Selection and ordering data			Order No.	
ULTRAMAT 23 gas analyzer For measuring 1 infrared component, oxygen and hydrogen sulfide			**7MB2335-■■■■■-■AA■**	Cannot be combined
Enclosure, version and gas paths 19" rack unit for installation in cabinets				
Gas connections	Gas path	Internal sample gas pump		
6 mm pipe	Viton	Without[2]	0	
¼" pipe	Viton	Without[2]	1	
6 mm pipe	Viton	With	2	
¼" pipe	Viton	With	3	
6 mm pipe	Stainless steel, mat. no. 1.4571	Without[2]	6	6 6
¼" pipe	Stainless steel, mat. no. 1.4571	Without[2]	7	7 7
Portable, in sheet steel enclosure, 6 mm gas connections, Viton gas path, with integrated sample gas pump, condensation trap with safety filter on the front panel			8	8 8
Measured component	Possible with measuring range identification			
CO	D, E, F, G ... R, U, X		A	
CO_2[1]	D[6], G[6], H[6], J[6], K ... R		C	
CH_4	E, H, L, N, P, R		D	
C_2H_4	K		F	
C_6H_{14}	K		M	
SO_2	F ... L, W		N	
NO	E, G ... J, T, V, W		P	
N_2O[7]	E		S	
SF_6	H		V	
Smallest measuring range	Largest measuring range			
0 ... 50 vpm	0 ... 250 vpm		D	
0 ... 100 vpm	0 ... 500 vpm		E	
0 ... 150 vpm	0 ... 750 vpm		F	
0 ... 200 vpm	0 ... 1 000 vpm		G	
0 ... 500 vpm	0 ... 2 500 vpm		H	
0 ... 1 000 vpm	0 ... 5 000 vpm		J	
0 ... 2 000 vpm	0 ... 10 000 vpm		K	
0 ... 0.5 %	0 ... 2.5 %		L	
0 ... 1 %	0 ... 5 %		M	
0 ... 2 %	0 ... 10 %		N	
0 ... 5 %	0 ... 25 %		P	
0 ... 10 %	0 ... 50 %		Q	
0 ... 20 %	0 ... 100 %		R	
0 ... 100 mg/m^3	0 ... 750 mg/m^3	TÜV version	T	
0 ... 150 mg/m^3	0 ... 750 mg/m^3	TÜV version	U	
0 ... 250 mg/m^3	0 ... 1 250 mg/m^3	TÜV version	V	
0 ... 400 mg/m^3	0 ... 2 000 mg/m^3	TÜV version	W	
0 ... 50 vpm	0 ... 2 500 vpm		X	
Oxygen measurement[5]				
Without O_2 sensor			0	
With O_2 sensor			1	1
With paramagnetic oxygen measuring cell			8	8 8
Hydrogen sulfide measurement				
Without			0	
With H_2S sensor 0 ... 500/5 000 ppm			3	3 3
Power supply				
100 V AC, 50 Hz			0	
120 V AC, 50 Hz			1	
200 V AC, 50 Hz			2	
230 V AC, 50 Hz			3	
100 V AC, 60 Hz			4	
120 V AC, 60 Hz			5	
230 V AC, 60 Hz			6	
Operating software, documentation[3]				
German			0	
English			1	
French			2	
Spanish			3	
Italian			4	

Footnotes: See next page.

Selection and ordering data

Additional versions		Order code
Add "-**Z**" to Order No. and specify order code		
Add-on electronics with 8 binary inputs/outputs, PROFIBUS PA interface		**A12**
Add-on electronics with 8 binary inputs/outputs, PROFIBUS DP interface		**A13**
Telescopic rails (2 units), 19" rack unit version only		**A31**
Set of Torx screwdrivers		**A32**
TAG labels (specific inscription based on customer information)		**B03**
Gas path for short response time[9)]		**C01**
Chopper compartment purging for 6 mm gas connection		**C02**
Chopper compartment purging for ¼" gas connection		**C03**
Presetting to reference temperature 0°C for conversion into mg/m³, applies to all components		**D15**
Certificate FM/CSA Class I, Div. 2, ATEX II 3 G		**E20**
Calibration interval 5 months (TÜV/QAL), measuring ranges:	CO: 0 ... 150/750 mg/m³ NO: 0 ... 100/750 mg/m³	**E50**
Measurement of CO_2 in forming gas[8)] (only in conjunction with measuring range 0 to 20/0 to 100%)		**Y14**

Accessories	Order No.
CO_2 absorber cartridge	**7MB1933-8AA**

Retrofitting sets	
RS 485/Ethernet converter	**A5E00852383**
RS 485/RS 232 converter	**C79451-Z1589-U1**
RS 485/USB converter	**A5E00852382**
Add-on electronics with 8 binary inputs/outputs and PROFIBUS PA	**A5E00056834**
Add-on electronics with 8 binary inputs/outputs and PROFIBUS DP	**A5E00057159**

1) For measuring ranges below 1%, a CO_2 absorber cartridge can be used for setting the zero point (see accessories)
2) Without separate zero gas input or solenoid valve
3) User language can be changed
4) Standard setting: smallest measuring range, largest measuring range
5) O_2 sensor in gas path of infrared measured component 1
6) With chopper compartment purging (N_2 approx. 3 000 hPa required for measuring ranges below 0.1% CO_2), to be ordered separately (see order code C02 or C03)
7) Not suitable for use with emission measurements since the cross-sensitivity is too high
8) CO_2 measurement in carrier gas Ar or Ar/He (3:1); forming gas
9) Only for version with Viton hose

Selection and ordering data			Order No.	
ULTRAMAT 23 gas analyzer For measuring 2 infrared components, oxygen and hydrogen sulfide			**7MB2337-** ■■■■■ **-** ■■■■	Cannot be combined
Enclosure, version and gas paths 19" rack unit for installation in cabinets				
Gas connections	Gas paths	Internal sample gas pump		
6 mm pipe	Viton, not separate	Without[2]	**0**	
¼" pipe	Viton, not separate	Without[2]	**1**	
6 mm pipe	Viton, not separate	With	**2**	
¼" pipe	Viton, not separate	With	**3**	
6 mm pipe	Viton, separate	Without[2]	**4**	**4 → A27, A29**
¼" pipe	Viton, separate	Without[2]	**5**	**5 → A27, A29**
6 mm pipe	Stainless steel, mat. no. 1.4571, separate	Without[2]	**6**	**6 6 6**
¼" pipe	Stainless steel, mat. no. 1.4571, separate	Without[2]	**7**	**7 7 7**
Portable, in sheet steel enclosure, 6 mm gas connections, Viton gas path, with integrated sample gas pump, condensation trap with safety filter on the front panel			**8**	**8 8**
1. infrared measured component				
Measured component	Possible with measuring range identification			
CO	D, E, F, G ... R, U, X		**A**	
CO_2[1]	D[6], G[6], H[6], J[6], K ... R		**C**	
CH_4	E, H, L, N, P, R		**D**	
C_2H_4	K		**F**	
C_6H_{14}	K		**M**	
SO_2	F ... L, W		**N**	
NO	E, G ... J, T, V, W		**P**	
N_2O[7]	E		**S**	
SF_6	H		**V**	
Smallest measuring range	Largest measuring range			
0 ... 50 vpm	0 ... 250 vpm		**D**	
0 ... 100 vpm	0 ... 500 vpm		**E**	
0 ... 150 vpm	0 ... 750 vpm		**F**	
0 ... 200 vpm	0 ... 1 000 vpm		**G**	
0 ... 500 vpm	0 ... 2 500 vpm		**H**	
0 ... 1 000 vpm	0 ... 5 000 vpm		**J**	
0 ... 2 000 vpm	0 ... 10 000 vpm		**K**	
0 ... 0.5 %	0 ... 2.5 %		**L**	
0 ... 1 %	0 ... 5 %		**M**	
0 ... 2 %	0 ... 10 %		**N**	
0 ... 5 %	0 ... 25 %		**P**	
0 ... 10 %	0 ... 50 %		**Q**	
0 ... 20 %	0 ... 100 %		**R**	
0 ... 100 mg/m^3	0 ... 750 mg/m^3	TÜV version	**T**	
0 ... 150 mg/m^3	0 ... 750 mg/m^3	TÜV version	**U**	
0 ... 250 mg/m^3	0 ... 1 250 mg/m^3	TÜV version	**V**	
0 ... 400 mg/m^3	0 ... 2 000 mg/m^3	TÜV version	**W**	
0 ... 50 vpm	0 ... 2 500 vpm		**X**	
Oxygen measurement[5]				
Without O_2 sensor			**0**	
With O_2 sensor			**1**	**1**
With paramagnetic oxygen measuring cell			**8**	**8 8**
Hydrogen sulfide measurement				
Without			**0**	
With H_2S sensor 0 ... 500/5 000 ppm			**3**	**3**
Power supply				
100 V AC, 50 Hz			**0**	
120 V AC, 50 Hz			**1**	
200 V AC, 50 Hz			**2**	
230 V AC, 50 Hz			**3**	
100 V AC, 60 Hz			**4**	
120 V AC, 60 Hz			**5**	
230 V AC, 60 Hz			**6**	

Selection and ordering data			Order No.		
ULTRAMAT 23 gas analyzer For measuring 2 infrared components, oxygen and hydrogen sulfide			**7MB2337-** ■■■■■ - ■■■■		Cannot be combined
2. infrared measured component					
Measured component	Possible with measuring range identification				
CO	D, E, F, G ... R, U, X			**A**	
CO_2 [1]	D[6], G[6], H[6], J[6], K ... R			**C**	
CH_4	E, H, L, N, P, R			**D**	
C_2H_4	K			**F**	
C_6H_{14}	K			**M**	
SO_2	F ... L, W			**N**	
NO	E, G ... J, T, V, W			**P**	
N_2O	E[7], Y[10]			**S**	
SF_6	H			**V**	
Smallest measuring range	Largest measuring range				
0 ... 50 vpm	0 ... 250 vpm			**D**	
0 ... 100 vpm	0 ... 500 vpm			**E**	
0 ... 150 vpm	0 ... 750 vpm			**F**	
0 ... 200 vpm	0 ... 1 000 vpm			**G**	
0 ... 500 vpm	0 ... 2 500 vpm			**H**	
0 ... 1 000 vpm	0 ... 5 000 vpm			**J**	
0 ... 2 000 vpm	0 ... 10 000 vpm			**K**	
0 ... 0.5 %	0 ... 2.5 %			**L**	
0 ... 1 %	0 ... 5 %			**M**	
0 ... 2 %	0 ... 10 %			**N**	
0 ... 5 %	0 ... 25 %			**P**	
0 ... 10 %	0 ... 50 %			**Q**	
0 ... 20 %	0 ... 100 %			**R**	
0 ... 100 mg/m³	0 ... 750 mg/m³	TÜV version		**T**	
0 ... 150 mg/m³	0 ... 750 mg/m³	TÜV version		**U**	
0 ... 250 mg/m³	0 ... 1 250 mg/m³	TÜV version		**V**	
0 ... 400 mg/m³	0 ... 2 000 mg/m³	TÜV version		**W**	
0 ... 50 vpm	0 ... 2 500 vpm			**X**	
0 ... 500 vpm	0 ... 5 000 vpm			**Y**	
Operating software, documentation[3]					
German					**0**
English					**1**
French					**2**
Spanish					**3**
Italian					**4**

Footnotes: See next page.

Additional versions	Order code
Add "-Z" to Order No. and specify Order code	
Add-on electronics with 8 binary inputs/outputs, PROFIBUS PA interface	**A12**
Add-on electronics with 8 binary inputs/outputs, PROFIBUS DP interface	**A13**
Stainless steel (mat. no. 1.4571) connection pipe, 6 mm, complete with screwed gland (cannot be combined with Viton hose)	**A27**
Stainless steel (mat. no. 1.4571) connection pipe, ¼", complete with screwed gland (cannot be combined with Viton hose)	**A29**
Telescopic rails (2 units, 19" rack unit version only)	**A31**
Set of Torx screwdrivers	**A32**
TAG labels (specific inscription based on customer information)	**B03**
Gas path for short response time[9)]	**C01**
Chopper compartment purging for 6 mm gas connection	**C02**
Chopper compartment purging for ¼" gas connection	**C03**
Presetting to reference temperature 0°C for conversion into mg/m³, applies to all components	**D15**
Measuring range indication in plain text[4)]	**Y11**
Certificate FM/CSA Class I, Div. 2, ATEX II 3 G	**E20**
Calibration interval 5 months (TÜV/QAL), measuring ranges: CO: 0 ... 150/750 mg/m³ NO: 0 ... 100/750 mg/m³	**E50**
Measurement of CO_2 in forming gas[8)] (only in conjunction with measuring range 0 to 20/0 to 100%)	**Y14**

Accessories	Order No.
CO_2 absorber cartridge	**7MB1933-8AA**

Retrofitting sets	
RS 485/Ethernet converter	**A5E00852383**
RS 485/RS 232 converter	**C79451-Z1589-U1**
RS 485/USB converter	**A5E00852382**
Add-on electronics with 8 binary inputs/outputs and PROFIBUS PA	**A5E00056834**
Add-on electronics with 8 binary inputs/outputs and PROFIBUS DP	**A5E00057159**

1) For measuring ranges below 1%, a CO_2 absorber cartridge can be used for setting the zero point (see accessories)

2) Without separate zero gas input or solenoid valve

3) User language can be changed

4) Standard setting: smallest measuring range, largest measuring range

5) O_2 sensor in gas path of infrared measured component 1

6) With chopper compartment purging (N_2 approx. 3 000 hPa required for measuring ranges below 0.1% CO_2), to be ordered separately (see order code C02 or C03)

7) Not suitable for use with emission measurements since the cross-sensitivity is too high

8) CO_2 measurement in carrier gas Ar or Ar/He (3:1); forming gas

9) Only for version with Viton hose

10) Only in conjunction with CO_2 measuring range 0 to 5% to 0 to 25% (CP)

Selection and ordering data			Order No.							
ULTRAMAT 23 gas analyzer for measuring 3 infrared components and oxygen			**7MB2338-**				**0 -**			Cannot be combined
Enclosure, version and gas paths 19" rack unit for installation in cabinets										
Gas connections	Gas paths	Internal sample gas pump								
6 mm pipe	Viton, not separate	Without[2]		**0**						
¼" pipe	Viton, not separate	Without[2]		**1**						
6 mm pipe	Viton, not separate	With		**2**						
¼" pipe	Viton, not separate	With		**3**						
6 mm pipe	Viton, separate	Without[2]		**4**						**4 → A27, A29**
¼" pipe	Viton, separate	Without[2]		**5**						**5 → A27, A29**
6 mm pipe	Stainless steel, mat. no. 1.4571, separate	Without[2]		**6**						**6**
¼" pipe	Stainless steel, mat. no. 1.4571, separate	Without[2]		**7**						**7**
Portable, in sheet steel enclosure, 6 mm gas connections, Viton gas path, with integrated sample gas pump, condensation trap with safety filter on the front panel				**8**						**8**
1. and 2nd infrared measured components										
Measured component	Smallest measuring range	Largest measuring range								
CO NO	0 ... 500 vpm 0 ... 500 vpm	0 ... 2 500 vpm 0 ... 2 500 vpm			**A A**					
CO NO	0 ... 2 000 vpm 0 ... 1 000 vpm	0 ... 10 000 vpm 0 ... 5 000 vpm			**A B**					
CO NO	0 ... 1 000 vpm 0 ... 1 000 vpm	0 ... 5 000 vpm 0 ... 5 000 vpm			**A C**					
CO NO	0 ... 1 % 0 ... 1 000 vpm	0 ... 5 % 0 ... 5000 vpm			**A D**					
CO NO	0 ... 250 mg/m³ 0 ... 400 mg/m³	0 ... 1 250 mg/m³ 0 ... 2 000 mg/m³	TÜV version		**A K**					
CO CO_2	0 ... 10 % 0 ... 10 %	0 ... 50 % 0 ... 50 %			**B A**					
CO CO_2	0 ... 10 % 0 ... 0.5 %	0 ... 50 % 0 ... 2.5 %			**B B**					
CO CO_2	0 ... 20 % 0 ... 20 %	0 ... 100 % 0 ... 100 %			**B D**					
CO_2 CO	0 ... 5 % 0 ... 100 vpm	0 ... 25 % 0 ... 500 vpm			**B J**					
CO_2 CO	0 ... 10 % 0 ... 0.5 %	0 ... 50 % 0 ... 2.5 %			**B K**					
CO_2 CO	0 ... 5 % 0 ... 75 mg/m³	0 ... 25 % 0 ... 750 mg/m³			**B L**					
CO_2 CH_4	0 ... 5 % 0 ... 1 %	0 ... 25 % 0 ... 5 %			**C A**					
CO_2 CH_4	0 ... 5 % 0 ... 2 %	0 ... 25 % 0 ... 10 %			**C B**					
CO_2 NO	0 ... 5 % 0 ... 500 vpm	0 ... 25 % 0 ... 2 500 vpm			**D C**					
Oxygen measurement[5]										
Without O_2 sensor						**0**				
With O_2 sensor						**1**				**1**
With paramagnetic oxygen measuring cell						**8**				**8 8**
Power supply										
100 V AC, 50 Hz							**0**			
120 V AC, 50 Hz							**1**			
200 V AC, 50 Hz							**2**			
230 V AC, 50 Hz							**3**			
100 V AC, 60 Hz							**4**			
120 V AC, 60 Hz							**5**			
230 V AC, 60 Hz							**6**			

Footnotes: See page 2/28.

Selection and ordering data			Order No.				
ULTRAMAT 23 gas analyzer for measuring 3 infrared components and oxygen			**7MB2338-** ■■■■ **0 -** ■■■■				Cannot be combined
3. infrared measured component							
Measured component	Possible with measuring range identification						
CO	D, E, F, G ... R, U, X				**A**		
CO_2 [1]	D[6], G[6], H[6], J[6], K ... R				**C**		
CH_4	E, H, L, N, P, R				**D**		
C_2H_4	K				**F**		
C_6H_{14}	K				**M**		
SO_2	F ... L, W				**N**		
NO	E, G ... J, V, W				**P**		
N_2O	E[7], S[10] (biomass), Y[11]				**S**		
SF_6	H				**V**		
Smallest measuring range	Largest measuring range						
0 ... 50 vpm	0 ... 250 vpm					**D**	
0 ... 100 vpm	0 ... 500 vpm					**E**	
0 ... 150 vpm	0 ... 750 vpm					**F**	
0 ... 200 vpm	0 ... 1 000 vpm					**G**	
0 ... 500 vpm	0 ... 2 500 vpm					**H**	
0 ... 1 000 vpm	0 ... 5 000 vpm					**J**	
0 ... 2 000 vpm	0 ... 10 000 vpm					**K**	
0 ... 0.5 %	0 ... 2.5 %					**L**	
0 ... 1 %	0 ... 5 %					**M**	
0 ... 2 %	0 ... 10 %					**N**	
0 ... 5 %	0 ... 25 %					**P**	
0 ... 10 %	0 ... 50 %					**Q**	
0 ... 20 %	0 ... 100 %					**R**	
0 ... 50 mg/m³	0 ... 500 mg/m³	} TÜV version				**S**	
0 ... 150 mg/m³	0 ... 750 mg/m³	} TÜV version				**U**	
0 ... 250 mg/m³	0 ... 1 250 mg/m³	} TÜV version				**V**	
0 ... 400 mg/m³	0 ... 2 000 mg/m³	} TÜV version				**W**	
0 ... 50 vpm	0 ... 2 500 vpm					**X**	
0 ... 500 vpm	0 ... 5 000 vpm					**Y**	
Operating software, documentation[3]							
German						**0**	
English						**1**	
French						**2**	
Spanish						**3**	
Italian						**4**	

Footnotes: See page 2/28.

Additional versions	**Order code**
Add "-**Z**" to Order No. and specify order code	
Add-on electronics with 8 binary inputs/outputs, PROFIBUS PA interface	**A12**
Add-on electronics with 8 binary inputs/outputs, PROFIBUS DP interface	**A13**
Stainless steel (mat. no. 1.4571) connection pipe, 6 mm, complete with screwed gland (cannot be combined with Viton hose)	**A27**
Stainless steel (mat. no. 1.4571) connection pipe, ¼", complete with screwed gland (cannot be combined with Viton hose)	**A29**
Telescopic rails (2 units, 19" rack unit version only)	**A31**
Set of Torx screwdrivers	**A32**
TAG labels (specific inscription based on customer information)	**B03**
Gas path for short response time[9)]	**C01**
Chopper compartment purging for 6 mm gas connection	**C02**
Chopper compartment purging for ¼" gas connection	**C03**
Presetting to reference temperature 0°C for conversion into mg/m³, applies to all components	**D15**
Certificate FM/CSA Class I, Div. 2, ATEX II 3 G	**E20**
Measuring range indication in plain text[4)]	**Y11**
Measurement of CO_2 in forming gas[8)] (only in conjunction with measuring range 0 to 20/0 to 100%)	**Y14**

Accessories	**Order No.**
CO_2 absorber cartridge	**7MB1933-8AA**
Retrofitting sets	
RS 485/Ethernet converter	**A5E00852383**
RS 485/RS 232 converter	**C79451-Z1589-U1**
RS 485/USB converter	**A5E00852382**
Add-on electronics with 8 binary inputs/outputs and PROFIBUS PA	**A5E00056834**
Add-on electronics with 8 binary inputs/outputs and PROFIBUS DP	**A5E00057159**

1) For measuring ranges below 1%, a CO_2 absorber cartridge can be used for setting the zero point (see accessories)

2) Without separate zero gas input or solenoid valve

3) User language can be changed

4) Standard setting: smallest measuring range, largest measuring range

5) O_2 sensor in gas path of infrared measured component 1

6) With chopper compartment purging (N_2 approx. 3 000 hPa required for measuring ranges below 0.1% CO_2), to be ordered separately (see order code C02 or C03)

7) Not suitable for use with emission measurements since the cross-sensitivity is too high

8) CO_2 measurement in carrier gas Ar or Ar/He (3:1); forming gas

9) Only for version with Viton hose

10) Only in conjunction with CO/CO_2, measuring range 0 to 75/750 mg/m³, 0 to 5/25% [-BL-]

11) Only in combination with CO2/NO, measuring range 0 to 5/25%, 0 to 500/5 000 vpm [-DC-]

Ordering notes

Special selection rules must be observed when measuring some components.

Measured component N_2O

7MB2335, 7MB2337 and 7MB2338
(application: Si chip production)

- Measuring range 0 to 100/500 ppm (MB designation "E")
- Can only be used to measure N_2O in ultra-pure gases

7MB2337 and 7MB2338
(application: measurement in accordance with the requirements of the Kyoto protocol)

- Measuring range 0 to 500/5 000 vpm (MB designation "Y")
- Requires simultaneous measurement of CO_2 for correction of cross-interference

7MB2337-*CP*0-*SY* or
7MB2338-*DC*0-*SY* (including NO measurement)

7MB2338
(application in accordance with the requirements of the 30th BImSchV, "biomass")

- Measuring range 0 to 50/500 mg/m³ (MB designation "S")
- Requires simultaneous measurement of CO_2 and CO for correction of cross-interference

7MB2338-*BL*0-*SS*

Measured component SF_6

7MB2335, 7MB2337 and 7MB2338
(application: SI chip production)

- Measuring range 0 to 500/2 500 ppm (MB designation "H")
- Can only be used to measure SF6 in inert gases

Calibration interval (TÜV versions)

Component	Smallest measuring range (TÜV)	Calibration interval	Remarks	Z suffix
CO	0 … 150 mg/m³	5 months	13./27. BImSchV	E50
CO	0 … 250 mg/m³	12 months	13./27. BImSchV	
NO	0 … 100 mg/m³	5 months	13./27. BImSchV	E50
NO	0 … 250 mg/m³	12 months	13./27. BImSchV	
SO_2	0 … 400 mg/m³	12 months	13./27. BImSchV	
N_2O	0 … 500 ppm		Kyoto protocol	
N_2O	0 … 50 mg/m³	6 months	30. BImSchV	