



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	
CC1 - 3.242497.3	
Large combustion plant	
2001/80/EC	
Enipower Ravenna	
CC1	
NO	
75	mg/m ³
75	mg/m ³

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

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

Zero point $s_{AMS} =$ 2,67 mg/m³

Reference point performance specifications and resulting partial standard uncertainties

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

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

Reference point $s_{AMS} =$ 3,00 mg/m³

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