

Selection and ordering data

Order No.

ULTRAMAT 23 gas analyzer

for measuring 1 infrared component and oxygen

D) 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⁾
¼" pipe	Viton	Without ²⁾
6 mm pipe	Viton	With
¼" pipe	Viton	With
6 mm pipe	Stainless steel, mat. no. 1.4571	Without ²⁾
¼" pipe	Stainless steel, mat. no. 1.4571	Without ²⁾

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

Measured component Possible with measuring range identification

CO	D, E, F, G ... R, U, X
CO ₂ ¹⁾	D ⁶⁾ , G ⁶⁾ , H ⁶⁾ , J ⁶⁾ , K ... R
CH ₄	E, H, L, N, P, R
C ₂ H ₄	K
C ₆ H ₁₄	K
SO ₂	F ... L, W
NO	E, G ... J, T, V, W
N ₂ O ⁷⁾	E
SF ₆	H

Smallest measuring range Largest measuring range

0 ... 50 vpm	0 ... 250 vpm	} TÜV version
0 ... 100 vpm	0 ... 500 vpm	
0 ... 150 vpm	0 ... 750 vpm	
0 ... 200 vpm	0 ... 1 000 vpm	
0 ... 500 vpm	0 ... 2 500 vpm	
0 ... 1 000 vpm	0 ... 5 000 vpm	
0 ... 2 000 vpm	0 ... 10 000 vpm	
0 ... 0,5 %	0 ... 2,5 %	
0 ... 1 %	0 ... 5 %	
0 ... 2 %	0 ... 10 %	
0 ... 5 %	0 ... 25 %	
0 ... 10 %	0 ... 50 %	
0 ... 20 %	0 ... 100 %	
0 ... 100 mg/m ³	0 ... 750 mg/m ³	
0 ... 150 mg/m ³	0 ... 750 mg/m ³	
0 ... 250 mg/m ³	0 ... 1 250 mg/m ³	
0 ... 400 mg/m ³	0 ... 2 000 mg/m ³	
0 ... 50 vpm	0 ... 2 500 vpm	

Oxygen measurement⁵⁾

Without O ₂ sensor	0
With O ₂ sensor	1
With paramagnetic oxygen measuring cell	8

Hydrogen sulfide measurement

Without	0
With H ₂ S sensor 0 ... 500 / 5 000 ppm	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, documentation³⁾

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

Add-on electronics with 8 binary inputs/outputs, PROFIBUS DP interface

Telescopic rails (2 units), 19" rack unit version only

Set of Torx screwdrivers

TAG labels (specific inscription based on customer information)

Gas path for short response time⁹⁾

Chopper compartment purging for 6 mm gas connection

Chopper compartment purging for ¼" gas connection

Presetting to reference temperature 0 °C for conversion into mg/m³, applies to all components

Certificate FM/CSA Class I, Div. 2, ATEX II 3 G

Calibration interval 5 months (TÜV / QAL), measuring ranges:
CO: 0 ... 150 / 750 mg/m³
NO: 0 ... 100 / 750 mg/m³Measuring range indication in plain text⁴⁾Measurement of CO₂ in forming gas⁸⁾ (only in conjunction with measuring range 0 to 20/0 to 100%)**A12****A13****A31****A32****B03****C01****C02****C03****D15****E20****E50****Y11****Y14***Accessories***Order No.**CO₂ 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

D) Subject to export regulations AL: 91999, ECCN: N

¹⁾ For measuring ranges below 1%, a CO₂ absorber cartridge can be used for setting the zero point (see accessories)²⁾ Without separate zero gas input or solenoid valve³⁾ User language can be changed⁴⁾ Standard setting: smallest measuring range, largest measuring range⁵⁾ O₂ sensor in gas path of infrared measured component 1⁶⁾ With chopper compartment purging (N₂ approx. 3 000 hPa required for measuring ranges below 0.1% CO₂), to be ordered separately (see order code C02 or C03)⁷⁾ Not suitable for use with emission measurements since the cross-sensitivity is too high⁸⁾ CO₂ measurement in accompanying gas Ar or Ar/He (3:1); forming gas⁹⁾ Only for version with Viton hose

Selection and ordering data

Order No.

ULTRAMAT 23 gas analyzer

for measuring 2 infrared components and oxygen

D) **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⁾
¼" pipe	Viton, not separate	Without ²⁾
6 mm pipe	Viton, not separate	With
¼" pipe	Viton, not separate	With
6 mm pipe	Viton, separate	Without ²⁾
¼" pipe	Viton, separate	Without ²⁾
6 mm pipe	Stainless steel, mat. no. 1.4571, separate	Without ²⁾
¼" pipe	Stainless steel, mat. no. 1.4571, separate	Without ²⁾

0
1
2
3
4
5
6
7
8

4 → A27, A29
5 → A27, A29

6
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

1. infrared measured component

Measured component	Possible with measuring range identification
CO	D, E, F, G ... R, U, X
CO ₂ ¹⁾	D ⁶⁾ , G ⁶⁾ , H ⁶⁾ , J ⁶⁾ , K ... R
CH ₄	E, H, L, N, P, R
C ₂ H ₄	K
C ₆ H ₁₄	K
SO ₂	F ... L, W
NO	E, G ... J, T, V, W
N ₂ O ⁷⁾	E
SF ₆	H

A
C
D
F
M
N
P
S
V

Smallest measuring range **Largest measuring range**

0 ... 50 vpm	0 ... 250 vpm
0 ... 100 vpm	0 ... 500 vpm
0 ... 150 vpm	0 ... 750 vpm
0 ... 200 vpm	0 ... 1 000 vpm
0 ... 500 vpm	0 ... 2 500 vpm
0 ... 1 000 vpm	0 ... 5 000 vpm
0 ... 2 000 vpm	0 ... 10 000 vpm
0 ... 0,5 %	0 ... 2,5 %
0 ... 1 %	0 ... 5 %
0 ... 2 %	0 ... 10 %
0 ... 5 %	0 ... 25 %
0 ... 10 %	0 ... 50 %
0 ... 20 %	0 ... 100 %
0 ... 100 mg/m ³	0 ... 750 mg/m ³
0 ... 150 mg/m ³	0 ... 750 mg/m ³
0 ... 250 mg/m ³	0 ... 1 250 mg/m ³
0 ... 400 mg/m ³	0 ... 2 000 mg/m ³
0 ... 50 vpm	0 ... 2 500 vpm

} TÜV version

D
E
F
G
H
J
K
L
M
N
P
Q
R
T
U
V
W
X

Oxygen measurement⁵⁾

Without O ₂ sensor	0
With O ₂ sensor	1
With paramagnetic oxygen measuring cell	8

0
1
8

1
8

Hydrogen sulfide measurement

Without	0
With H ₂ S sensor 0 ... 500 / 5 000 ppm	3

0
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

0
1
2
3
4
5
6

Selection and ordering data

ULTRAMAT 23 gas analyzer

for measuring 2 infrared components and oxygen

Order No.

D) 7MB2337-  - 

Cannot be combined

2. infrared measured component

Measured component	Possible with measuring range identification
CO	D, E, F, G ... R, U, X
CO ₂ ¹⁾	D ⁶⁾ , G ⁶⁾ , H ⁶⁾ , J ⁶⁾ , K ... R
CH ₄	E, H, L, N, P, R
C ₂ H ₄	K
C ₆ H ₁₄	K
SO ₂	F ... L, W
NO	E, G ... J, T, V, W
N ₂ O	E ⁷⁾ , Y ¹⁰⁾
SF ₆	H

Smallest measuring range Largest measuring range

0 ... 50 vpm	0 ... 250 vpm
0 ... 100 vpm	0 ... 500 vpm
0 ... 150 vpm	0 ... 750 vpm
0 ... 200 vpm	0 ... 1 000 vpm
0 ... 500 vpm	0 ... 2 500 vpm
0 ... 1 000 vpm	0 ... 5 000 vpm
0 ... 2 000 vpm	0 ... 10 000 vpm
0 ... 0,5 %	0 ... 2,5 %
0 ... 1 %	0 ... 5 %
0 ... 2 %	0 ... 10 %
0 ... 5 %	0 ... 25 %
0 ... 10 %	0 ... 50 %
0 ... 20 %	0 ... 100 %
0 ... 100 mg/m ³	0 ... 750 mg/m ³
0 ... 150 mg/m ³	0 ... 750 mg/m ³
0 ... 250 mg/m ³	0 ... 1 250 mg/m ³
0 ... 400 mg/m ³	0 ... 2 000 mg/m ³
0 ... 50 vpm	0 ... 2 500 vpm
0 ... 500 vpm	0 ... 5 000 vpm

} TÜV version

Operating software, documentation³⁾

German	0
English	1
French	2
Spanish	3
Italian	4

Footnotes: See next page.

A
C
D
F
M
N
P
S
V

D
E
F
G
H
J
K
L
M
N
P
Q
R
T
U
V
W
X
Y

<i>Additional versions</i>	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 connection pipe (mat. no. 1.4571), 6 mm, complete with screwed gland (cannot be combined with Viton hose)	A27
Stainless steel connection pipe (mat. no. 1.4571), 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/m ³ , 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), mea- CO: 0 ... 150 / 750 mg/m ³ suring ranges: NO: 0 ... 100 / 750 mg/m ³	E50
Measurement of CO ₂ in forming gas ⁸⁾ (only in conjunction with measuring range 0 to 20/0 to 100%)	Y14
<i>Accessories</i>	Order No.
CO ₂ absorber cartridge	7MB1933-8AA
<i>Retrofitting sets</i>	
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

D) Subject to export regulations AL: 91999, ECCN: N

¹⁾ For measuring ranges below 1%, a CO₂ 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⁾ O₂ sensor in gas path of infrared measured component 1

⁶⁾ With chopper compartment purging (N₂ approx. 3 000 hPa required for measuring ranges below 0.1% CO₂), 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⁾ CO₂ measurement in accompanying gas Ar or Ar/He (3:1); forming gas

⁹⁾ Only for version with Viton hose

¹⁰⁾ Only in conjunction with CO₂ 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

D) 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⁾
¼" pipe	Viton, not separate	Without ²⁾
6 mm pipe	Viton, not separate	With
¼" pipe	Viton, not separate	With
6 mm pipe	Viton, separate	Without ²⁾
¼" pipe	Viton, separate	Without ²⁾
6 mm pipe	Stainless steel, mat. no. 1.4571, separate	Without ²⁾
¼" pipe	Stainless steel, mat. no. 1.4571, separate	Without ²⁾

 0
1
2
3
4
5
6
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8

 4 → A27, A29
5 → A27, A29
6
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

1. and 2nd infrared measured components

Measured component	Smallest measuring range	Largest measuring range
CO	0 ... 500 vpm	0 ... 2 500 vpm
NO	0 ... 500 vpm	0 ... 2 500 vpm
CO	0 ... 2 000 vpm	0 ... 10 000 vpm
NO	0 ... 1 000 vpm	0 ... 5 000 vpm
CO	0 ... 1 000 vpm	0 ... 5 000 vpm
NO	0 ... 1 000 vpm	0 ... 5 000 vpm
CO	0 ... 1 %	0 ... 5 %
NO	0 ... 1 000 vpm	0 ... 5000 vpm
CO	0 ... 250 mg/m ³	0 ... 1 250 mg/m ³ TÜV version
NO	0 ... 400 mg/m ³	0 ... 2 000 mg/m ³ TÜV version
CO	0 ... 10 %	0 ... 50 %
CO ₂	0 ... 10 %	0 ... 50 %
CO	0 ... 10 %	0 ... 50 %
CO ₂	0 ... 0,5 %	0 ... 2,5 %
CO	0 ... 20 %	0 ... 100 %
CO ₂	0 ... 20 %	0 ... 100 %
CO ₂	0 ... 5 %	0 ... 25 %
CO	0 ... 100 vpm	0 ... 500 vpm
CO ₂	0 ... 10 %	0 ... 50 %
CO	0 ... 0,5 %	0 ... 2,5 %
CO ₂	0 ... 5 %	0 ... 25 %
CO	0 ... 75 mg/m ³	0 ... 750 mg/m ³
CO ₂	0 ... 5 %	0 ... 25 %
CH ₄	0 ... 1 %	0 ... 5 %
CO ₂	0 ... 5 %	0 ... 25 %
CH ₄	0 ... 2 %	0 ... 10 %
CO ₂	0 ... 5 %	0 ... 25 %
NO	0 ... 500 vpm	0 ... 2 500 vpm

 AA
AB
AC
AD
AK
BA
BB
BD
BJ
BK
BL
CA
CB
DC

Oxygen measurement⁵⁾

 Without O₂ sensor

 With O₂ sensor

With paramagnetic oxygen measuring cell

 0
1
8

 1
8

Power supply

100 V AC, 50 Hz

120 V AC, 50 Hz

200 V AC, 50 Hz

230 V AC, 50 Hz

100 V AC, 60 Hz

120 V AC, 60 Hz

230 V AC, 60 Hz

 0
1
2
3
4
5
6

Footnotes: See next page.

Selection and ordering data

Order No.

ULTRAMAT 23 gas analyzer

D) 7MB2338- 0 -

Cannot be combined

for measuring 3 infrared components and oxygen

3. infrared measured component

Measured component Possible with measuring range identification

CO	D, E, F, G ... R, U, X
CO ₂ ¹⁾	D ⁶⁾ , G ⁶⁾ , H ⁶⁾ , J ⁶⁾ , K ... R
CH ₄	E, H, L, N, P, R
C ₂ H ₄	K
C ₆ H ₁₄	K
SO ₂	F ... L, W
NO	E, G ... J, V, W
N ₂ O	E ⁷⁾ , S ¹⁰⁾ (biomass), Y ¹¹⁾
SF ₆	H

A
C
D
F
M
N
P
S
V

Smallest measuring range Largest measuring range

0 ... 50 vpm	0 ... 250 vpm
0 ... 100 vpm	0 ... 500 vpm
0 ... 150 vpm	0 ... 750 vpm
0 ... 200 vpm	0 ... 1 000 vpm
0 ... 500 vpm	0 ... 2 500 vpm
0 ... 1 000 vpm	0 ... 5 000 vpm
0 ... 2 000 vpm	0 ... 10 000 vpm
0 ... 0,5 %	0 ... 2,5 %
0 ... 1 %	0 ... 5 %
0 ... 2 %	0 ... 10 %
0 ... 5 %	0 ... 25 %
0 ... 10 %	0 ... 50 %
0 ... 20 %	0 ... 100 %

D
E
F
G
H
J
K
L
M
N
P
Q
R

0 ... 50 mg/m ³	0 ... 500 mg/m ³
0 ... 150 mg/m ³	0 ... 750 mg/m ³
0 ... 250 mg/m ³	0 ... 1 250 mg/m ³
0 ... 400 mg/m ³	0 ... 2 000 mg/m ³

} TÜV version

S
U
V
W
X
Y

Operating software, documentation³⁾

German	0
English	1
French	2
Spanish	3
Italian	4

D) Subject to export regulations AL: 91999, ECCN: N

<i>Additional versions</i>	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 connection pipe (mat. no. 1.4571), 6 mm, complete with screwed gland (cannot be combined with Viton hose)	A27
Stainless steel connection pipe (mat. no. 1.4571), 1/4", 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 1/4" gas connection	C03
Presetting to reference temperature 0 °C for conversion into mg/m ³ , 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/m ³ NO: 0 ... 100 / 750 mg/m ³	E50
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

<i>Accessories</i>	Order No.
CO ₂ absorber cartridge	7MB1933-8AA
<i>Retrofitting sets</i>	
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 CO₂ 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⁾ O₂ sensor in gas path of infrared measured component 1

⁶⁾ With chopper compartment purging (N₂ approx. 3 000 hPa required for measuring ranges below 0.1% CO₂), 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⁾ CO₂ measurement in accompanying gas Ar or Ar/He (3:1); forming gas

⁹⁾ Only for version with Viton hose

¹⁰⁾ Only in conjunction with CO/CO₂, 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-]