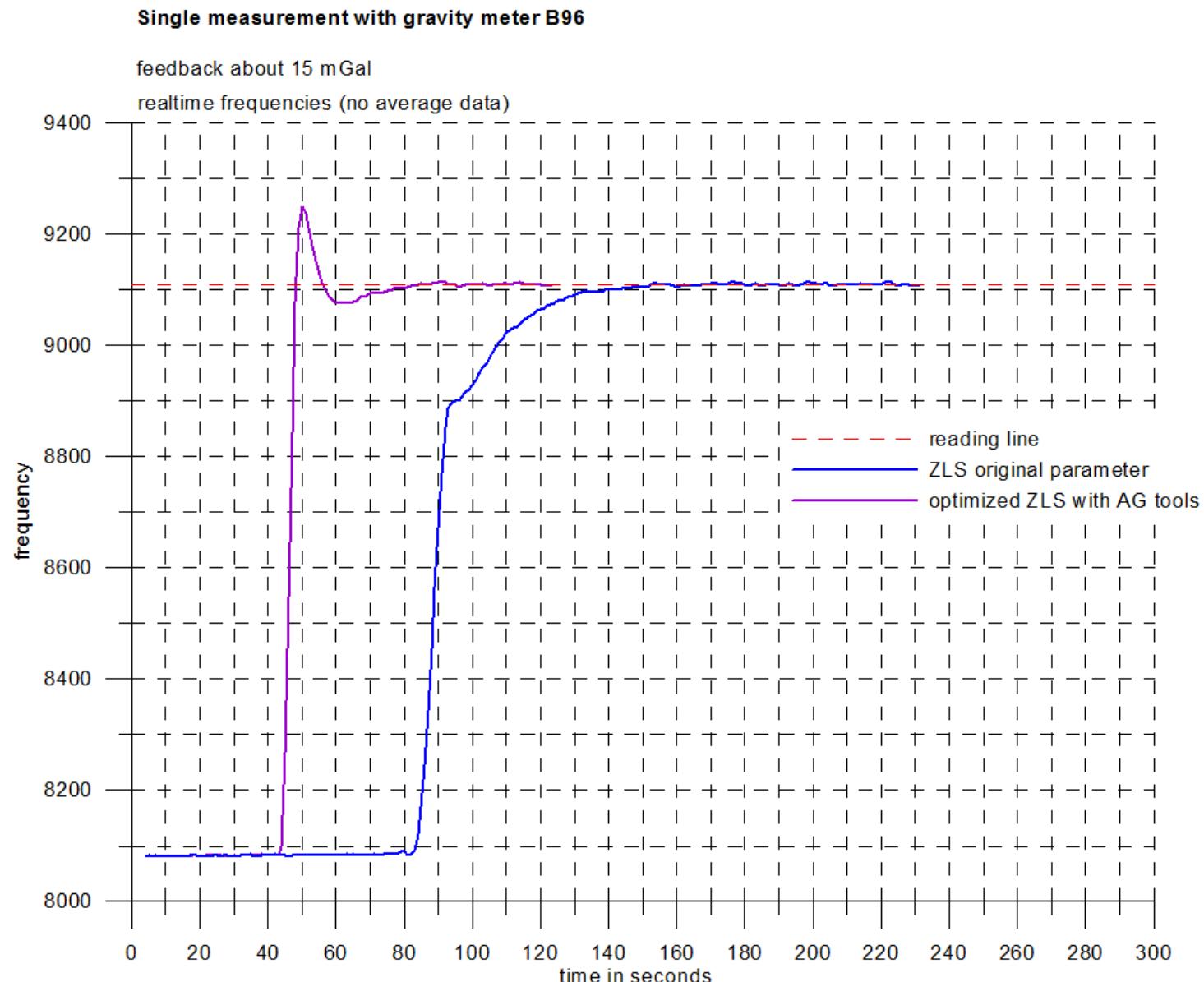
.... but it is better to import the data because of the number of parameters

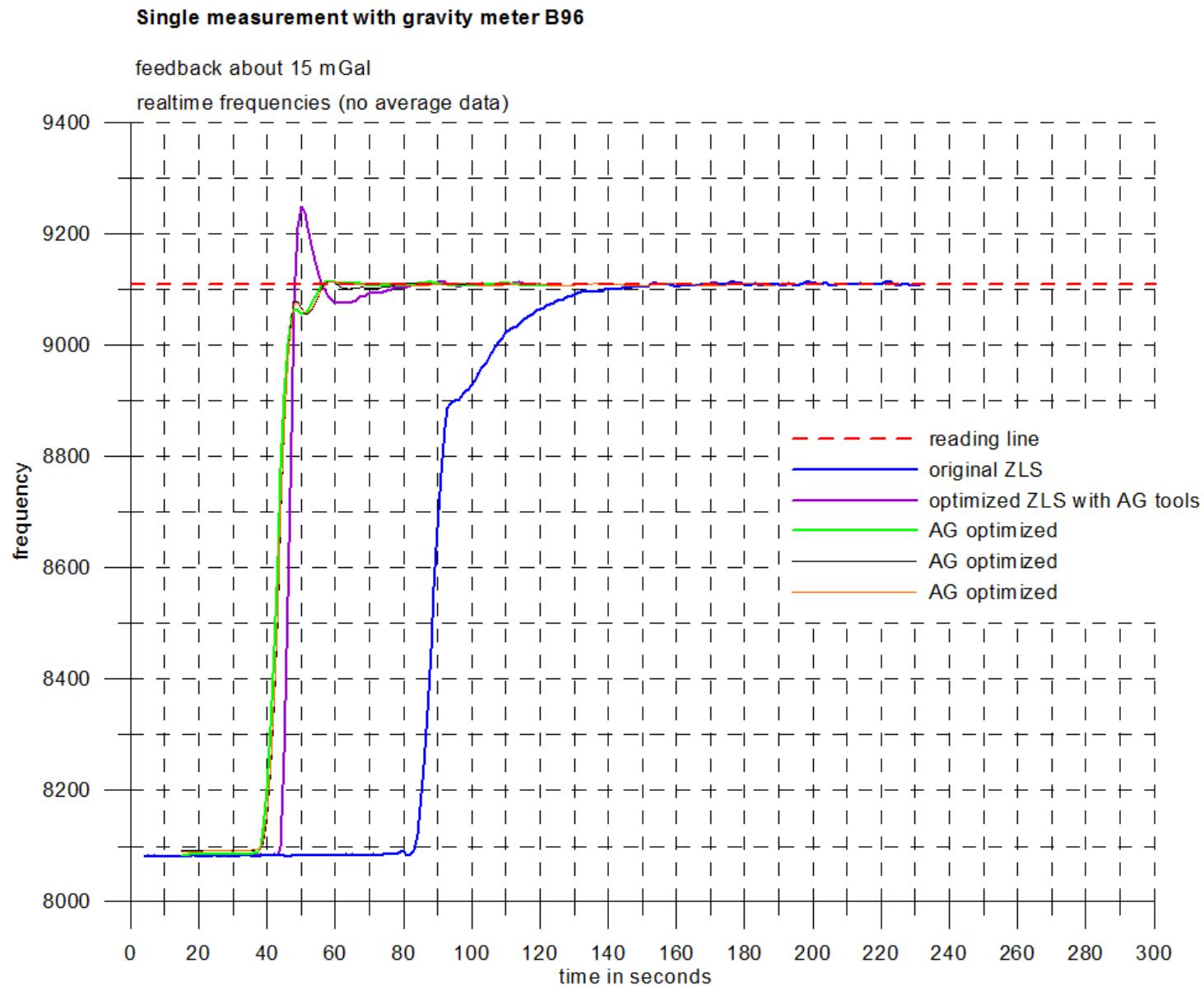
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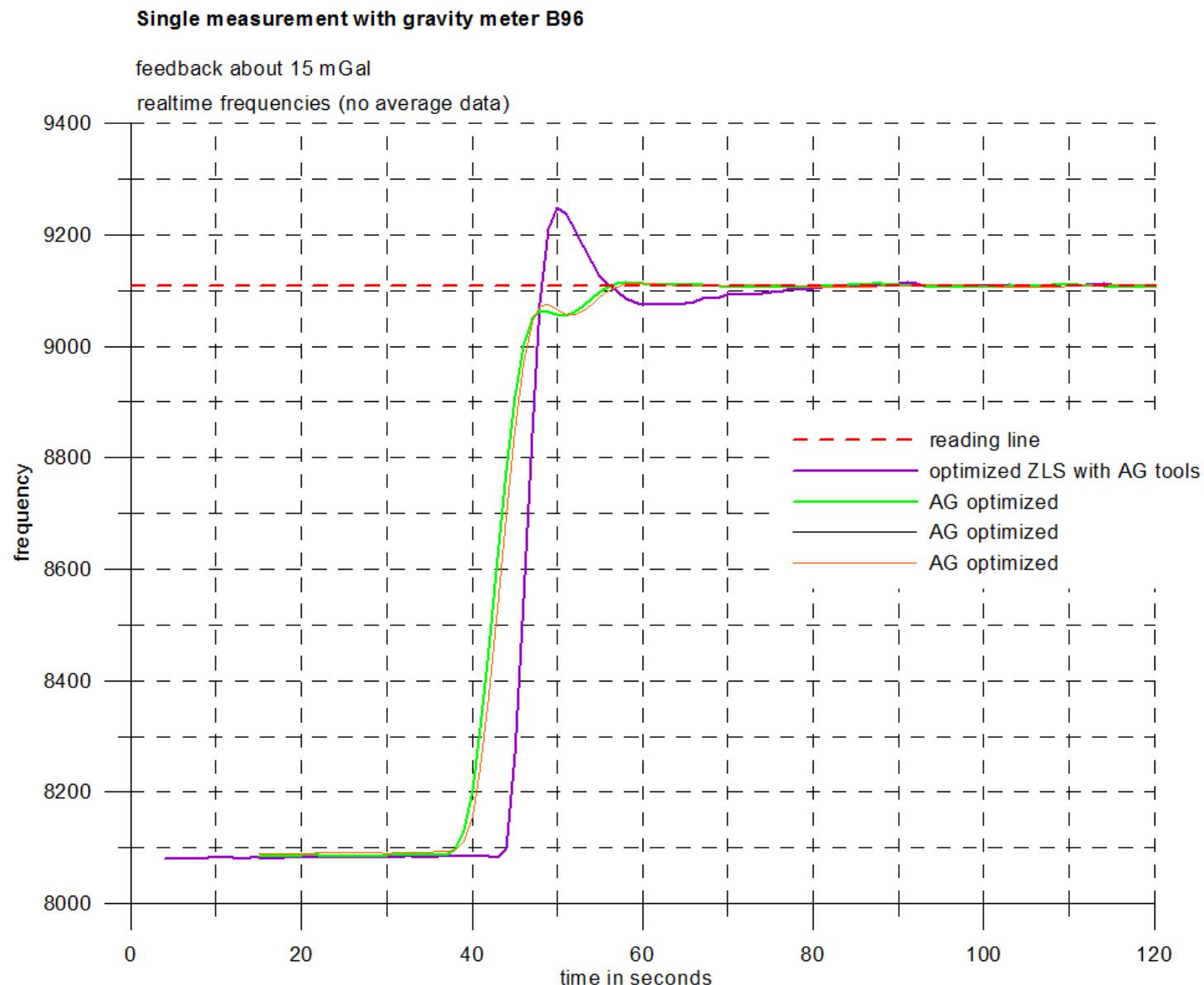
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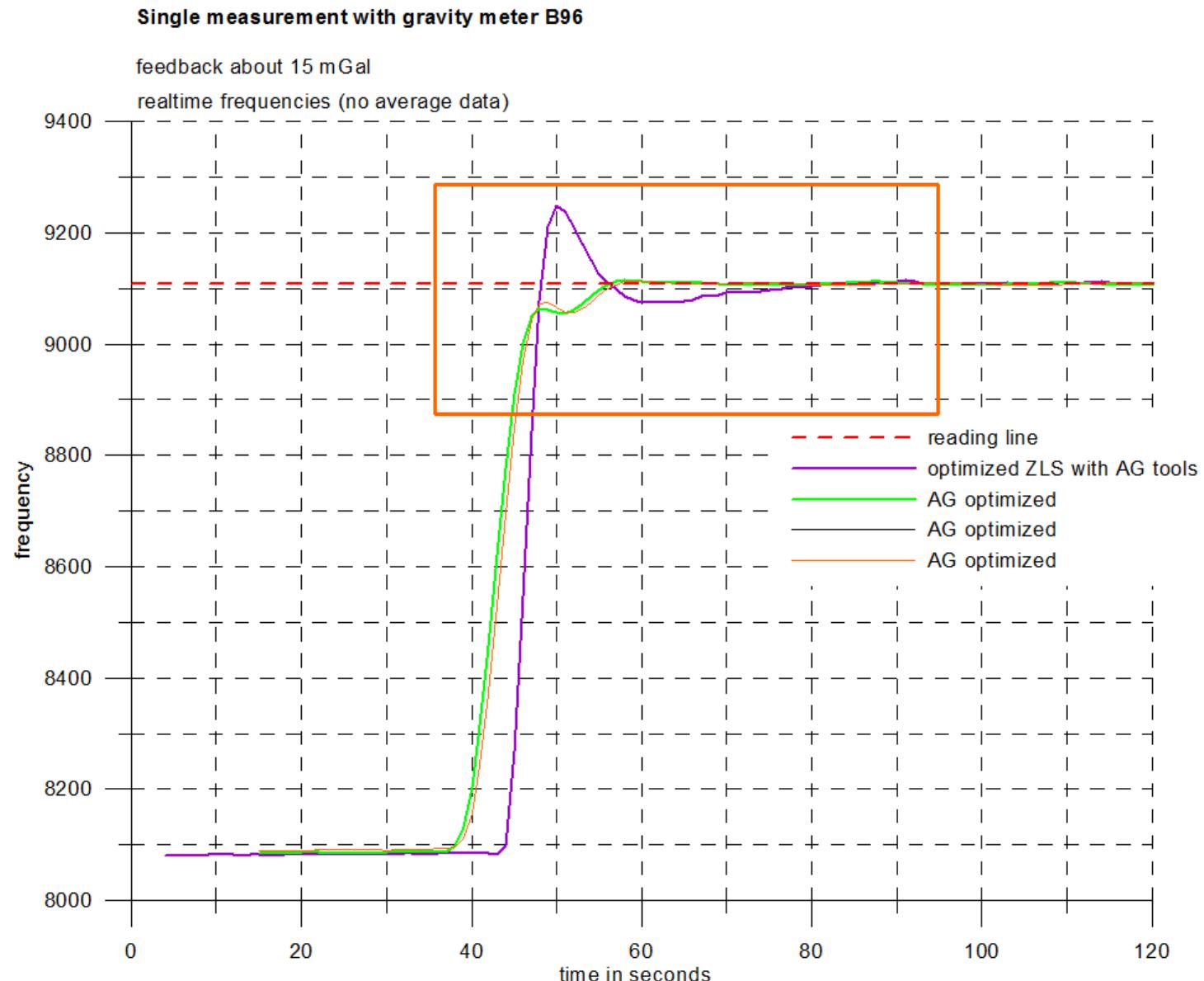


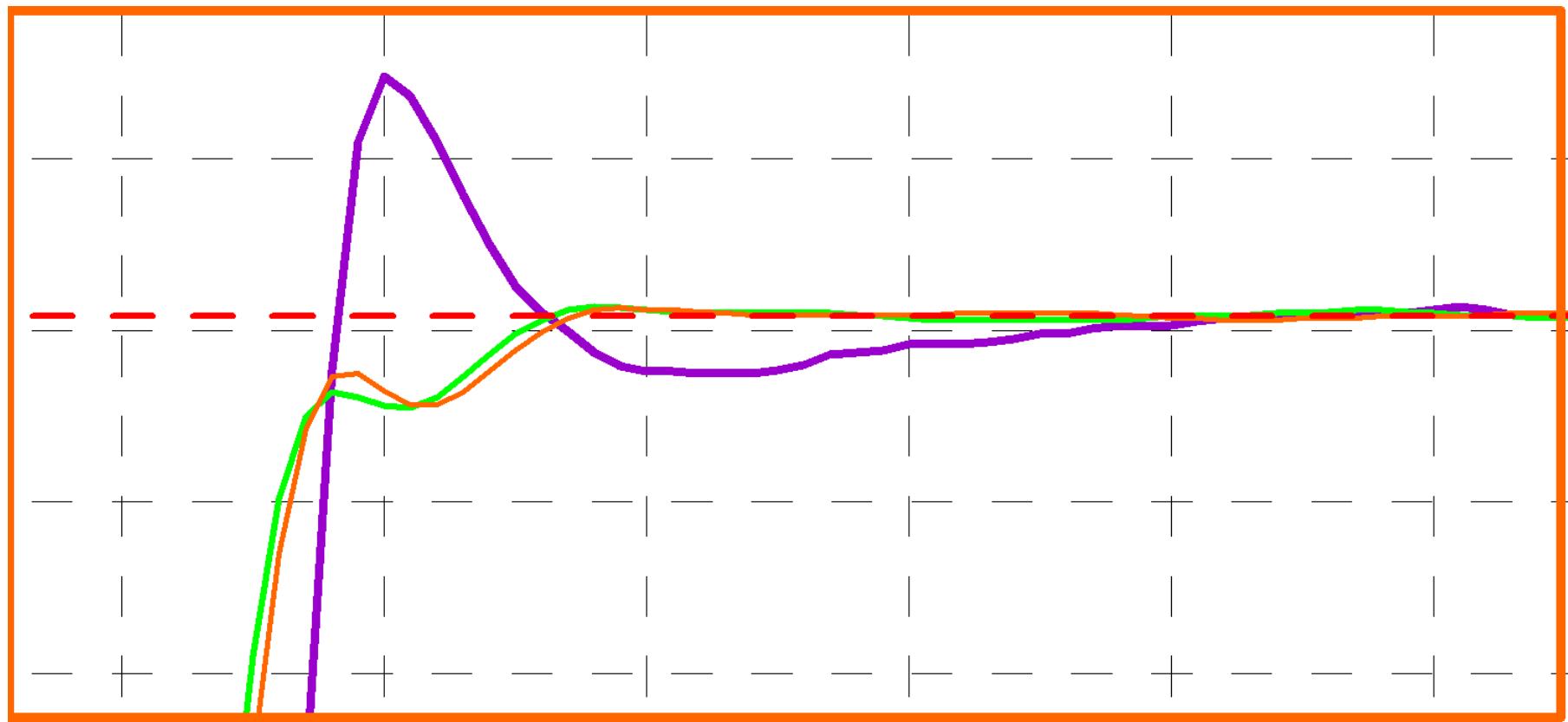


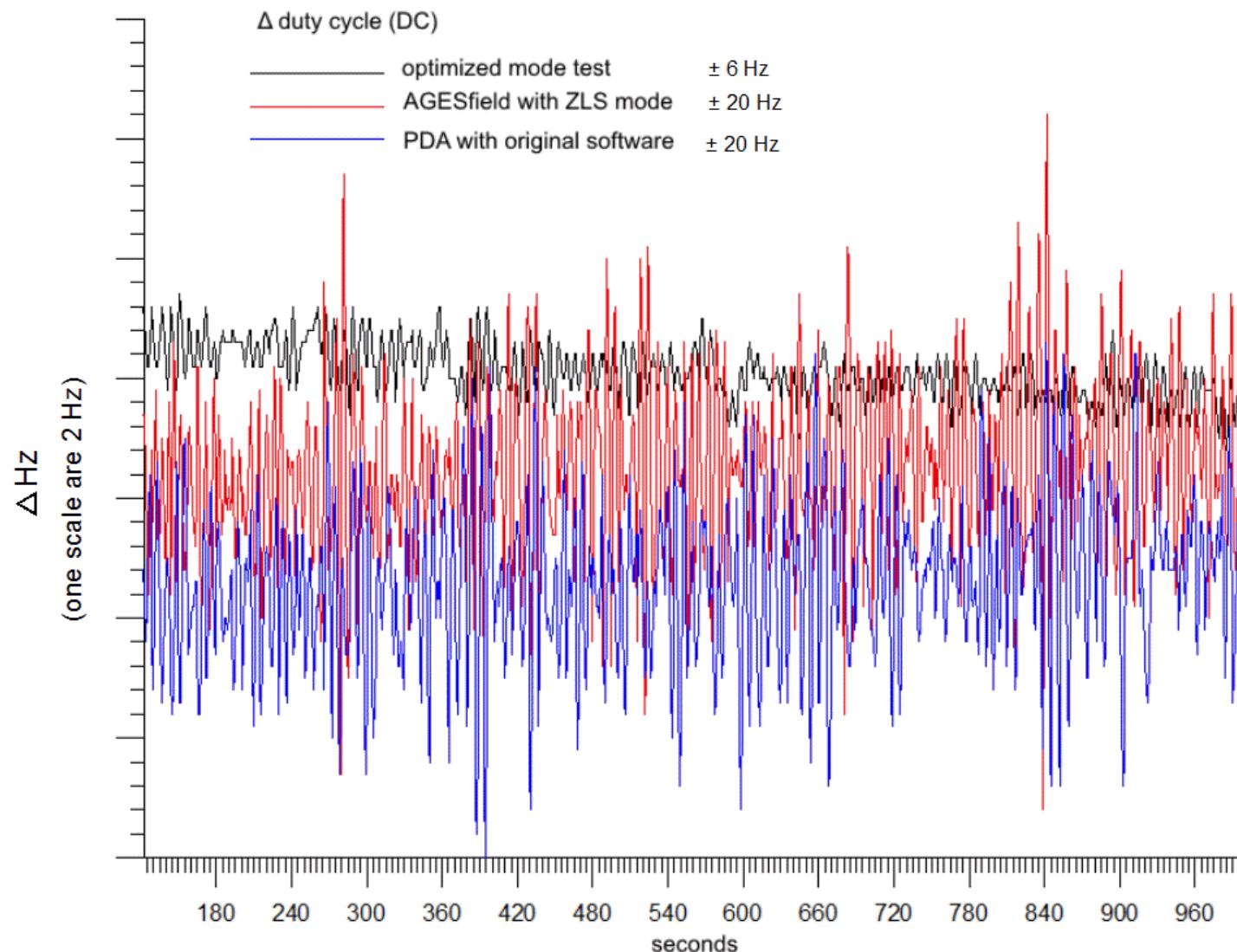




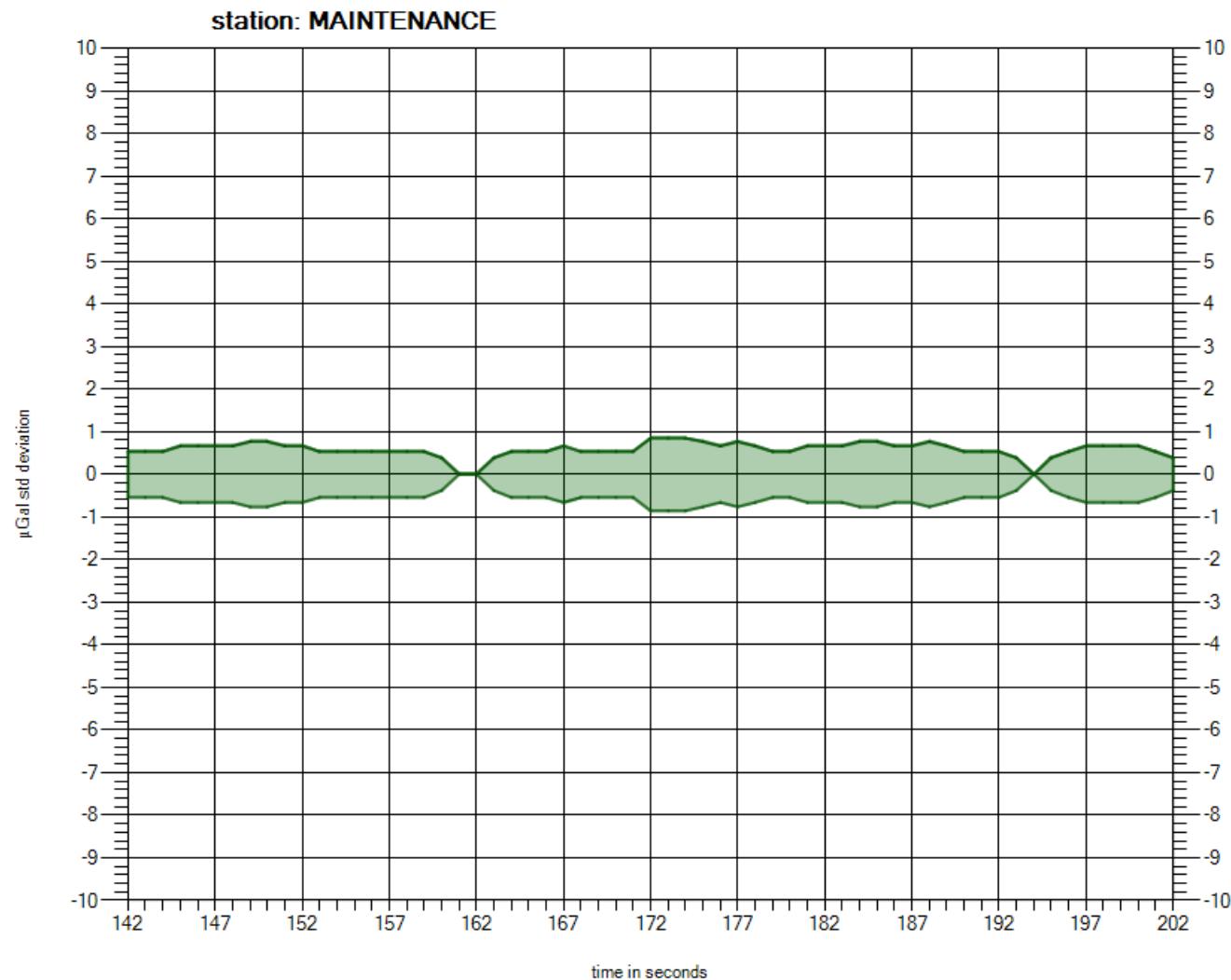








standard deviation (here 6 datasets)



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Net time synchronisation

hard disk, redundant

station and observer administration (25 parameters)

no data transfer

familiar Windows system

more information

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more information

plus

real time information

graphics of the parameters

station import opportunities

GPS in computer

data format changes

easier maintenance

three standard packages

modules for individual requests

optimised control circuit

..... (see in the future)

