IC Application Note No. C-32

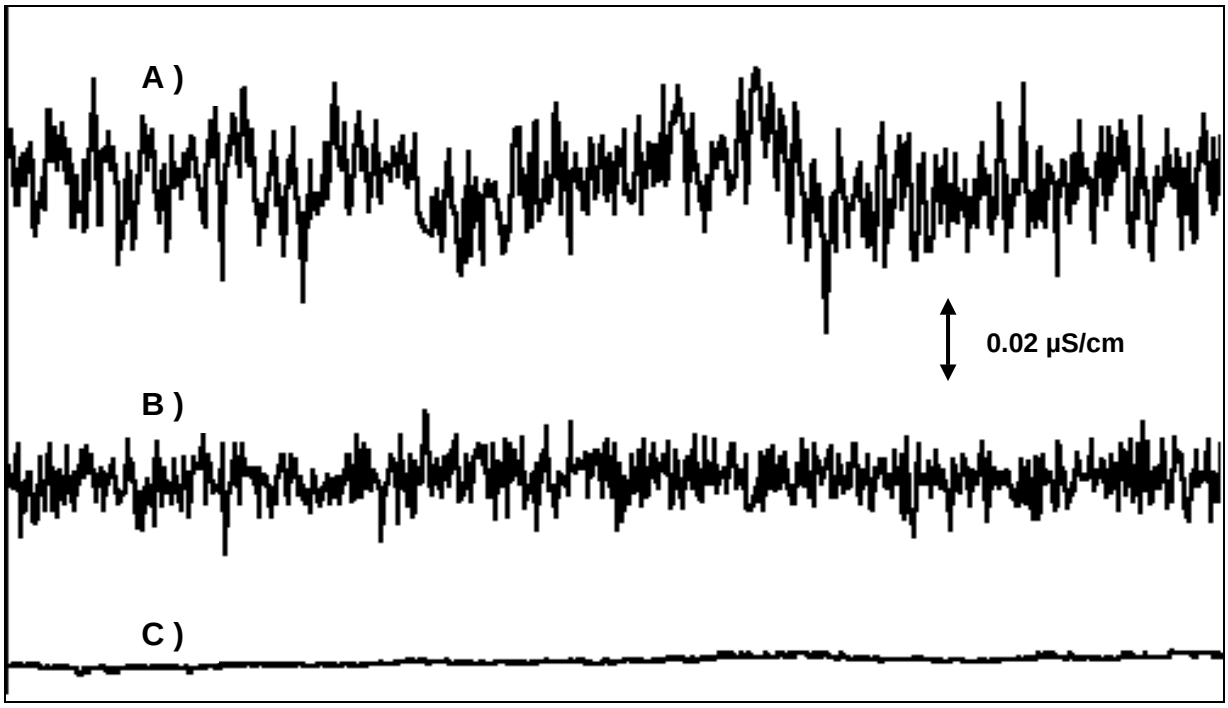
Title:	**Noise reduction in non-suppressed ion chromatography using 732 IC Detector – the benefit of the Metrohm auto zero / full scale approach**

Range:		Absolute Range of conductivity measurement (e.g. 0 ... 1000 µS/cm).
Full Scale:		Relative conductivity measurement window. Zero function activated on the Background conductivity.
	Example:	Background = 712.5 µS/cm; 10 µS/cm Full Scale (corresponding to a 100 fold signal amplification)

Analog Output	absolute Cond.	relative Cond.
0 mV	712.5 µS/cm	0.0 µS/cm
500 mV	717.5 µS/cm	5.0 µS/cm
1000 mV	722.5 µS/cm	10.0 µS/cm

Zero:	Electronic background compensation of actual conductivity at the time of activation as well as a reduction of electronic noise and drift.

Column:	6.1010.000 Metrosep Cation 1-2
Eluent:	4 mmol/L tartaric acid, 1 mmol/L dipicolinic acid
Flow:	1.0 mL/min



***Description*:**		Duration of the measurement: 4 min.
	trace A)	Baseline measured with Range = 1000 µS/cm and Full Scale = 1000 µS/cm. Zero Function not activated. Measured noise level: 45 nS/cm
	trace B)	same as A) but Zero function activated. Measured noise level: 22 nS/cm The use of the zero function reduces the noise by a factor of 2.
	trace C)	Baseline measured with Range = 1000 µS/cm. Full Scale is set to 10 µS/cm. This corresponds to an amplification factor of 100 compared to signals A) and B). Zero function is activated. Measured noise level: 2 nS/cm The use of the Zero function together with a lower Full Scale (amplification) yields in far less baseline noise. In the actual setup the noise is reduced by a factor of 20 compared to the direct measurement (signal A).

***Summary*:**	The use of an appropriate Full Scale together with the Zero Function of the 732 IC Detector minimises the Baseline Noise drastically. Much lower detection limits are achieved.