



## 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)

ACF-NT CO		
Waste incineration plant		
2000/76/EC		
Colacem Rassina		
CO		
300	mg/m <sup>3</sup>	
300	mg/m <sup>3</sup>	

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

	Min. value	Max. value	
Ambient temperature range	25	35	°C
Ambient pressure range	970	1030	hPa
Flow range	30	100	l/h
Voltage range	190	250	V
Period of unattended operation, Zero point		1	day(s)
Period of unattended operation, Reference point		181	day(s)

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

Drift		3%	of smallest range
	$u_{inst,0}$	5,20	mg/m <sup>3</sup>
Shift due to ambient temperature change		5%	of smallest range
	$u_{temp,0}$	8,66	mg/m <sup>3</sup>
Repeatability		2%	of smallest range
	$u_{others,0}$	3,46	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  $s_{AMS}$  = 10,68 mg/m<sup>3</sup>**

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

Drift		3%	of largest range
	$u_{inst}$	5,20	mg/m <sup>3</sup>
Shift due to ambient temperature change		5%	of largest range
	$u_{temp}$	8,66	mg/m <sup>3</sup>
Effect of sample gas pressure		2%	of largest range for 3 kPa change
	$u_{pres}$	3,46	mg/m <sup>3</sup>
Effect of sample gas flow		1%	of largest range
	$u_{flow}$	1,73	mg/m <sup>3</sup>
Voltage effect		2%	of largest range
	$u_{volt}$	3,46	mg/m <sup>3</sup>
Repeatability		2%	of largest range
	$u_{others}$	3,46	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  $s_{AMS}$  = 12,37 mg/m<sup>3</sup>**

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