



**LSE**  
MONITORS

# NH<sub>3</sub> MONITOR FOR AMMONIA IN AMBIENT AIR AND STACK

**Ammonia measurement from LSE Monitors: a new solution for air pollution monitoring!**

Emission coming from farm animals and natural processes as well as from industrial activities leads to the formation of acid rain and to the development of aerosols.

In higher concentrations the smell is a problem.

Ammonia has to be monitored in stacks from industry and from farm ventilation systems as well as in ambient air.

To improve ambient air quality for human and for nature ammonia concentrations in wide parts of the world will have to be reduced. Monitoring is then needed to follow the effect of methods to reduce ammonia concentrations.

LSE Monitors has developed a simple and effective monitor based on a combination of a quantum cascade laser with photo acoustic technology to follow concentrations from ppm to low ppb, with a detection limit below 1 ppb in 10 minutes.



## QCL PAS technique and LSE Monitors

Infrared light that can be absorbed by ammonia molecules is produced by a quantum cascade laser. The laser light is led through a resonator cell that is continuously flushed with the sample. If ammonia is present the gas pressure increases as a result of absorption of the laser light. We modulate the laser at an acoustic frequency of 1600 Hz and the resulting pressure modulation can be measured by a microphone. The amplitude is proportional to the ammonia concentration. LSE Monitors is a joint venture between Sensor Sense BV in Nijmegen and Synspec BV in Groningen, combining knowledge of laser research, electronic design and analyser production.

### LASER EN PAS SPECS

AMMONIA  
ANALYSER

WAVELENGTH SUITABLE FOR AMMONIA  
PHOTOACOUSTIC FREQUENCY 1600 Hz  
CORRECTED FOR WATER- AND  
CARBON DIOXIDE INTERFERENCE

### RANGE, PRECISION, CALIBRATION GAS

RANGE

DETECTION LIMIT AT 10 MIN , 1 PPB  
RANGE UP TO 5 PPM, TUNEABLE TO 75 PPM

PRECISION

PRECISION AT 10 MIN 1 PPB

CALIBRATION

CALIBRATION TEST WITH ETHENE OR AMMONIA,  
MIN. 6 MONTHS, ADVISED 30 DAYS

### TECHNICAL DATA

DIMENSIONS

19" rack, 3 Standard Height Units (12 cm)  
depth 37,2 cm net, 15 kg

POWER DEMAND

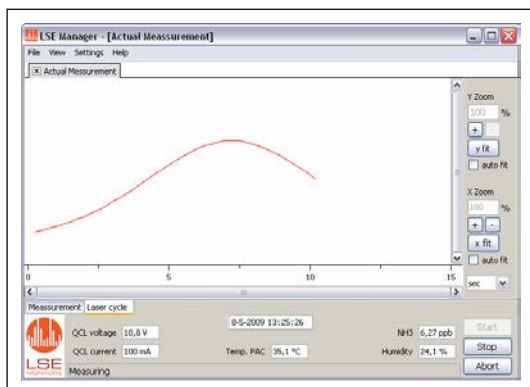
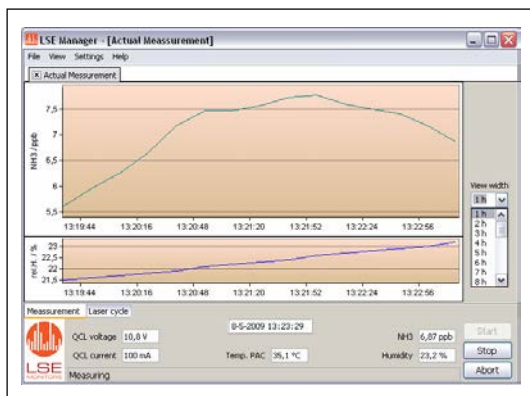
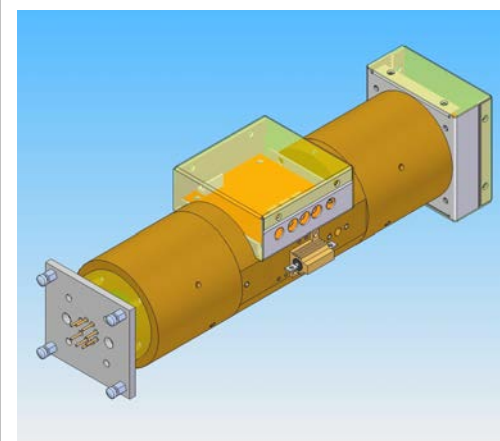
230 Vac, 200 VA (110 Vac available)

ENVIRONMENTAL  
CONDITIONS

TEMPERATURE 5 TO 35°C  
HUMIDITY 20 TO 95% (at high water concentration  
response time will increase)

SAMPLE CONNECTIONS

SWAGELOCK 1/8"



## PRELIMINARY TECH SPECS

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