



## Calculation of the Standard Uncertainty according to the EN 14181:2004 QAL3 based on Performance Specifications of the prEN 15267-3:2005

### Description of Gas Monitoring AMS

Automated Measuring System (AMS) based on  
ABB order number  
Intended for monitoring of  
Applicable EU directive  
Name of plant  
Identification of measuring point  
Gas to be measured  
Smallest measurement range  
Largest measurement range (includes reference point)

AO2000 Limas11 NO	
CC2 - 3.2424.98.3	
Large combustion plant	
2001/80/EC	
Enipower Ravenna	
CC2	
NO	
75	mg/m <sup>3</sup>
75	mg/m <sup>3</sup>

### Field conditions of operation used in the uncertainty assessment

	Min. value	Max. value	
Ambient temperature range	5	30	°C
Ambient pressure range	980	1010	hPa
Flow range	50	90	l/h
Voltage range	190	250	V
Period of unattended operation, Zero point		7	day(s)
Period of unattended operation, Reference point		7	day(s)

### Zero point performance specifications and resulting partial standard uncertainties

Drift		3%	of smallest range
	$u_{inst,0} =$	1,30	mg/m <sup>3</sup>
Shift due to ambient temperature change		5%	of smallest range
	$u_{temp,0} =$	2,17	mg/m <sup>3</sup>
Repeatability		2%	of smallest range
	$u_{others,0} =$	0,87	mg/m <sup>3</sup>

$$\text{Zero point } s_{AMS} = (u_{inst,0}^2 + u_{temp,0}^2 + u_{others,0}^2)^{1/2}$$

**Zero point  $s_{AMS}$  = 2,67 mg/m<sup>3</sup>**

### Reference point performance specifications and resulting partial standard uncertainties

Drift		3%	of largest range
	$u_{inst} =$	1,30	mg/m <sup>3</sup>
Shift due to ambient temperature change		5%	of largest range
	$u_{temp} =$	2,17	mg/m <sup>3</sup>
Effect of sample gas pressure		2%	of largest range for 3 kPa change
	$u_{pres} =$	0,43	mg/m <sup>3</sup>
Effect of sample gas flow		1%	of largest range
	$u_{flow} =$	0,43	mg/m <sup>3</sup>
Voltage effect		2%	of largest range
	$u_{volt} =$	0,87	mg/m <sup>3</sup>
Repeatability		2%	of largest range
	$u_{others} =$	0,87	mg/m <sup>3</sup>
Converter efficiency for NOx		0%	of largest range
	$u_{ce} =$	0,00	mg/m <sup>3</sup>

$$\text{Reference point } s_{AMS} = (u_{inst}^2 + u_{temp}^2 + u_{pres}^2 + u_{volt}^2 + u_{flow}^2 + u_{others}^2 + u_{ce}^2)^{1/2}$$

**Reference point  $s_{AMS}$  = 3,00 mg/m<sup>3</sup>**

- ABB Automation GmbH assumes no warranty and no liability for the correctness of the above results -