

# APPLICATION NOTE

# LD20-01



## MultiDetek2 gas chromatograph uses for medical & pharmaceutical applications



▲ MultiDetek2

### LDetek SOLUTION:

Our medical gas analysers control safety and quality of production, according to the European Pharmacopeia norms.

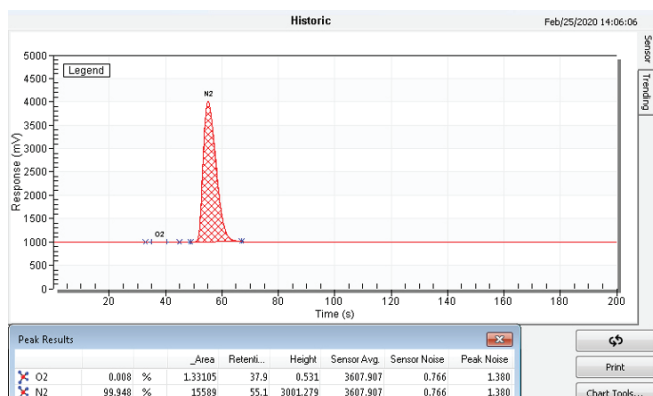
LDetek provides different GC configurations using the MultiDetek2 gas chromatograph where different detectors as our TCD and/or our FID can be mounted in.

### Various applications possible :

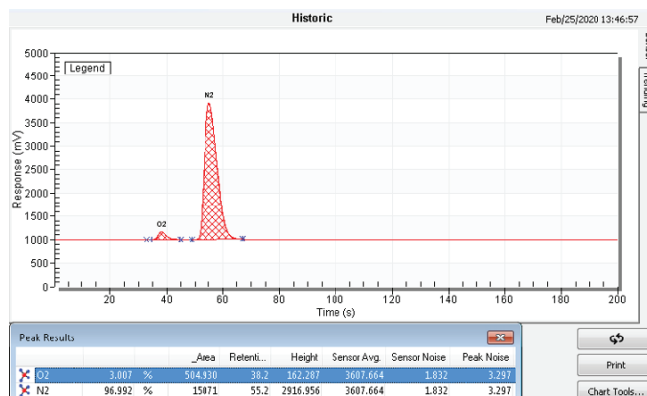
- **Nitrogen:** Analysis of % N<sub>2</sub> by TCD (% O<sub>2</sub> optional)
- **Nitric Oxide:** Analysis of ppm N<sub>2</sub>-CO<sub>2</sub>-N<sub>2</sub> by TCD
- **Carbon dioxide:** Analysis of ppm CO by FID/methanizer
- **Nitrous Oxide:** Analysis of ppm CO by FID/methanizer & ppm CO<sub>2</sub> by TCD inside the same unit

### RESULTS - NITROGEN ASSAY

#### Chromatogram of UHP Nitrogen



#### Chromatogram of a gas mixture containing 3% Oxygen & 97% Nitrogen



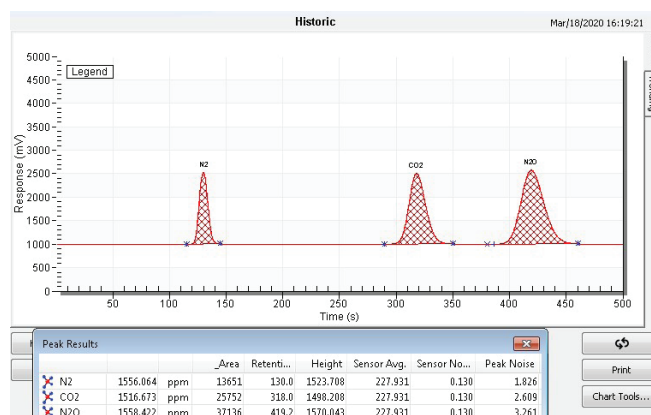
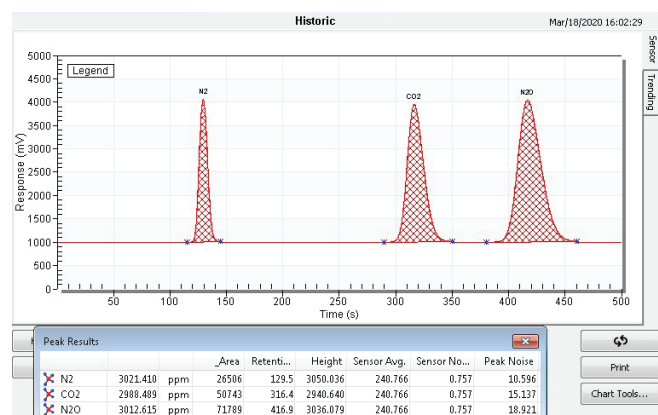
10 consecutive analyses to demonstrates a quick overview of the stability

Start	O2	N2
2020-02-21 11:47	3.007 %	97.024 %
2020-02-21 11:46	3.009 %	97.030 %
2020-02-21 11:44	3.004 %	97.038 %
2020-02-21 11:42	3.007 %	97.047 %
2020-02-21 11:40	3.008 %	97.045 %
2020-02-21 11:39	3.002 %	97.047 %
2020-02-21 11:37	3.004 %	97.031 %
2020-02-21 11:35	3.008 %	97.034 %
2020-02-21 11:33	3.008 %	97.033 %
2020-02-21 11:32	3.007 %	97.021 %
2020-02-21 11:30	3.015 %	97.000 %

## RESULTS - NITRIC OXIDE ASSAY

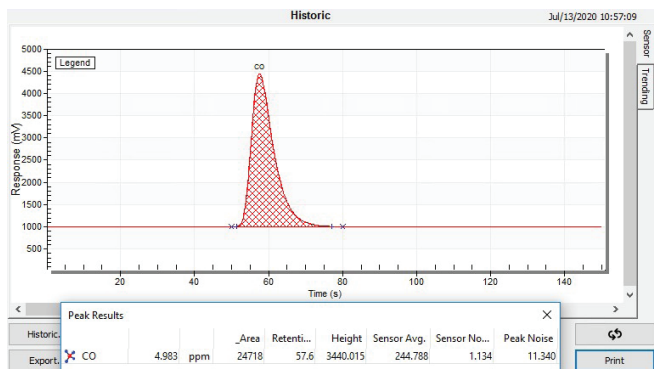
**Chromatogram of a gas mixture** containing 3000ppm N2-CO2-N2O in a balance of Nitric Oxide.

**Chromatogram of a gas mixture** containing 1500ppm N2-CO2-N2O in a balance of Nitric Oxide. Considering a ratio of 3 times the noise level, the LDLs for the N2-CO2-N2O have been established at 10ppm.

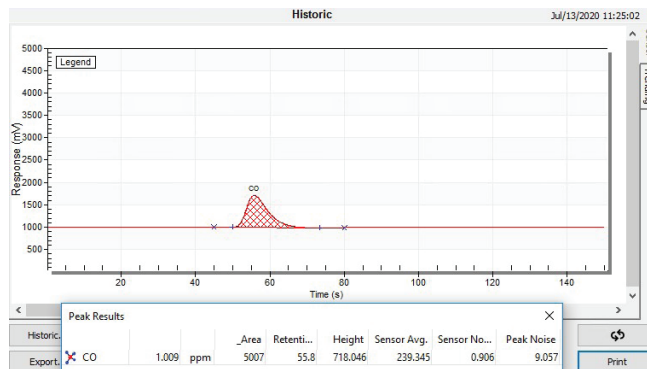


## RESULTS - CARBON DIOXIDE ASSAY

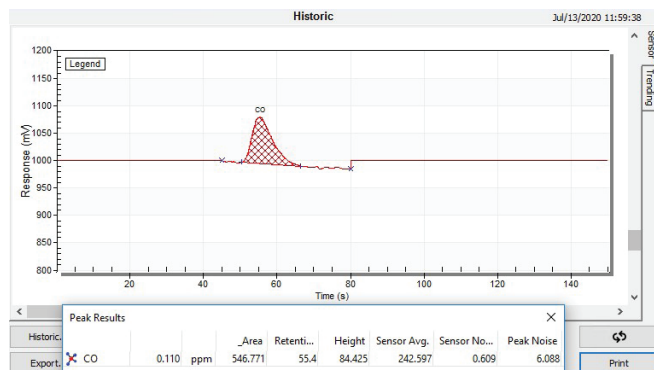
**Chromatogram of a gas mixture**  
containing 5ppm CO in a balance of Carbon dioxide.



**Chromatogram of a gas mixture**  
containing 1ppm CO in a balance of Carbon dioxide.



**Chromatogram of a gas mixture containing 0.1ppm CO in a balance of Carbon dioxide. Considering a ratio of 3 times the noise level, the LDL for the CO has been established at 25ppb.**



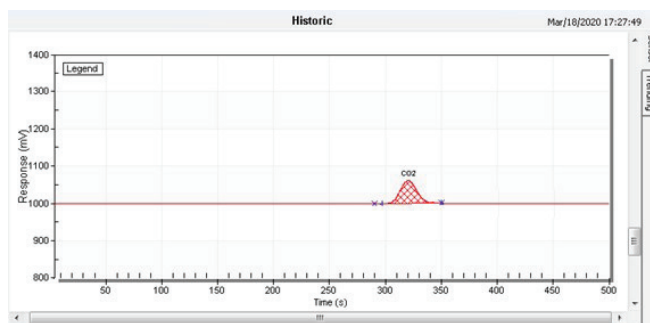
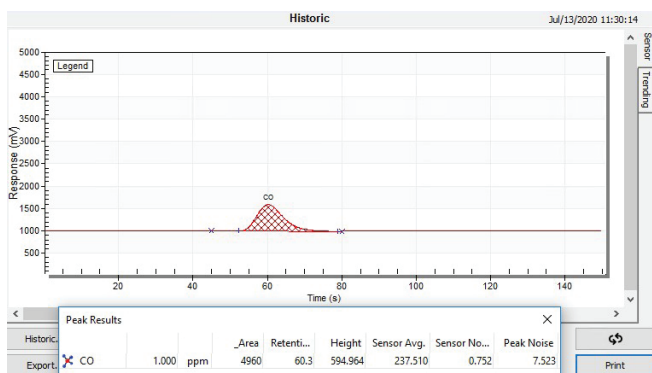
## Repeatability Test: 10 Cycles @ 1.2ppm CO in CO2 balance

Peak	Average	Standard Deviation	Coefficient of Variation (%)	3 * CV (%)	Status
CO	1.21985583 ppm	0.00428070	0.35	1.05	Accepted

Start	CO
2020-07-13 16:28	1.227 ppm
2020-07-13 16:25	1.220 ppm
2020-07-13 16:22	1.216 ppm
2020-07-13 16:20	1.213 ppm
2020-07-13 16:17	1.216 ppm
2020-07-13 16:15	1.219 ppm
2020-07-13 16:12	1.222 ppm
2020-07-13 16:10	1.225 ppm
2020-07-13 16:07	1.222 ppm
2020-07-13 16:04	1.219 ppm

## RESULTS - NITROUS OXIDE ASSAY

**Chromatogram of** a gas mixture containing 1ppm CO on FID/methanizer channel and 100ppm CO2 on TCD channel in a balance of Nitrous oxide. Considering a ratio of 3 times the noise level, the LDL for the CO has been established at 25ppb and it has been established at 10ppm for the CO2.



## CONCLUSION:

With its combination of the TCD and the FID, the MultiDetek2 can be configured adequately for the European pharmacopeia norms. Our system is compact and offer the performances required by this medical market. The platform offers a touchscreen panel PC with date storage disk and remote-control platform.



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