



**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 SO2 | | |
| Waste incineration plant | | |
| 2000/76/EC | | |
| Colacem Rassina | | |
| | | |
| SO2 | | |
| 75 | mg/m ³ | |
| 75 | mg/m ³ | |

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 |
| $u_{inst,0}$ | = | 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} | = | 0,87 | 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} = | 3,09 | mg/m³ |
|---|-------------|-------------------------|

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