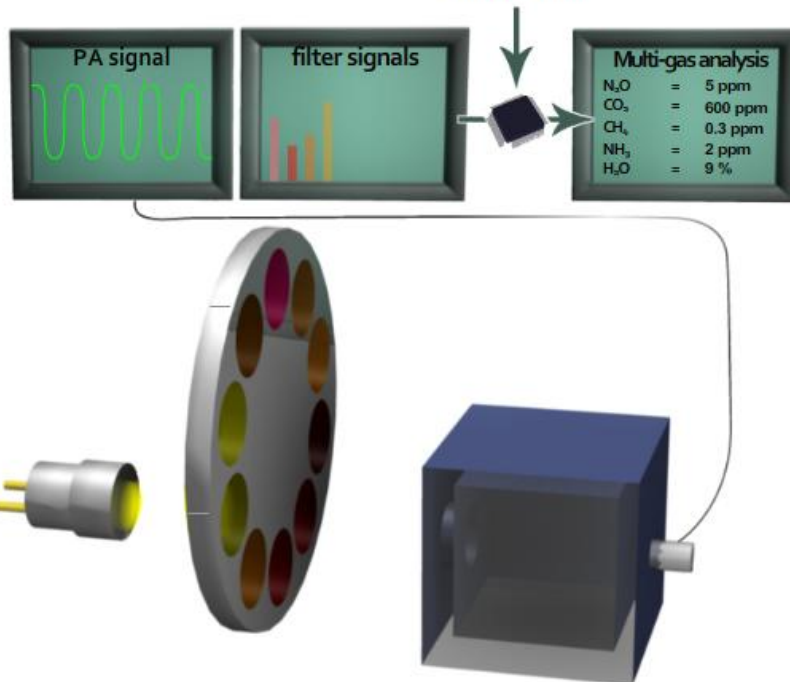
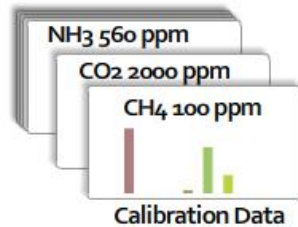


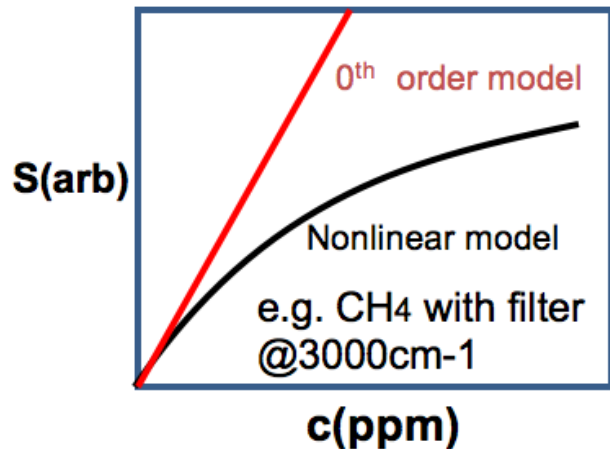
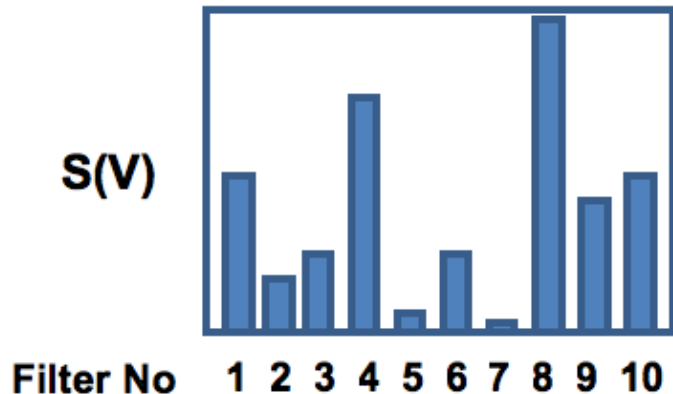
Multi-Gas Analyzer: **F10**



Reliable gas analysis with cantilever
enhanced photoacoustic technology

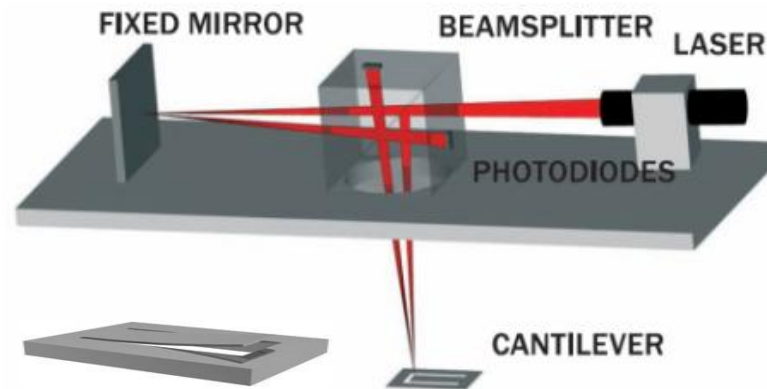


- F10 Multi-Gas analyzer measures selectively up to 9 gases simultaneously
- Photoacoustic infrared technology: Pulsed IR source and 10 distinct spectral bands in the mid-IR region defined by narrow band-pass optical filters

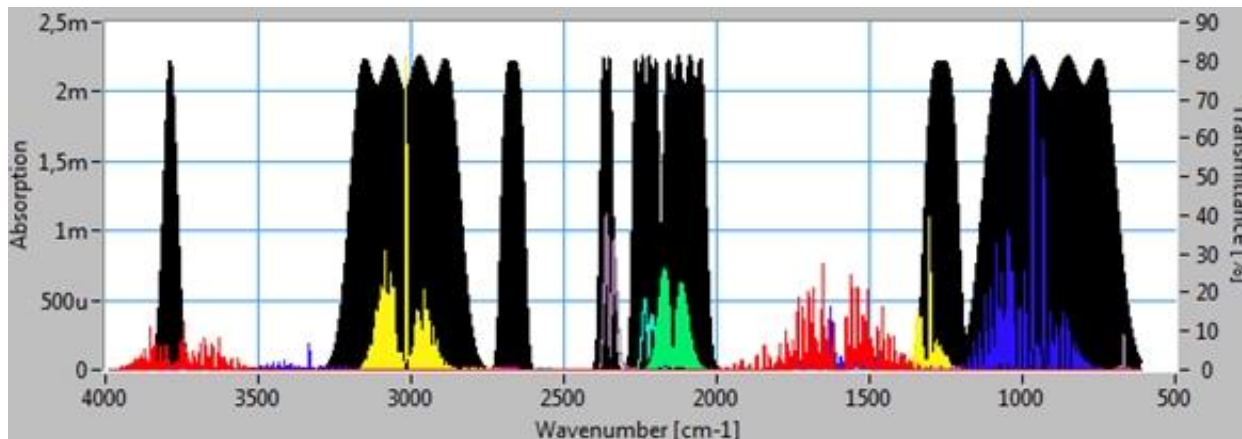


- The fingerprint curve from the filter signals (calibration library) is created during the single-point span calibration
- A least squares fit of the calibration library is applied to the sample measurement data
- Non-linear model is applied in the analysis algorithm for better selectivity and increased linear dynamic range

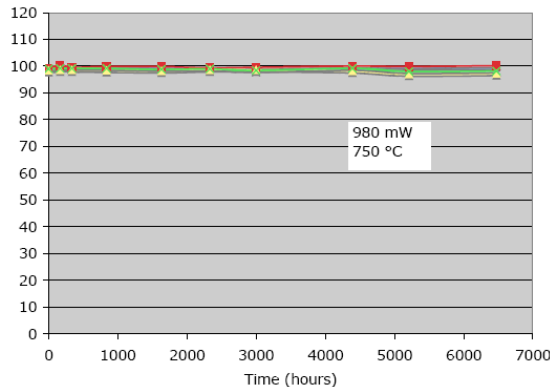
- High sensitivity is obtained by utilizing the patented cantilever based optical microphone technology
- Cantilever enhanced optical microphone ensures 100 times better S/N compared to conventional microphones



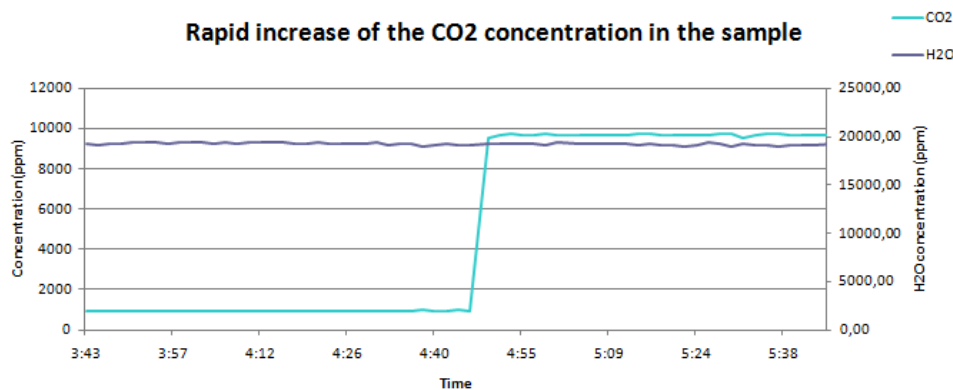
- High selectivity is obtained by selecting up to 10 optical filters with optimal spectral bands in the mid-IR region for **target gases** as well as **interfering gases**
- All installed optical filters are used for each gas and several spectral regions can be used for a single gas to minimize the cross sensitivity



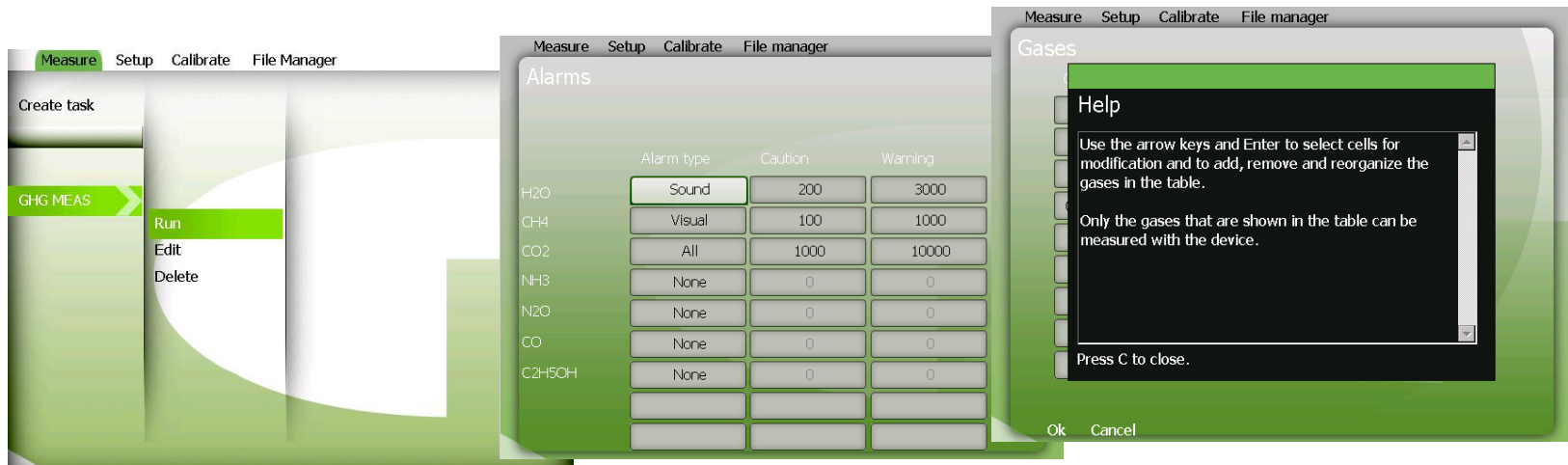
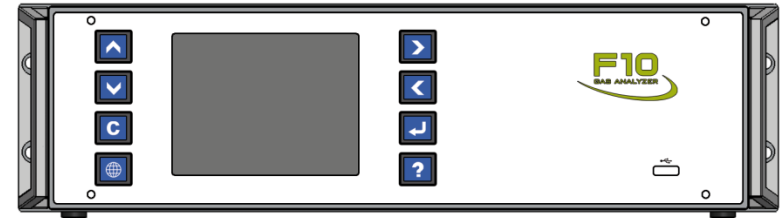
- Calibration period is several months
- Mechanical chopper is not required due to the use of the electrically pulsed IR source
- The IR source is highly stable with a life time of years of continuous operation
- Measurements can be performed in wide ambient temperature and pressure range



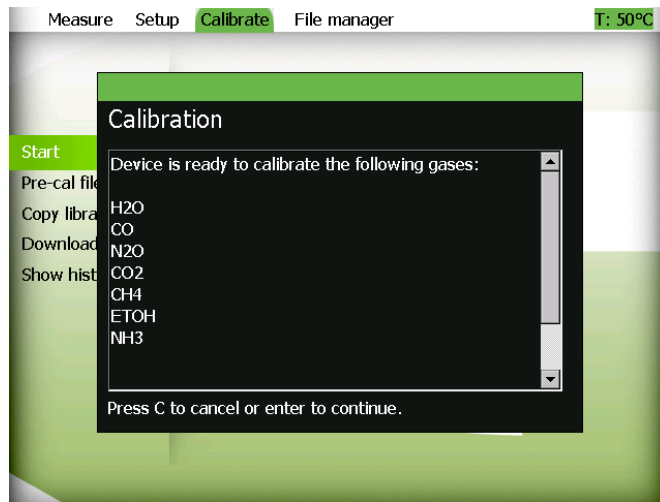
- Photoacoustic technology provides high sensitivity from short optical path length
- Short optical path length enables wide dynamic range
- Model-based non-linearity compensation is used to broaden the range even further
- Dynamic range can be over five orders of magnitude with single-point span calibration



- Full operation with eight large push-buttons
- Graphical user interface with user-friendly menus and quick assistance function
- Operation system is based on Windows CE®



- Non-linearity compensation curves are factory-installed
- Only one concentration for each gas in needed in span calibration
- Each component can be re-calibrated whenever wanted without the need for full calibration

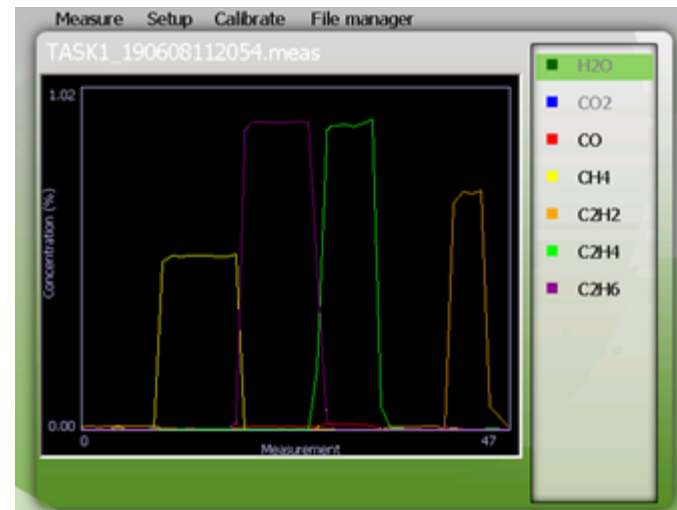


- Versatile programming of measurement tasks
- Multiple parameters for monitoring, data logging and presentation of the results
- No external computer is required for data logging

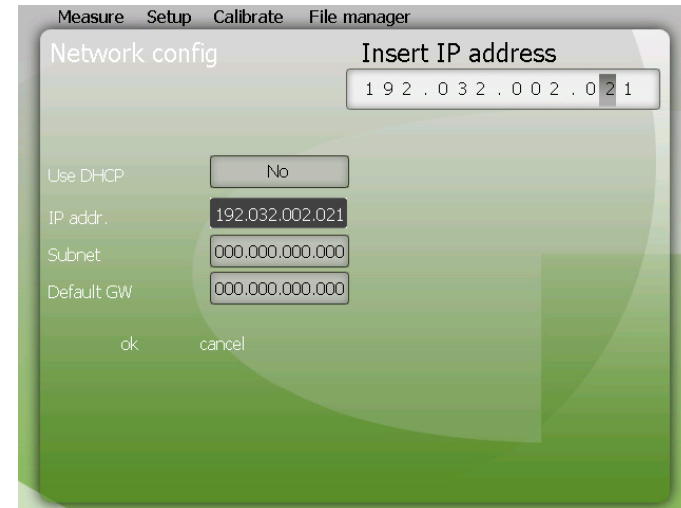
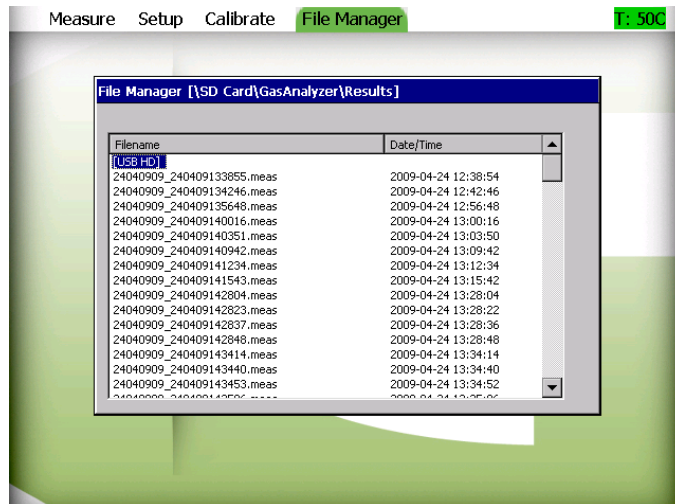


- Full scale analysis without range adjustment
- High-resolution graphical display
- Built in graphical trend view of all the gases in the monitoring tasks

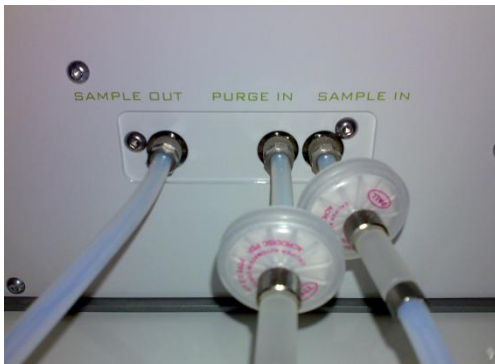
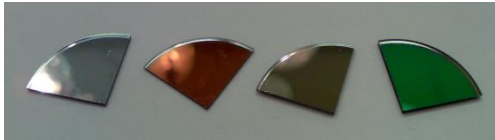
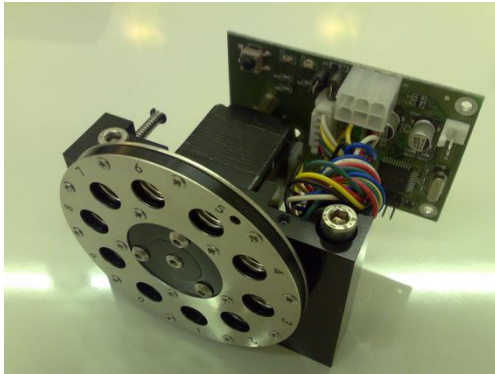
Measure Setup Calibrate File manager			
H2O	=	0.50	%
CH4	=	433	ppm
CO2	=	35.0	ppm
NH3	=	122	ppm
N2O	=	1.23	ppm
CO	=	59.0	ppm
C2H5OH	=	11.0	ppm



- Easy access to measurement data files and device log-files. File format is universal.
- Equipped with Ethernet, USB2.0, RS-232 and RS-485



Low cost of ownership



- Only 30 ml of sample gas is consumed in each sample change
- No consumables is required
- Very little regular maintenance required
 - Only single point span and zero-gas calibration is needed
 - Gas filters are located outside the device and are easy to replace
 - IR source and optical filters can be easily removed from the base unit
 - Very few mechanical moving parts
 - Cell purifying options with purge gas



● CE

- EN 61010-1:2001
- EN 50270:2006
- EN 61000-3-2:2006
- EN 61000-3-3:1995 + A1:2001 + A2:2005)

● CB

- IEC 61010-1:2001
- CAN/CSA-C22.2 No. 61010-1:2004
- UL 61010-1:2004 incl. rev. 2005

- Greenhouse gas monitoring
 - Agriculture, animal husbandry
 - Scientific monitoring of GHG
- Air quality monitoring
 - Indoor air analysis
 - Industrial hygiene
 - Health and safety
- Contaminated soil
- Gas manufacturing
 - QA/QC of gas cylinders
 - Impurities in pure gases
- Food and beverages
 - Storage control
- Ventilation measurements
 - Waste gases in hospitals
 - Leak detection
 - Fume hoods
- Dissolved gas analysis
 - Power stations
- Automotive
 - Environmental certification
 - SHED testing
- Scrubber efficiency
- Refrigerant leakage monitoring
- And many more

APPLICATION DETAILS

Lower detection limits with 5 second integration time per optical filter (CIT)

CO ₂	0.1 ppm
CH ₄	0.6 ppm
N ₂ O	60 ppb
CO	0.2 ppm
NH ₃	0.8 ppm
EtOH	0.4 ppm
H ₂ O	20 ppm

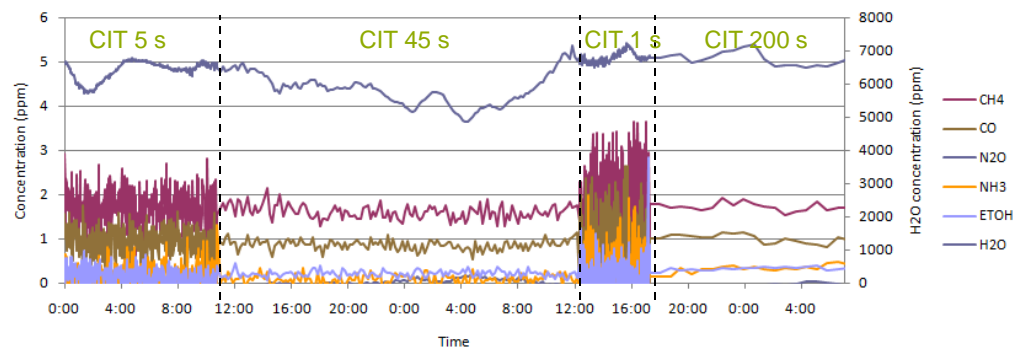
Response time at 5 seconds CIT is 74 seconds with full 10 filter configuration

Repeatability at high concentration (more than 100 x LDL) is below $\pm 1\%$

Repeatability at low concentration is \pm LDL

Water vapor and CO₂ doesn't influence in monitoring e.g. methane and CO in ambient air

REPEATABILITY AT TRACE LEVEL WITH DIFFERENT INTEGRATION TIMES. MONITORING OUTDOORS



REPEATABILITY AT HIGH CONCENTRATION

CO measurement repeatability is $\pm 0.4\%$

CH₄ measurement repeatability is $\pm 0.6\%$

