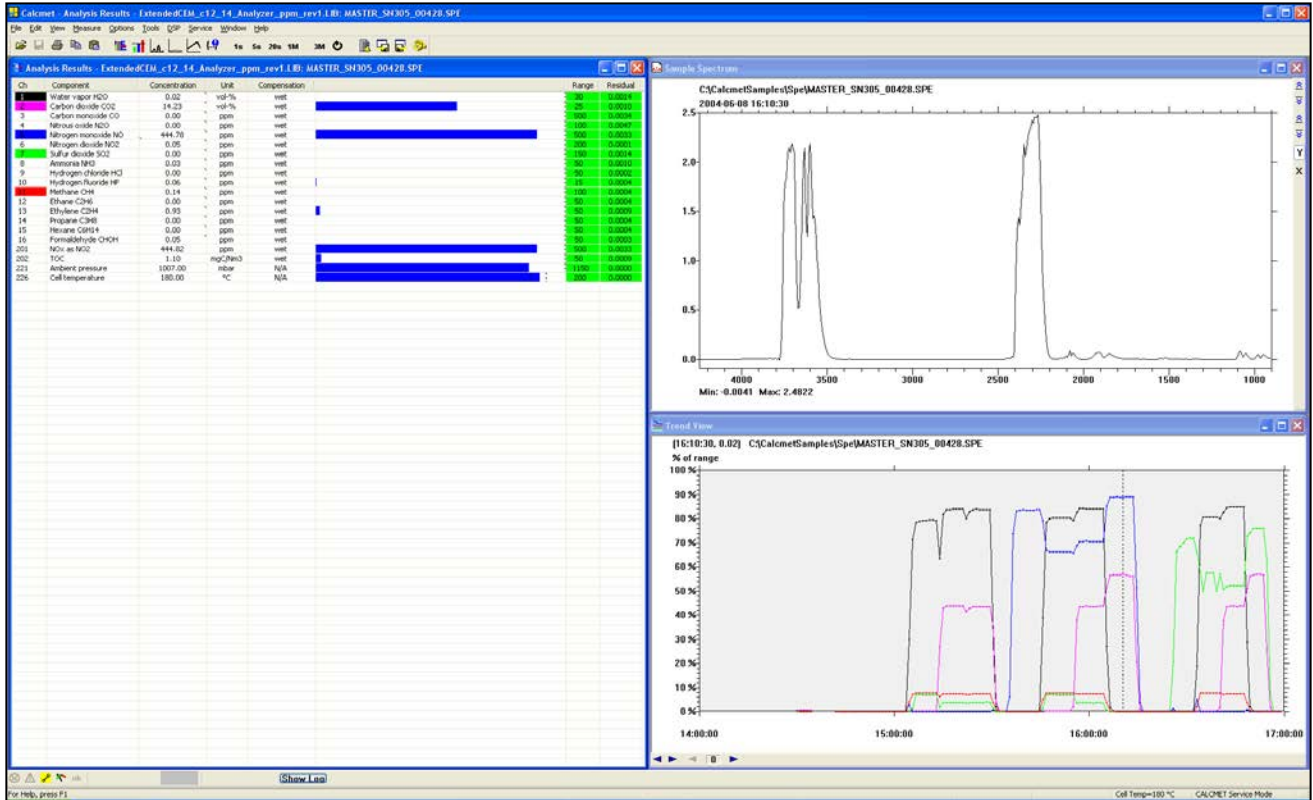


# Calcmeter Analysis Software (STD and PRO)



## Analysis and Control Software for FTIR Gas Analyzers

Calcmeter is used together with Gasmeter gas analyzers to collect FTIR spectra of the sample gas and to analyse the concentrations of gas components. Calcmeter provides an easy to use interface to the FTIR gas analyser, stores and visualises the sample spectra and performs the multicomponent analysis using Gasmeter Technologies Oy's patented modified classical least squares algorithm.

Calcmeter also supports various input and output formats, which enable integration of the Gasmeter gas analysers to continuous emissions monitoring systems (CEMS) and to variety of data acquisition systems. Typical inputs include analogue 0-10 V and 4-20 mA signals and digital inputs from e.g. stack temperature and pressure sensors, flow measurement devices and particulate matter analysers. Typical outputs include relay outputs used to control sampling systems, 0-10 V and 4-20 mA outputs of measured concentrations, and serial ModBus output consolidating both measured concentrations and binary alarm/status signals. Conversion of ModBus to other FieldBus formats is also supported.

Calcmeter comes in two versions, Calcmeter Standard and Calcmeter Pro. The Pro version offers additional features including automatic identification of gases based on a Library Search routine.

## General parameters

- Operating system:** Windows 7 (32-bit) operating system
- Hardware requirements:** 512 MB memory, > 40 GB hard disk, > 2.4 GHz Intel Pentium IV processor, DVD-RW, modem, network card, RS-232 and USB ports.
- Analysis principle:** Modified classical least squares
- Performance:** Simultaneous analysis of up to 50 gas compounds. Data acquisition, analysis of 20 gases and output in < 1000 ms
- Data storage:** Automatic saving of sample spectra with options for saving only when a specific condition is met (concentration / residual). Automatic saving of analysis results, log files, and calibration check files. User configured autosave file and folder names. Spectrum file size 4.3 kb in Calcmeter spectrum file format
- Hard disk guard:** Monitors disk space. Deletes old sample spectra when disk is full
- Hardware watchdog:** Possible to enable when using Gasmeter PC

### Input/output options

<b>Analyzer control:</b>	RS-232 COM port (standard), RS-422 COM port (optional in Pro)
<b>Expansion cards:</b>	AdLink PCI expansion cards (up to a total of eight cards) <ul style="list-style-type: none"> <li>- PCI-6208 analog output</li> <li>- PCI-7230 digital input /output</li> <li>- PCI-7250/51 relay output</li> <li>- PCI-9112 analog input</li> </ul> AdLink ISA expansion cards (up to a total of three cards) <ul style="list-style-type: none"> <li>- ACL-7225 relay output</li> </ul> Advantech DA&C unit via Ethernet (up to eight modules) Beckhoff TwinCAT (up to 255 modules)
<b>Serial output:</b>	MODBUS (other FieldBus formats as an option) AK Protocol (Pro) COMLI ASCII (proprietary format)

### Analytical performance

<b>Data acquisition time:</b>	1 – 500 seconds, time weighted average of individual scans lasting 100 ms each. In Calcmet Pro acquisition time may be shortened to below one second.  Data acquisition may be configured for any interval or for sampling from multiple sample streams
<b>Detection limit:</b>	< 3 x spectral baseline noise
<b>Linearity deviation:</b>	< 2 % of reference concentration
<b>Linearity correction:</b>	Automatic, multi-point fitting of calibration curve
<b>Cross interference:</b>	< 4 % of reference concentration, cross-interfering components are included in multicomponent analysis
<b>Quality assurance:</b>	Residual absorbance from analysis is monitored and results invalidated if residual is too high
<b>Supported file formats:</b>	Gasmeter sample spectra (.spe) Gasmeter reference spectra (.ref) Gasmeter background spectra (.bkg) Gasmeter Interferogram file (.ifg) ASCII x-y table (.txt) JCAMP-DX (.dx)

### Comparison of Calcmet versions

Calcmet Standard and Professional version support all Gasmeter models.

	<b>Standard</b>	<b>Pro</b>
FTIR analyser control (RS-232)	<b>X</b>	<b>X</b>
50 gas multicomponent analysis	<b>X</b>	<b>X</b>
Sampling system control (portable and stationary)	<b>X</b>	<b>X</b>
Support for inputs and outputs (PCI expansion cards)	<b>X</b>	<b>X</b>
Support for 16 and 24 bit electronics	<b>X</b>	<b>X</b>
Identification of gas components using Library Search routine	<b>X</b>	<b>X</b>
Identification of gas components using Advanced Library Search routine	-	<b>X</b>
Fast measurement for automotive applications. Requires additional hardware	-	<b>X</b>
English language	<b>X</b>	<b>X</b>
Possibility to use NIST library (requires a separate NIST library option)	-	<b>X</b>
Match functions & Logic functions	-	<b>X</b>
Peak marking, Savitsky-Golay smoothing, Deconvolution	-	<b>X</b>

All new advanced updates will be updated in Pro version. Updates are free of charge for Pro users

### End user licence

<b>Standard version:</b>	Unlimited Site Licence, user may install Calcmet on as many workstations as required for his/her own use.
<b>Professional version:</b>	Single user licence, protected with a HASP USB key.  Calcmet Pro features are contained in standard version distribution package, but are hidden when Calcmet Pro licence key is not present.