



**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	AO 2000 Magnos106 O2	
ABB order number	3-251409-4	
Intended for monitoring of	Large combustion plant	
Applicable EU directive	2001/80/EC	
Name of plant	Enipower Ravenna	
Identification of measuring point	TG501	
Gas to be measured	O2	
Smallest measurement range	25	Vol.-%
Largest measurement range (includes reference point)	25	Vol.-%

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		0.20	Vol.-%
	$u_{inst,0}$	0.12	Vol.-%
Shift due to ambient temperature change		0.50	Vol.-%
	$u_{temp,0}$	0.29	Vol.-%
Repeatability		0.20	Vol.-%
	$u_{others,0}$	0.12	Vol.-%

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

Zero point s_{AMS} =	0.33	Vol.-%
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Reference point performance specifications and resulting partial standard uncertainties

Drift		0.20	Vol.-%
	u_{inst}	0.12	Vol.-%
Shift due to ambient temperature change		0.50	Vol.-%
	u_{temp}	0.29	Vol.-%
Effect of sample gas pressure		0.20	Vol.-% for 3 kPa change
	u_{pres}	0.06	Vol.-%
Effect of sample gas flow		0.20	Vol.-%
	u_{flow}	0.12	Vol.-%
Voltage effect		0.20	Vol.-%
	u_{volt}	0.12	Vol.-%
Repeatability		0.20	Vol.-%
	u_{others}	0.12	Vol.-%

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

Reference point s_{AMS} =	0.37	Vol.-%
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- ABB Automation GmbH assumes no warranty and no liability for the correctness of the above results -