

Published by  
Siemens Industry, Inc. 2019

Siemens Process Industries and Drives  
100 Technology Drive  
Alpharetta, GA 30005

For more information please contact  
Phone: (800)365-8766  
E-mail: info.us@siemens.com

Order No: PIAFL-00088-0121  
Printed in USA

The technical data presented in this document is based on an actual case or on as-designed parameters, and therefore should not be relied upon for any specific application and does not constitute a performance guarantee for any projects. Actual results are dependent on variable conditions. Accordingly, Siemens does not make representations, warranties, or assurances as to the accuracy, currency or completeness of the content contained herein. If requested, we will provide specific technical data or specifications with respect to any customer's particular applications. Our company is constantly involved in engineering and development. For that reason, we reserve the right to modify, at any time, the technology and product specifications contained herein.

ULTRAMAT 23

# A legacy mainstay continues with performance enhancements...

[usa.siemens.com/analyticalproducts](http://usa.siemens.com/analyticalproducts)



# A legacy mainstay continues with performance enhancements...

The ULTRAMAT 23 gas analyzer continues its world-renowned legacy for dependability, performance, and versatility in online gas analysis applications serving countless industries worldwide. ULTRAMAT 23 throughout its product lifecycle has advanced in both sensor technology and measurement performance capability. Originally offering the measurement of up to (3) IR active gas components such as (CO, CO<sub>2</sub>, NO...) using NDIR and in addition able to measure Oxygen with either an electrochemical fuel cell or paramagnetic O<sub>2</sub> dumbbell sensor. Advancement continued with the addition of low ppm H<sub>2</sub>S electrochemical fuel cell for upgraded biogas application and most recently came the addition of an Ultraviolet photometer module for low ppm SO<sub>2</sub> measurement meeting Europe's TÜV requirement for emissions monitoring application.

So there you have it...but wait there's more and it's all about measurement drift performance improvement of the NDIR channels which is important when measuring low concentration ppm levels for example such as CO and NO and perhaps for applicable stationary source emissions monitoring application. Siemens R&D headquarters recently published test data shows outstanding performance over a seven-day continuous period with the only interruption being initiation of the ULTRAMAT 23 integral Autocal feature being performed once every 24 hours. As is often said... the results speak for themselves and so shown below is the actual testing criteria and performance results data.



## ULTRAMAT 23



Two ULTRAMAT 23 units with the configuration 7MB2337-4AD86-5PE1 tested to examine the drift performance for one week.

## ULTRAMAT 23 drift performance test report

**The measured components and concentration ranges were:**

CO 0 ... 50/250 ppm  
 NO 0 ... 100/500 ppm  
 O<sub>2</sub> 0 ... 25Vol-%  
 Environmental conditions were room temperature with app. +/- 2° C smooth variation. Autocal was performed every 24h.

**The applicable tolerances are:**

	Tolerance (%measuring range)	Tolerance smallest MR	Tolerance greatest MR
NO	2.5%	2.5vpm	12.5vpm
CO	3.0%	1.5vpm	7.5vpm
O <sub>2</sub>	0.5%	0.03vol%O <sub>2</sub>	0.13vol%O <sub>2</sub>

## Test results:

**CO (Results in ppm):**

Device 1:

	Zero	Span small measuring range	Limit small range	Span great measuring range	Limit great range	Result
Day 0	-0,3	47,8		253,5		
Day 7	-0,28	47,52		254		
Result	0,02	-0,28	1,5 vpm	0,5	7,5 vpm	Pass <input type="checkbox"/>

Device 2:

	Zero	Span small measuring range	Limit small range	Span great measuring range	Limit great range	Result
Day 0	0.0	48.3		253		
Day 7	-0.11	48.7		254		
Result	-0.11	0.4	1.5 ppm	1.00	7,5 ppm	Pass <input type="checkbox"/>

**NO (Results in ppm):**

Device 1:

	Zero	Span small measuring range	Limit small range	Span great measuring range	Limit great range	Result
Day 0	0,2	101.5		493.7		
Day 7	1,3	100.9		492.9		
Result	1,1	-0.6	2.5 ppm	-0.8	12.5 ppm	Pass <input type="checkbox"/>

Device 2:

	Zero	Span small measuring range	Limit small range	Span great measuring range	Limit great range	Result
Day 0	-0.2	101.57		493.3		
Day 7	0.8	101		492.9		
Result	1.0	-0.57	2.5 ppm	-0.4	12.5 ppm	Pass <input type="checkbox"/>

**O<sub>2</sub> (Results in vol%O<sub>2</sub>):**

Device 1:

	Zero	Span small measuring range	Limit small range	Span great measuring range	Limit great range	Result
Day 0	0	5.0		20.96		
Day 7	0	5.023		21.0		
Result	0	0.023	0.03vol%O <sub>2</sub>	0.04	0.13vol%O <sub>2</sub>	Pass <input type="checkbox"/>

Device 2:

	Zero	Span small measuring range	Limit small range	Span great measuring range	Limit great range	Result
Day 0	0	5.0		20.95		
Day 7	-0.03	4.98		21		
Result	-0.03	-0.02	0.03 vol%O <sub>2</sub>	0.05	0.13vol%O <sub>2</sub>	Pass <input type="checkbox"/>