Overview

The ULTRAMAT 6 single-channel or dual-channel gas analyzers operate according to the NDIR two-beam alternating light principle and measure gases highly selectively whose absorption bands lie in the infrared wavelength range from 2 to 9 μ m, such as CO, CO₂, NO, SO₂, NH₃, H₂O, CH₄ and other hydrocarbons.

Single-channel analyzers measure up to 2 gas components, dual-channel analyzers up to 4 gas components simultaneously.



ULTRAMAT 6, 19" unit and field unit

Benefits

- · High selectivity with double-layer detector and optical coupler - Reliable measurements even in complex gas mixtures
- Low detection limits
- Measurements with low concentrations
- Corrosion-resistant materials in gas path (option)
- Measurement possible in highly corrosive sample gases • Cleanable sample cells
- Cost saving in further use in case of pollution
- · Electronics and physics: gas-tight isolation, purging is possible, IP65
- High service life even in harsh environments
- Heated versions (option) - Use also in presence of gases condensing at low temperature
- EEx(p) for zones 1 and 2 according to ATEX 2G and ATEX 3G.

Application

Application

- Measurements for boiler control in combustion plants
- Emission measurements in incineration plants
- Measurements in the automotive industry (test benches)
- Warning equipment
- Process gas concentrations in chemical plants
- Trace measurements in pure gas processes
- Environment protection
- MAC-value monitoring at place of work
- Quality monitoring
- Ex versions to analyze flammable and non-flammable gases or vapors for use in hazardous areas.

Special versions

Special applications

Besides the standard combinations special applications concerning material of the gas path, material of the sample cells (e.g. titanium, Hastelloy C22) and sample components are also available on request.

TÜV version

TÜV-approved versions are available for measurement of CO, NO and SO₂ according to 13. BImSchV and TA Luft.

Smallest TÜV-approved and permitted measuring ranges: 1-component analyzer

- CO: 0 to 50 mg/m²
- NO: 0 to 100 mg/m³
- SO₂: 0 to 75 mg/m³
- 2-component analyzer (series connection) CO: 0 to 75 mg/m³ NO: 0 to 200 mg/m³

Furthermore, the TÜV-approved versions of the ULTRAMAT 6 comply with the requirements of EN 14956 and of QAL 1 according to ÉN 14181. Conformity of the analyzers with both standards is TÜV-certified.

Determination of the analyzer drift according to EN 14181 (QAL 3) can be carried out manually or also with a PC using the SIPROM GA maintenance and servicing software. In addition, selected manufacturers of emission evaluation computers offer the possibility for downloading the drift data via the analyzer's serial interface and to automatically record and process them in the evaluation computer.

Design

19" unit

- With 4 HU for installation
 - in hinged frames - in cabinets, with or without slide rails
- Front panel for service can be hinged down (laptop connection)
- Internal gas paths: flexible tube made of FKM (Viton) or pipe made of titanium or stainless steel
- Gas connections for sample gas input and output: pipe diameter 6 mm or 1/4"
- Flowmeter for sample gas on the front panel (option).

Field unit

- Two-door housing with gas-tight separation of analyzer and electronics sections from gas path
- · Each half of the enclosure can be purged separately
- Analyzer section and piping can be heated up to 65 °C (option)
- Gas path: hose made of FKM (Viton) or pipe made of titanium or stainless steel (further materials possible as special applications)
- Gas connections for sample gas inlet and outlet: ferrule screw for pipe diameter 6 mm or 1/4"
- Purging gas connections: pipe diameter 10 mm or 3/8".

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2

General

General

2

Display and control panel

- Large LCD panel for simultaneous display of:
- Measured value (digital and analog displays)
- Status line
- Measuring ranges
- Contrast of LCD panel adjustable using menu
- · Washable membrane keyboard with five softkeys
- Menu-based operation for configuration, test functions, calibration
- User help in plain text
- Graphic display of concentration trend; programmable time intervals
- Operating software in two languages: German/English, English/Spanish, French/English, Italian/English.

Inputs and outputs

- One analog output per sample component
- Two analog inputs freely configurable (e.g. correction of cross interferences or external pressure sensor)

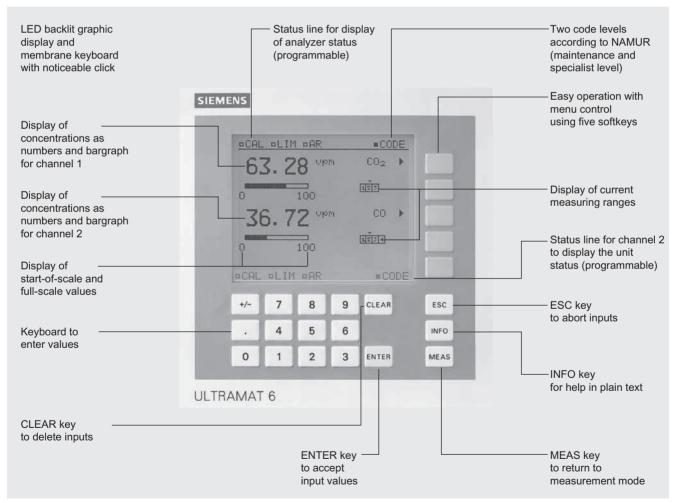
- Six binary inputs freely configurable (e.g. for range switching, processing external signals from sample conditioning)
- Six relay outputs freely configurable (e.g. failure, maintenance request, limit alarm, external solenoid valves)
- Extension with eight additional binary inputs and eight additional relay outputs, e.g. for automatic calibration with up to four calibration gases.

Communication

• RS 485 present in basic unit (connection at the rear; with 19" unit also possibility of connection behind the front plate).

Options

- AK interface for the automotive industry with extended functions
- RS 485/RS 232 converter
- RS 485/Ethernet converter
- · Linking to networks via PROFIBUS DP/PA interface
- SIPROM GA software as service and maintenance tool.



ULTRAMAT 6, membrane keyboard and graphic display

Gener<u>al</u>

Versions – Wetted parts, standard

Gas path		19" unit	Field unit	Ex field unit
With hoses	Bushing	SS, type No. 1	SS, type No. 1.4571	
	Hose	FKM (e.g. V	FKM (e.g. Viton)	
	Sample cell:			
	• Body	Aluminur	Aluminum	
Cell lining		Aluminur	n	—
	• Stub	SS, type No. 1	.4571,	
		O-ring: FKM (e.g. Viton)	or FFKM (Kalrez)	
	• Window	CaF ₂ , adhesive	e: E353,	
		O-ring: FKM (e.g. Viton)	or FFKM (Kalrez)	
With pipes	Bushing		Titanium	
	Pipe		Titanium,	
		O-ring: Fł	O-ring: FKM (e.g. Viton) or FFKM (Kalre	
	Sample cell:			
	• Body		Aluminum	
	Cell lining	Tantalum (on	Tantalum (only for cell length 20 mm to	
	• Window		CaF ₂ , adhesive: E353,	
		O-ring: Fk	O-ring: FKM (e.g. Viton) or FFKM (K	
With pipes	Bushing		SS, type No. 1.4571	
	Pipe		SS, type No. 1.4571,	
		O-ring: Fk	KM (e.g. Viton) or FFKM (H	Kalrez)
	Sample cell:			
	• Body		Aluminum	
	Cell lining	Aluminum or tantalum	n (Ta: only for cell length 2	20 mm to 180 mm)
	• Window		CaF ₂ , adhesive: E353,	
		O-ring: FKM (e.g. Viton) or FFKM (Kalrez)		(alrez)

Options

Gas path		19" unit	Field unit	Ex field unit
Flowmeter	Metering pipe	Duran glass		
	Float	Duran glass		
	Float limit	PTFE (e.g. Teflon)	—	
	Elbows	FKM (e.g. Viton)		
Pressure switch	Membrane	FKM (e.g. Viton)		
	Enclosure	PA 6.3 T	—	

Versions – Wetted parts, special applications (examples)

Gas path		19" unit	Field unit	Ex field unit	
With pipes	Bushing		e.g. Hastelloy C22		
	Pipe		e.g. Hastelloy C22,		
			O-ring: FKM (e.g. Viton) or FFKM (Kalrez)		
	Sample cell:				
	• Body		e.g. Hastelloy C22		
	• Window		CaF ₂ , without adhesive		
		O-ring	g: FKM (e.g. Viton) or FFKM (K	(alrez)	

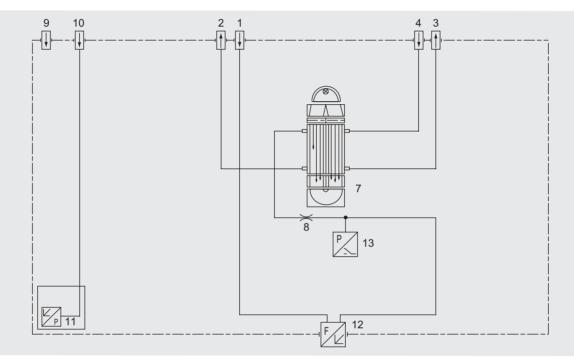
General

Gas path (19" unit)

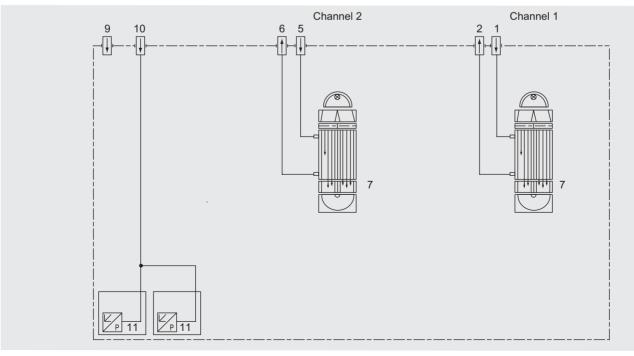
Key to gas path figures

- 1 Sample gas inlet channel 1
- 2 Sample gas outlet channel 1
- 3 Reference gas outlet (option)
- 4 Reference gas inlet (option)
- 5 Sample gas inlet channel 2
- 6 Sample gas outlet channel 2
- 7 IR bench

- 8 Restriction
- 9 Purging gas inlet
- 10 Gas inlet atmospheric pressure sensor
- 11 Atmospheric pressure sensor
- 12 Flowmeter in sample gas path (option)
- 13 Pressure switch in sample gas path (option)



Gas path ULTRAMAT 6, single-channel unit, 19" unit, with flow-type reference cell (option)



Gas path ULTRAMAT 6, dual-channel unit, 19" unit

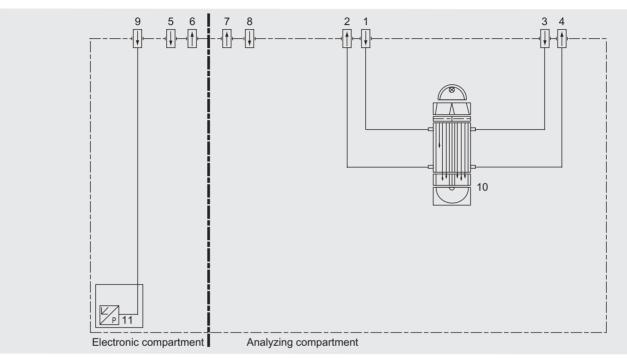
General

Gas path (field unit)

Key to gas path figures

- 1 Sample gas inlet
- 2 Sample gas outlet
- 3 Reference gas inlet (option)
- 4 Reference gas outlet (option)
- 5 Purging gas inlet (electronic compartment)
- 6 Purging gas outlet (electronic compartment)

- 7 Purging gas outlet (anlyzing compartment)
- 8 Purging gas inlet (anlyzing compartment)
- 9 Gas inlet atmospheric pressure sensor
- 10 IR bench
- 11 Atmospheric pressure sensor



Gas path ULTRAMAT 6, field unit, with flow-type reference cell (option)

General

Function

Mode of operation

The ULTRAMAT 6 gas analyzer operates according to the infrared two-beam alternating light principle with double-layer detector and optical coupler.

The measuring principle is based on the molecule-specific absorption of bands of infrared radiation. The absorbed wavelengths are characteristic to the individual gases, but may partially overlap. This results in cross-sensitivities which are reduced to a minimum in the ULTRAMAT 6 gas analyzers by the following measures:

- · Gas-filled filter cell (beam divider)
- Double-layer detector with optical coupler
- Optical filters if necessary.

The figure shows the measuring principle. An IR source (1) which is heated to approx. 700 °C and which can be shifted to balance the system is divided by the beam divider (3) into two equal beams (sample and reference beams). The beam divider also acts as a filter cell.

The reference beam passes through a reference cell (8) filled with N₂ (a non-infrared-active gas) and reaches the right-hand side of the detector (11) practically unattenuated. The sample beam passes through the sample cell (7) through which the sample gas flows and reaches the left-hand side of the detector (10) attenuated to a lesser or greater extent depending on the concentration of the sample gas. The detector is filled with a defined concentration of the gas component to be measured.

The detector is designed as a double-layer detector. The center of the absorption band is preferentially absorbed in the upper detector layer, the edges of the band are absorbed to approximately the same extent in the upper and lower layers. The upper and lower detector layers are connected together via the microflow sensor (12). This coupling means that the spectral sensitivity has a very narrow band.

The optical coupler (13) lengthens the lower receiver cell layer optically. The infrared absorption in the second detector layer is varied by changing the slider position (14). It is thus possible to individually minimize the influence of interfering components.

A chopper (5) rotates between the beam divider and the sample cell and interrupts the two beams alternately and periodically. If absorption takes place in the sample cell, a pulsating flow is generated between the two detector levels which is converted by the microflow sensor (12) into an electric signal.

The microflow sensor consists of two nickel grids heated to approx. 120 °C which, together with two further resistors, form a Wheatstone bridge. The pulsating flow together with the very close arrangement of the Ni grids leads to a change in resistance. This leads to an offset in the bridge which is dependent on the concentration of the sample gas.

Notes

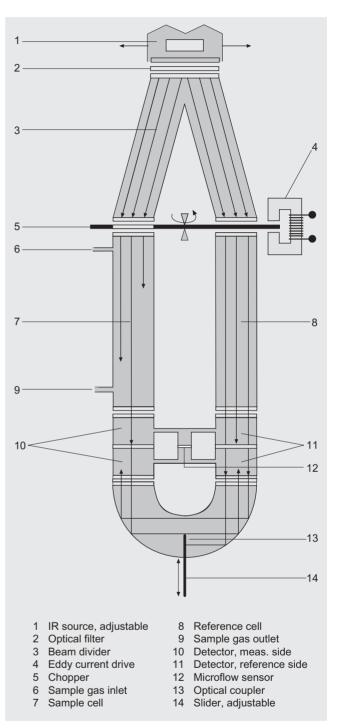
The sample gases have to enter the analyzer dust-free. Avoid condensate in the sample cells. Therefore an appropriate gas preparation is required in most applications.

The ambient air of the analyzer should be, in a large extent, free of high concentration of the component to be measured.

Flow-type reference compartments with reduced flow must not be used with flammable or toxic gases.

Channels with electronically suppressed zero only differ from the standard version by the measuring ranges parameterization.

Physically suppressed zeros are implemented as special applications.



ULTRAMAT 6, mode of operation

General

Essential characteristics

- Four freely-programmable measuring ranges per component
- · Measuring ranges with suppressed zero possible
- Measuring range identification
- One electrically isolated signal output 0/2/4 to 20 mA per component
- Autoranging or manual range switching possible; remote switching is also possible
- Differential measuring ranges with flow-type reference cell
- · Storage of measured values possible during calibration
- Time constants selectable within wide limits (static/dynamic noise suppression); i.e. the response time of the analyzer or the component can be matched to the respective application.
- Fast response time
- · Low long-term drift
- Measuring-point selection for up to 6 measuring points (programmable)
- Measuring point identification
- Monitoring of sample gas flow (option)
- Internal pressure sensor for correction of variations in atmospheric pressure in the range 600 to 1200 hPa absolute

- External pressure sensor can be connected for correction of variations in the process gas pressure in the range 600 to 1500 hPa absolute (option)
- Two-stage access code to prevent unintentional and unauthorized inputs
- Automatic range calibration can be parameterized
- Simple handling using menu-based operation with numerical membrane keyboard
- Operation based on NAMUR Recommendation
- Customer-specific analyzer versions such as e.g.: - Customer acceptance
 - Tag labels
 - Drift recording
- Simple analyzer exchange since electric connections are easy to remove
- Sample cell for use in presence of highly corrosive sample gases (e.g. tantalum layer or Hastelloy C22).

Additional characteristics, dual-channel version

- Separate design of physical unit, electronics, inputs/outputs and power supply for each channel
- Display and operation via common LCD panel and keyboard
- Channels 1 and 2 can be converted to connection in series (linking of gas connections from channel 1 to channel 2 on rear).

19" unit

General			
Measuring ranges	4, switchable internally and exter- nally; autoranging is also possible		
Smallest possible measuring range	Depending on application, e.g. CO: 0 10 vpm, CO ₂ : 0 5 vpm		
Largest possible measuring span	Depending on application		
Measuring range with suppressed zero	Every zero possible within 0 100 Vol.%, smallest possible measuring span 20%		
Characteristic	Linearized		
Position of use	Front panel vertical		
Conformity	CE identification EN 50081-1, EN 50082-2		
Design, enclosure			
Weight	Approx. 15 kg		
	(with one IR channel), approx. 21 kg (with two IR channels)		
Degree of protection	IP20 according to EN 60529		
Electrical characteristics			
EMC interference immunity (ElectroMagnetic Compatibility)	According to standard require- ments of NAMUR NE21 (08/98)		
Electrical safety	According to EN 61010-1, overvoltage category III		
Power supply	100 120 V AC (rated range 90 132 V), 48 63 Hz or 200 240 V AC (rated range 180 264 V), 48 63 Hz		
Power consumption	1-channel unit: approx. 40 VA 2-channel unit: approx. 70 VA		
Fuse links			
• 100 120 V	1T/250 (7MB2121), 1.6T/250 (7MB2123)		
• 200 240 V	0.63T/250 (7MB2121), 1T/250 (7MB2123)		
Gas inlet conditions			
Perm. sample gas pressure			
 for analyzers with hoses 			
- without pressure switch	600 1500 hPa (absolute)		
- with pressure switch	600 1300 hPa (absolute)		
• for analyzers with pipes (without pressure switch)	600 1500 hPa (absolute)		
Sample gas flow	18 90 l/h (0.3 1.5 l/min)		
Sample gas temperature	0 50 °C		
Sample gas humidity	< 90 % RH (relative humidity) or depending on application, non condensing		
Time response			
Warm-up period	With amb. temperature < 30 min (maximum accuracy achieved after 2 hours)		
Response time (T ₉₀ time)	Dependent on length of analyzer cell, sample gas line and damping		
Damping (electric time constant)	0 100 s, programmable		
Dead time (purging time of gas path in analyzer at 1 l/min)	Approx. 0.5 5 s, depending on version		
Time for internal signal processing	< 1 s		

Pressure correction range

Pressure correction range	
Pressure sensor	
• internal	600 1200 hPa absolute
• external	600 1500 hPa absolute
Measuring response (maximum acc	curacy achieved after 2 hours)
Output signal fluctuation	$\pm0.1\%\pm1\%$ of smallest possible measuring range specified on rating plate depending on application with the unit specific electronic time constant (corresponds to $\pm0.33\%$ at $2\sigma)$
Zero drift	< 1% of measuring range/week
Measured-value drift	< 1% of measuring range/week
Repeatability	≤ 1% of respective measuring range
Minimum detection limit	1% of smallest measuring range
Linearity error	< 0.5% of full-scale value
Influencing variables (referred to 10 0.5 l/min sample gas flow and 25 °C	000 hPa sample gas pressure, ambient temperature)
Ambient temperature	< 1% of measuring range/10 K (for a constant temperature of the reception cell)
Sample gas pressure	With pressure compensation: < 0.15% of span/1% change in atmospheric pressure
	without pressure compensation: < 1.5% of span/1% change in atmospheric pressure
Sample gas flow	Negligible
Power supply	< 0.1% of output signal span with rated voltage \pm 10%
Ambient conditions	Application-dependent influenc- ing of measurement if ambient air contains measured component or cross-sensitive gases
Electric inputs and outputs	
Analog output	0/2/4 20 mA, floating; load \leq 750 Ω
Relay outputs	6, with changeover contacts, freely parameterizable, e.g. for range identification; loading capacity: 24 V AC/DC / 1 A floating, non sparking
Analog inputs	2, designed for 0/2/4 20 mA, for external pressure sensor and correction of influence of residual gas (correction of cross interfer- ence)
Binary inputs	6, designed for 24 V, floating, freely parameterizable, e.g. for range switching
Serial interface	RS 485
Options	Autocal function with 8 additional binary inputs and 8 relay outputs, also with PROFIBUS PA and PROFIBUS DP
Ambient conditions	
Permissible ambient temperature	-30 +70 °C during storage and transport, +5 +45 °C during operation
Permissible humidity	< 90 % RH (relative humidity) as annual average, during storage and transport (dew point must not be fallen below)

19" unit

Stetchin and Ordering Data Order No. UtTRAMAT Sea sanayser Single channel 19 ⁻ int life installation in cabinots THE 31 21 - • • • • • • • • • • • • • • • • • •					
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010 vpm 0200 vpm 11 B 020 vpm 0400 vpm 12 C 050 vpm 01000 vpm 13 D 0100 vpm 01000 vpm 14 E 0500 vpm 0300 vpm 16 D 0500 vpm 01000 vpm 19 J 0300 vpm 01000 vpm 19 J 03000 vpm 01000 vpm 19 J 03000 vpm 010000 vpm 19 J 03000 vpm 010000 vpm 21 M 015% 010% 22 N 015% 010% 24 O 05% 010% 28 U 05% 010% 29 U 010% 010% 29 U 030% 0100% 29 U 030% 0100% 29 U 030% 0100% 30 U Internal gas paths Sample cell ¹ Reference cell (lining) I </td <td>0</td> <td></td> <td>÷</td> <td></td> <td></td>	0		÷		
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$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0 1000 vpm	0 10000 vpm	17	н	
0 5000 vpm 0 5000 vpm 20 L 0 5000 vpm 0 5000 vpm 21 M 0 1% 0 3% 22 N 0 1% 0 10% 23 N 0 3% 0 10% 24 O 0 3% 0 10% 24 O 0 5% 0 50% 27 T 0 10% 0 30% 28 U 0 10% 0 30% 28 U 0 10% 0 30% 28 U 0 10% 0 100% 30 W Internal gas paths Sample cell ¹) Reference cell M (/tion) Aluminum Non-flow-type 0 0 0 -> A20, A21 Pipe made of FKM Aluminum Non-flow-type 1 1 4 -> A20, A21, Y02 Fipe made of SS Aluminum Non-flow-type 5 6 -> A20, A21 6 Vith sample gas monitoring Non-flow-type 8 8 -> A20, A21 8 -> A20, A21 Wit				J	
0 5000 vpm 0 50000 vpm 21 M 0 1% 0 3% 22 N 0 1% 0 10% 23 P 0 1% 0 10% 24 O 0 3% 0 30% 25 R 0 5% 0 50% 27 T 0 5% 0 50% 28 U 0 10% 0 100% 29 V 0 10% 0 100% 30 W Internal gas paths Sample cell ¹) Reference cell W (Viton) Aluminum Non-flow-type 0 0 0				K	
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$\begin{array}{c c c c c c c c c c c c c c c c c c c $	0 5%	0 50%	27		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					
Internal gas pathsSample cell1 (lining)Reference cell (flow-type)Hose made of FKMAluminumNon-flow-type00Hose made of FKMAluminumNon-flow-type11Pipe made of titaniumTantalumNon-flow-type4 $4 \rightarrow A20, A21, Y02$ Pipe made of SS (type No. 1.4571)AluminumNon-flow-type5 $5 \rightarrow Y02$ TantalumNon-flow-type6 $6 \rightarrow A20, A21$ With sample gas monitoring Hose made of FKMNon-flow-type8 $8 \rightarrow A20, A21$ Hose made of FKMAluminumNon-flow-type2 $2 \rightarrow A20, A21$ With sample gas monitoring (Viton)AluminumNon-flow-type33					
Image: Non-flow stypeImage: Non-flow stypeImage: Non-flow stypeHose made of FKMAluminumNon-flow-stypeImage: Non-flow stypeAluminumFlow-stypeImage: Non-flow stypeImage: Non-flow stypePipe made of stanumTantalumNon-flow-stypeImage: Non-flow stypePipe made of SSAluminumNon-flow-stypeImage: Non-flow stypePipe made of SSAluminumNon-flow-stypeImage: Non-flow stypePipe made of SSAluminumNon-flow-stypeImage: Non-flow stypeImage: Non-flow				W	
Hose made of FKM (Viton)AluminumNon-flow-type00 \rightarrow A20, A21AluminumFlow-type11Pipe made of titaniumTantalumNon-flow-type4 $4 \rightarrow$ A20, A21, Y02TantalumFlow-type5 $5 \rightarrow$ Y02Pipe made of SS (type No. 1.4571)AluminumNon-flow-type6 $6 \rightarrow$ A20, A21TantalumNon-flow-type6 $6 \rightarrow$ A20, A21With sample gas monitoring Hose made of FKM (Viton)Non-flow-type2 $2 \rightarrow$ A20, A21AluminumFlow-type33	Internal gas paths				Ļ
(Viton)AluminumFlow-type11Pipe made of titaniumTantalumNon-flow-type4 $4 \rightarrow A20, A21, Y02$ Pipe made of SS (type No. 1.4571)Flow-type5 $5 \rightarrow Y02$ TantalumNon-flow-type6 $6 \rightarrow A20, A21$ Mith sample gas monitoringNon-flow-type8 $8 \rightarrow A20, A21$ Hose made of FKM (Viton)AluminumNon-flow-type22AluminumFlow-type33	Hose made of FKM		· · · · ·	0	0 0> A20. A21
Pipe made of titanium Tantalum TantalumNon-flow-type4 $4 \rightarrow A20, A21, Y02$ Pipe made of SS (type No. 1.4571)Flow-type6 $5 \rightarrow Y02$ Tantalum (type No. 1.4571)Non-flow-type6 $6 \rightarrow A20, A21$ Tantalum With sample gas monitoring Hose made of FKM (Viton)Non-flow-type8 $8 \rightarrow A20, A21$ Hose made of FKM (Viton)Aluminum Flow-typeNon-flow-type222AluminumFlow-type33					
TantalumFlow-type5 $5 \rightarrow Y02$ Pipe made of SS (type No. 1.4571)AluminumNon-flow-type6 $6 \rightarrow A20, A21$ TantalumNon-flow-type8 $8 \rightarrow A20, A21$ With sample gas monitoring Hose made of FKMNon-flow-type222AluminumNon-flow-type33			21	1	1
Pipe made of SS (type No. 1.4571)AluminumNon-flow-type66	Pipe made of titanium				
TantalumNon-flow-type88 — A20, A21With sample gas monitoringHose made of FKMAluminumNon-flow-type222- A20, A21Hose made of FKMAluminumNon-flow-type333					
TantalumNon-flow-type88> A20, A21With sample gas monitoringHose made of FKMAluminumNon-flow-type222-> A20, A21Hose made of FKMAluminumNon-flow-type2333		Aluminum	Non-flow-type	6	6 — A20, A21
Hose made of FKM Aluminum Non-flow-type 2 2 2 A20, A21 (Viton) Aluminum Flow-type 3 3	(.)	Tantalum	Non-flow-type	8	8 — A20, A21
(Viton) Aluminum Flow-type 3 3	1 0	0			
Aluminum Flow-type 3 3		Aluminum	Non-flow-type	2	2 2 — A20, A21
	(vitori)	Aluminum	Flow-type	3	3
	1) Only for sample cell				

1) Only for sample cell length 20 mm ... 180 mm

Selection and Ordering Data	Order No.	
ULTRAMAT 6 gas analyzer Single-channel 19" unit for installation in cabinets	7MB2121-	cannot be combined
Additional electronics Without Autocal board • With 8 additional binary inputs/outputs • With serial interface for the automotive industry (AK) • With 8 binary inputs/outputs and PROFIBUS PA interface • With 8 binary inputs/outputs and PROFIBUS DP interface	0 1 3 6 7	3 — E 20
Power supply 100 120 V AC, 48 63 Hz 200 240 V AC, 48 63 Hz	0	
<u>Operating software and documentation</u> German English French Spanish Italian	0 1 2 3 4	

Further versions	Order code	cannot be combined		
Please add "-Z" to Order No. and specify Order code.				
Interface converter from RS 485 to RS 232	A11	> E20		
Flow-type reference compartment with reduced flow, 6 mm	A20			
Flow-type reference compartment with reduced flow, 1/4"	A21			
Slide rails (2 rails)	A31			
Set of Torx tools, socket spanner	A32			
TAG labels (customer-defined inscriptions)	B03			
Kalrez gaskets in sample gas path	B04			
Certificate CSA – Class I Div 2	E20			
Clean for O ₂ -Service (specially cleaned gas path)	Y02			
Measuring range in plain text, if different from standard setting	Y11			
Special setting (only in conjunction with an application No., e.g. extended measuring range)	Y12			
Extended special setting (only in conjunction with an application No., e.g. determination of cross-interferences)	Y13			
TÜV version according to 17. BlmSch	Y17			
Retrofitting sets	Order No.			
RS 485/Ethernet converter	C79451-A3364	-D61		
RS 485/RS 232 converter	-U1			
Autocal function with serial interface for the automotive industry (AK)	C79451-A3480-D12			
Autocal function with 8 binary inputs/outputs	C79451-A3480-D511			
Autocal function with 8 binary inputs/outputs and PROFIBUS PA	A5E00057307			
Autocal function with 8 binary inputs/outputs and PROFIBUS DP	butputs and PROFIBUS DP A5E00057312			

19" unit

2

Selection and Orde	ring Data		Order No.	
ULTRAMAT 6 gas ana Dual-channel 19" unit f to measure 2 IR-compo	or installation in cabir	nets	7 M B 2 1 2 3	cannot be combined
Gas connections for sa	mple gas and refere	nce gas		
Piping with outer diame			0	0 — A21, A41
Piping with outer diame	eter ¼"		1	1 — A20, A40
Measured component		possible with		
		range codes		
CO		11 30	A	
CO (highly selective (w		12 30	В	
CO (TÜV; see Table TÜ	IV, 2 components)	10 00	x	
CO ₂ CH ₄		10 30 13 30	C	
C_{14} $C_{2}H_{2}$		15 30	E	
C_2H_2 C_2H_4		15 30	F	
C_2H_6		14 30	G	
C_3H_6		14 30	H	
C ₃ H ₈		13 30	J	
C_4H_6		15 30	к	
C ₄ H ₁₀		14 30	L	
C ₆ H ₁₄	"N/ O	14 30	M	
SO ₂ (TÜV; see Table TU		13 30	N	
NO (TÜV; see Table TÜ	v, 2 components)	14 20, 22	PQ	0
NH ₃ (dry) H ₂ O		14 30 17 20, 22	R	Q R
N ₂ O		13 30	S	n
Smallest meas. range	Lorgost moos rang	e Meas. range code		
		10		
0 5 vpm 0 10 vpm	0 100 vpm 0 200 vpm	11	AB	
0 20 vpm	0 400 vpm	12	c	
0 50 vpm	0 1000 vpm	13	D	
0 100 vpm	0 1000 vpm	14	Е	
0 300 vpm	0 3000 vpm	15	F	
0 500 vpm	0 5000 vpm	16	G	
0 1000 vpm	0 10000 vpm	17	н	
0 3000 vpm	0 10000 vpm	19	J	
0 3000 vpm 0 5000 vpm	0 30000 vpm 0 15000 vpm	19 20	K	
0 5000 vpm	0 50000 vpm	20	M	
0 1%	0 3%	22	N	
01%	0 10%	23	P	
0 3%	0 10%	24	Q	
03%	0 30%	25	R	
0 5%	0 15%	26	S	
0 5%	0 50%	27	т	
0 10%	0 30%	28	U	
0 10% 0 30%	0100%	29	V	
	0 100%	30 Defense cell	W	
Internal gas paths	<u>Sample cell</u> 1) <u>(lining)</u>	<u>Reference cell</u> (flow-type)		+
Hose made of FKM	Aluminum	Non-flow-type	0	0 0 — A20, A21, A40, A41
(Viton)		21		
	Aluminum	Flow-type	1	1
Pipe made of titanium	Tantalum	Non-flow-type	4	4 — A20, A21, A40, A41, Y02
Pipe made of SS	Tantalum Aluminum	Flow-type	5	5
(type No. 1.4571)	Tantalum	Non-flow-type		6
With sample gas monit		Non-flow-type	8	8 — A20, A21, A40, A41
Hose made of FKM (Viton)	Aluminum	Non-flow-type	2	2 2 — A20, A21, A40, A41
()	Aluminum	Flow-type	3	3

1) Only for sample cell length 20 mm ... 180 mm

	dering Data		Order No.	
ULTRAMAT 6 gas a	nalyzer		7 M B 2 1 2 3 -	cannot be combined
Dual-channel 19" un	it for installation in cabi	inets		
to measure 2 IR-com	iponents			
Additional electronic	·9			
	<u>o</u>		0	
Without			U	
Autocal board				
	inary inputs/outputs for		1	
 With 8 additional b 	inary inputs/outputs for	r channel 2	2	
 With 8 additional b 	inary inputs/outputs for	channel 1 and channel 2	3	
	e for the automotive inc		5	5> E20
		, , ,	6	5
and PROFIBUS PA		channel 1 and channel 2	0	
			-	
		channel 1 and channel 2	7	
and PROFIBUS DF	Interface			
Power supply				
100 120 V AC, 48	63 Hz		0	
200 240 V AC, 48			1	
	00 112		_	
<u>Channel 2</u>		possible with		
Measured compone	<u>nt</u>	range codes		
СО		11 30	A	
CO (highly selective	(with optical filter)	12 30	в	
	TÜV, 2 components)		x	
(,	101, 2 00mponento)	10 30	ĉ	
CH ₄		13 30	D	
C ₂ H ₂		15 30	E	
C ₂ H ₄		15 30	F	
C_2H_6		14 30	G	
C ₃ H ₆		14 30	н	
		13 30		
C ₃ H ₈			J	
C ₄ H ₆		15 30	К	
C ₄ H ₁₀		14 30	L	
C ₆ H ₁₄		14 30	M	
SO ₂ (TÜV: see Table	TÜV, 2 components)	13 30	N	
	TÜV, 2 components)	14 20, 22	Р	
	101, 2 00110010110)	,		
NH ₃ (dry)		14 30	Q	Q
H ₂ O		17 20, 22	R	R
N ₂ O		13 30	S	
Smallest meas. rang	e Largest meas. rand	ge Meas. range code		
- 0 5 vpm	0 100 vpm	10	A	
			A	
0 10 vpm	0 200 vpm	11	В	
0 20 vpm	0 400 vpm	12		
			C	
0 50 vpm	0 1000 vpm	13	B C D	
	0 1000 vpm 0 1000 vpm		D	
0 100 vpm		13	C D E F	
0 100 vpm 0 300 vpm	0 1000 vpm 0 3000 vpm	13 14 15	E	
0 100 vpm 0 300 vpm 0 500 vpm	0 1000 vpm 0 3000 vpm 0 5000 vpm	13 14 15 16	E F G	
0 100 vpm 0 300 vpm 0 500 vpm 0 1000 vpm	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm	13 14 15 16 17	E F G H	
0 100 vpm 0 300 vpm 0 500 vpm 0 1000 vpm 0 3000 vpm	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm	13 14 15 16 17 19	E F G H J	
0 100 ypm 0 300 ypm 0 500 ypm 0 1000 ypm 0 3000 ypm 0 3000 ypm	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm	13 14 15 16 17	E F G H J K	
0 100 vpm 0 300 vpm 0 500 vpm 0 1000 vpm 0 3000 vpm 0 3000 vpm	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm	13 14 15 16 17 19	E F G H J	
0 100 vpm 0 300 vpm 0 500 vpm 0 1000 vpm 0 3000 vpm 0 3000 vpm 0 5000 vpm	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 15000 vpm	13 14 15 16 17 19 19 20	E F G H J K L	
0 100 vpm 0 300 vpm 0 500 vpm 0 1000 vpm 0 3000 vpm 0 3000 vpm 0 5000 vpm 0 5000 vpm	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 15000 vpm 0 50000 vpm	13 14 15 16 17 19 19 20 21	E F G H J K L M	
0 100 vpm 0 300 vpm 0 500 vpm 0 1000 vpm 0 3000 vpm 0 3000 vpm 0 5000 vpm 0 5000 vpm 0 5000 vpm	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 50000 vpm 0 3%	13 14 15 16 17 19 19 20 21 22	E F G H J K L N N	
0 100 ypm 0 300 ypm 0 500 ypm 0 1000 ypm 0 3000 ypm 0 3000 ypm 0 5000 ypm 0 5000 ypm 0 1% 0 1%	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 50000 vpm 0 3% 0 10%	13 14 15 16 17 19 19 20 21 22 23	E F G H J K L M N P	
0 100 ypm 0 300 ypm 0 500 ypm 0 1000 ypm 0 3000 ypm 0 3000 ypm 0 5000 ypm 0 5000 ypm 0 1% 0 1%	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 50000 vpm 0 3%	13 14 15 16 17 19 19 20 21 22	E F G H J K L M N P	
0 100 ypm 0 300 ypm 0 500 ypm 0 1000 ypm 0 3000 ypm 0 3000 ypm 0 5000 ypm 0 5000 ypm 0 1% 0 1% 0 1%	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 50000 vpm 0 3% 0 10%	13 14 15 16 17 19 19 20 21 22 23	E F G H J K L M N P	
0 100 ypm 0 300 ypm 0 500 ypm 0 1000 ypm 0 3000 ypm 0 3000 ypm 0 5000 ypm 0 5000 ypm 0 1% 0 1% 0 1% 0 3%	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 50000 vpm 0 3% 0 10% 0 10% 0 30%	13 14 15 16 17 19 19 20 21 22 23 24 25	E F G H J K L M N P	
0 100 vpm 0 300 vpm 0 500 vpm 0 1000 vpm 0 3000 vpm 0 3000 vpm 0 5000 vpm 0 5000 vpm 0 1% 0 1% 0 1% 0 3% 0 3%	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 50000 vpm 0 3% 0 10% 0 10% 0 30% 0 15%	13 14 15 16 17 19 19 20 21 22 23 24 25 26	E F G H J K L M N P	
0 100 vpm 0 300 vpm 0 500 vpm 0 1000 vpm 0 3000 vpm 0 3000 vpm 0 5000 vpm 0 5000 vpm 0 1% 0 1% 0 3% 0 3% 0 5%	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 50000 vpm 0 3% 0 10% 0 10% 0 30% 0 15% 0 50%	13 14 15 16 17 19 19 20 21 22 23 24 25 26 27	E F G H J K L M N P Q R S T	
0 100 vpm 0 300 vpm 0 500 vpm 0 1000 vpm 0 3000 vpm 0 3000 vpm 0 5000 vpm 0 5000 vpm 0 1% 0 1% 0 3% 0 3% 0 5% 0 5% 0 10%	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 50000 vpm 0 3% 0 10% 0 10% 0 30% 0 15% 0 50% 0 30%	13 14 15 16 17 19 20 21 22 23 24 25 26 27 28	E F G H J K L M N P Q R S T U	
0 100 ypm 0 300 ypm 0 500 ypm 0 1000 ypm 0 3000 ypm 0 3000 ypm 0 5000 ypm 0 5000 ypm 0 1% 0 1% 0 3% 0 3% 0 5% 0 5% 0 10% 0 10%	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 15000 vpm 0 50000 vpm 0 3% 0 10% 0 10% 0 15% 0 50% 0 30% 0 30% 0 100%	13 14 15 16 17 19 20 21 22 23 24 25 26 27 28 29	E F G H J K L M N P Q R S T U V V	
0 100 ypm 0 300 ypm 0 500 ypm 0 1000 ypm 0 3000 ypm 0 3000 ypm 0 5000 ypm 0 5000 ypm 0 1% 0 1% 0 3% 0 3% 0 5% 0 5% 0 10% 0 10%	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 50000 vpm 0 3% 0 10% 0 10% 0 30% 0 15% 0 50% 0 30%	13 14 15 16 17 19 20 21 22 23 24 25 26 27 28	E F G H J K L M N P Q R S T U	
0 100 vpm 0 300 vpm 0 500 vpm 0 1000 vpm 0 3000 vpm 0 3000 vpm 0 5000 vpm 0 5000 vpm 0 1% 0 1% 0 3% 0 5% 0 5% 0 5% 0 10% 0 10% 0 30%	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 30000 vpm 0 3% 0 10% 0 10% 0 30% 0 15% 0 50% 0 30% 0 30% 0 100%	13 14 15 16 17 19 20 21 22 23 24 25 26 27 28 29	E F G H J K L M N P Q R S T U V V	
0 100 vpm 0 300 vpm 0 500 vpm 0 3000 vpm 0 3000 vpm 0 3000 vpm 0 5000 vpm 0 5000 vpm 0 1% 0 1% 0 3% 0 5% 0 5% 0 5% 0 10% 0 10% 0 30%	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 30000 vpm 0 3% 0 10% 0 10% 0 30% 0 15% 0 50% 0 30% 0 30% 0 100%	13 14 15 16 17 19 20 21 22 23 24 25 26 27 28 29	E F G H J K L M N P Q R S T U V V W	
0 100 vpm 0 300 vpm 0 500 vpm 0 3000 vpm 0 3000 vpm 0 3000 vpm 0 5000 vpm 0 5000 vpm 0 1% 0 1% 0 3% 0 3% 0 5% 0 5% 0 5% 0 10% 0 10% 0 30% Operating software a German	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 30000 vpm 0 3% 0 10% 0 10% 0 30% 0 15% 0 50% 0 30% 0 30% 0 100%	13 14 15 16 17 19 20 21 22 23 24 25 26 27 28 29	E F G H J K L M N P Q R S S T U U V V W	
0 100 vpm 0 300 vpm 0 500 vpm 0 1000 vpm 0 3000 vpm 0 3000 vpm 0 5000 vpm 0 5000 vpm 0 1% 0 1% 0 3% 0 5% 0 5% 0 5% 0 5% 0 5% 0 10% 0 10% 0 30% Operating software a German English	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 30000 vpm 0 3% 0 10% 0 10% 0 30% 0 15% 0 50% 0 30% 0 30% 0 100%	13 14 15 16 17 19 20 21 22 23 24 25 26 27 28 29	E F G H J K L M N P Q R S T U U V W U 0 1	
0 100 vpm 0 300 vpm 0 500 vpm 0 3000 vpm 0 3000 vpm 0 3000 vpm 0 5000 vpm 0 5000 vpm 0 5000 vpm 0 1% 0 1% 0 3% 0 5% 0 5% 0 5% 0 5% 0 5% 0 5% 0 5% 0 5% 0 5% 0 10% 0 30% Operating software a German English French	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 30000 vpm 0 3% 0 10% 0 10% 0 30% 0 15% 0 50% 0 30% 0 30% 0 100%	13 14 15 16 17 19 20 21 22 23 24 25 26 27 28 29	E F G H J K L M N P Q Q R S S T U U V W W	
0 50 vpm 0 100 vpm 0 300 vpm 0 500 vpm 0 3000 vpm 0 3000 vpm 0 3000 vpm 0 5000 vpm 0 5000 vpm 0 5000 vpm 0 1% 0 1% 0 3% 0 3% 0 5% 0 10% 0 10% 0 10% 0 10% 0 10% 0 10% 0 30% Operating software a German English French Spanish Italian	0 1000 vpm 0 3000 vpm 0 5000 vpm 0 10000 vpm 0 10000 vpm 0 30000 vpm 0 30000 vpm 0 3% 0 10% 0 10% 0 30% 0 15% 0 50% 0 30% 0 30% 0 100%	13 14 15 16 17 19 20 21 22 23 24 25 26 27 28 29	E F G H J K L M N P Q R S T U U V W U 0 1	

Selection and Ordering Data		
Further versions	Order code	cannot be combined
Please add "-Z" to Order No. and specify Order code.		
Interface converter from RS 485 to RS 232	A11	→ E20
Flow-type reference compartment with reduced flow, 6 mm (channel 1)	A20	
Flow-type reference compartment with reduced flow, 1/4" (channel 1)	A21	
Flow-type reference compartment with reduced flow, 6 mm (channel 2)	A40	
Flow-type reference compartment with reduced flow, 1/4" (channel 2)	A41	
Connection pipes (can only be combined with the according gas connection diameter and materials of the internal gas path)		
- Connection pipe made of titanium 6 mm, complete with screwed gland, for sample gas compartment	A22	
 Connection pipe made of titanium 6 mm, complete with screwed gland, for reference gas compartment 	A23	
- Connection pipe made of titanium $1\!\!4$ ", complete with screwed gland, for sample gas compartment	A24	
- Connection pipe made of titanium 1/4", complete with screwed gland, for reference gas compartment	A25	
- Connection pipe made of SS (type no. 1.4571) 6 mm, compl. with screwed gland for sample gas compartment	A27	
- Connection pipe made of SS (type no. 1.4571) 1/4", complete with screwed gland, for sample gas compartment	A29	
Slide rails (2 rails)	A31	
Set of Torx tools, socket spanner	A32	
TAG labels (customer-defined inscriptions)	B03	
Kalrez gaskets in sample gas path (channel 1)	B04	
Kalrez gaskets in sample gas path (channel 2)	B05	
Certificate CSA – Class I Div 2	E20	
Clean for O ₂ -Service (specially cleaned gas path) (channel 1 + 2)	Y02	A22 - A25
Measuring range in plain text, if different from standard setting	Y11	
Special setting (only in conjunction with an application No., e.g. extended measuring range)	Y12	
Extended special setting (only in conjunction with an application No., e.g. determination of cross-interferences)	Y13	
TÜV version according to 17. BlmSch	Y17	
TÜV version according to 17. BlmSch (channel 2)	Y18	
Retrofitting sets	Order No.	
RS 485/Ethernet converter	C79451-A3364	-D61
RS 485/RS 232 converter	C79451-Z1589-	·U1
Autocal function with serial interface for the automotive industry (AK)	C79451-A3480	-D12
Autocal function with 8 binary inputs/outputs for channel 1 or channel 2	C79451-A3480	-D511
Autocal function with 8 binary inputs/outputs and PROFIBUS PA for channel 1 or channel 2	A5E00057307	
Autocal function with 8 binary inputs/outputs and PROFIBUS DP for channel 1 or channel 2	A5E00057312	

Selection and Orde	ering Data		Order No.	
ULTRAMAT 6 gas ana	alyzer		7MB2124 -	cannot be combined
Single or dual-channe to measure 2-3 IR-con	l 19" unit for installat nponents			
Gas connections for s		ence gas		
Piping with outer diam	Piping with outer diameter 6 mm Piping with outer diameter 14"		0	0 A21, A41 1 A20, A40
Meas: component		nge Largest meas. range		
CO NO	0 100 vpm 0 100 vpm	0 1000 vpm 0 1000 vpm	AA	
CO NO	0 300 vpm 0 300 vpm	0 3000 vpm 0 3000 vpm	AB	
CO NO	0 1000 vpm 0 1000 vpm	0 10000 vpm 0 10000 vpm	AC	
for CO/NO (TÜV; see 1	Table TÜV, 2 compor	nents)		
CO ₂ CO	0 100 vpm 0 100 vpm	0 1000 vpm 0 1000 vpm	BA	
CO ₂ CO	0 300 vpm 0 300 vpm	0 3000 vpm 0 3000 vpm	ВВ	
CO ₂ CO	0 1000 vpm 0 1000 vpm	0 10000 vpm 0 10000 vpm	BC	
CO ₂ CO	0 3000 vpm 0 3000 vpm	0 30000 vpm 0 30000 vpm	ВD	
CO ₂ CO	0 1% 0 1%	0 10% 0 10%	BE	
CO ₂ CO	0 3% 0 3%	0 30% 0 30%	BF	
CO ₂ CO	0 10% 0 10%	0 100% 0 100%	BG	
CO ₂	0 10%	0 100%	CG	
CH ₄	0 10%	0 100%		
CO ₂ NO	0 100 vpm 0 100 vpm	0 1000 vpm 0 1000 vpm	D A	
CO ₂	0 300 vpm	0 3000 vpm	DB	
NO	0 300 vpm	0 3000 vpm		
Internal gas paths	<u>Sample cell</u> 1) (lining)	<u>Reference cell</u> (flow-type)		
Hose made of FKM (Viton)	Aluminum	Non-flow-type	0	0 0 — A20, A21, A40, A41
	Aluminum	Flow-type	1	1
Pipe made of titanium	Tantalum Tantalum	Non-flow-type	4	4 → A20, A21, A40, A41, Y02 5 → Y02
Pipe made of SS	Aluminum	Flow-type Non-flow-type	6	6
(type No. 1.4571)	Tantalum	Non-flow-type	8	8 — A20, A21, A40, A41
With sample gas moni	itorin <u>a</u>	21		
Hose made of FKM (Viton)	Aluminum	Non-flow-type	2 3	2 2 — A20, A21, A40, A41
Additional algotraniag	Aluminum	Flow-type		3
Additional electronics Without			0	
Autocal board				
• With 8 additional bin			1	
		or channel 1 and channel 2 dustry (AK), channel 1	2 3	2 3 — E20
 With serial interface for the automotive industry (AK), channel 1 With serial interface for the automotive industry (AK), channel 1 and channel 2 		4	4 E20	
With 8 additional bin and PROFIBUS PA ir	ary inputs/outputs fonterface		5	
and PROFIBUS PA ir	nterface	r channel 1 and channel 2	6	6
 With 8 additional bin and PROFIBUS DP in With 8 additional bin 	nterface	or channel 1 or channel 1 and channel 2	7	8
and PROFIBUS DP in	nterface		Ů	

1) Only for sample cell length 20 mm ... 180 mm

Siemens PA 01 · 2006

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19" unit

				io ant	
Selection and Ordering Data			Order No.		
ULTRAMAT 6 gas and Single or dual-channe to measure 2-3 IR-con	alyzer I 19" unit for installatio	n in cabinets	7 M B 2 1 2 4 -	cannot be combined	
Power supply 100 120 V AC, 48 200 240 V AC, 48			0		
Channel 2		possible with			
Measured component		range codes		↓	
Without channel 2		U U	w	Ŵ	
CO		11 30	А		
CO (highly selective (with optical filter)	12 30	В		
CO (TÜV; see Table T			х		
CO ₂	- , ,	10 30	С		
CH4		13 30	D		
C_2H_2		15 30	Е		
C_2H_4		15 30	F		
C_2H_6		14 30	G		
C ₃ H ₆		14 30	н		
C ₃ H ₈		13 30	J		
C_4H_6		15 30	ĸ		
C_4H_{10}		14 30	ï		
C ₆ H ₁₄		14 30	M		
SO ₂ (TÜV; see Table T	TIV 2 components)	13 30	N		
NO (TÜV; see Table T		14 20, 22	Р	Ļ	
NH_3 (dry)	J v Z componenta)	14 30	Q	Q	
H ₂ O		17 20, 22	R	B	
N ₂ O		13 30	S		
Smallest meas. range	Largest meas. rang	e Meas. range code		W > 440 444 D05	
Without channel 2			w	W — A40, A41, B05	
0 5 vpm	0 100 vpm	10	A B C D E F C H J		
0 10 vpm	0 200 vpm	11	В		
0 20 vpm	0 400 vpm	12	C		
0 50 vpm	0 1000 vpm	13	D		
0 100 vpm	0 1000 vpm	14	E		
0 300 vpm	0 3000 vpm	15	F		
0 500 vpm	0 5000 vpm	16	С		
0 1000 vpm	0 10000 vpm	17	н		
0 3000 vpm	0 10000 vpm	19			
0 3000 vpm	0 30000 vpm	19	к		
0 5000 vpm	0 15000 vpm	20	L		
0 5000 vpm	0 50000 vpm	21	М		
01%	0 3%	22	N		
0 1%	0 10%	23	P		
0 3%	0 10%	24	Q		
0 3%	0 30%	25	Q R S T U V		
0 5%	0 15%	26	S		
0 5%	0 50%	27	Т		
0 10%	0 30%	28	U		
0 10%	0 100%	29			
0 30%	0 100%	30	w		
Operating software an	d documentation				
German			0		
English			1		
French			2		
Spanish			3		
Italian			4		

2

Selection and Ordering Data

Further versions	Order code	cannot be combined
Please add "-Z" to Order No. and specify Order code.		
Interface converter from RS 485 to RS 232	A11	E20
Flow-type reference compartment with reduced flow, 6 mm (channel 1)	A20	\rightarrow
Flow-type reference compartment with reduced flow, 1/4" (channel 1)	A21	
Flow-type reference compartment with reduced flow, 6 mm (channel 2)	A40	
Flow-type reference compartment with reduced flow, 1/4" (channel 2)	A41	
Connection pipes (can only be combined with the according gas connection diameter and materials of the internal gas path)		
- Connection pipe made of titanium 6 mm, complete with screwed gland, for sample gas compartment	A22	
 Connection pipe made of titanium 6 mm, complete with screwed gland, for reference gas compartment 	A23	
- Connection pipe made of titanium 1/4", complete with screwed gland, for sample gas compartment	A24	
- Connection pipe made of titanium 1/4", complete with screwed gland, for reference gas compartment	A25	
- Connection pipe made of SS (type no. 1.4571) 6 mm, compl. with screwed gland for sample gas compartment	A27	
- Connection pipe made of SS (type no. 1.4571) ¼", complete with screwed gland, for sample gas compartment	A29	
Slide rails (2 rails)	A31	
Set of Torx tools, socket spanner	A32	
TAG labels (customer-defined inscriptions)	B03	
Kalrez gaskets in sample gas path (channel 1)	B04	
Kalrez gaskets in sample gas path (channel 2)	B05	
Certificate CSA – Class I Div 2	E20	
Clean for O ₂ -Service (specially cleaned gas path) (channel 1 + 2)	Y02	A22 - A25
Measuring range in plain text, if different from standard setting	Y11	->
Special setting (only in conjunction with an application No., e.g. extended measuring range)	Y12	
Extended special setting (only in conjunction with an application No., e.g. determination of cross-interferences)	Y13	
TÜV version according to 17. BlmSch	Y17	
TÜV version according to 17. BImSch (channel 2)	Y18	
Retrofitting sets	Order No.	

Retrofitting sets	Order No.
RS 485/Ethernet converter	C79451-A3364-D61
RS 485/RS 232 converter	C79451-Z1589-U1
Autocal function with serial interface for the automotive industry (AK)	C79451-A3480-D12
Autocal function with serial interface for the automotive industry (AK) (channel 1 + 2)	C79451-A3480-D33
Autocal function with 8 binary inputs/outputs for channel 1 or channel 2	C79451-A3480-D511
Autocal function with 8 binary inputs/outputs and PROFIBUS PA for channel 1 or channel 2	A5E00057307
Autocal function with 8 binary inputs/outputs and PROFIBUS DP for channel 1 or channel 2	A5E00057312

19" unit

TÜV, single component

Component	CO (TÜV)		SO ₂	(TÜV)	NO (TÜV)	
Measuring range identification	Smallest measuring range from 0 to	Largest measuring range from 0 to	Smallest measuring range from 0 to	Largest measuring range from 0 to	Smallest measuring range from 0 to	Largest measuring range from 0 to
С			75 mg/m ³	1500 mg/m ³		
D	50 mg/m ³	1000 mg/m ³	300 mg/m ³	3000 mg/m ³		
E			500 mg/m ³	5000 mg/m ³	100 mg/m ³	2000 mg/m ³
F	300 mg/m ³	3000 mg/m ³	1000 mg/m ³	10000 mg/m ³	300 mg/m ³	3000 mg/m ³
G	500 mg/m ³	5000 mg/m ³			500 mg/m ³	5000 mg/m ³
Н	1000 mg/m ³	10000 mg/m ³	3000 mg/m ³	30000 mg/m ³	1000 mg/m ³	10000 mg/m ³
К	3000 mg/m ³	30000 mg/m ³	10 g/m ³	100 g/m ³	3000 mg/m ³	30000 mg/m ³
Р	10 g/m ³	100 g/m ³	30 g/m ³	300 g/m ³	10 g/m ³	100 g/m ³
R	30 g/m ³	300 g/m ³	100 g/m ³	1000 g/m ³	30 g/m ³	300 g/m ³
V	100 g/m ³	1160 g/m ³	300 g/m ³	2630 g/m ³	100 g/m ³	1250 g/m ³

Example for ordering

ULTRAMAT 6, TÜV Component CO Measuring range 0 ... 50/1000 mg/m³ with hoses, non-flow-type reference compartment without automatic adjustment (Autocal) 230 V AC; English **7MB2121-0XD00-1AA1-Z +Y17**

TÜV, 2 components in series

Component	CO (TÜV)		NO (TÜV)	
	Smallest measuring range from 0 to			Largest measuring range from 0 to
AA	75 mg/m ³	1000 mg/m ³	200 mg/m ³	2000 mg/m ³
AB	300 mg/m ³	3000 mg/m ³	300 mg/m ³	3000 mg/m ³
AC	1000 mg/m ³	10000 mg/m ³	1000 mg/m ³	10000 mg/m ³

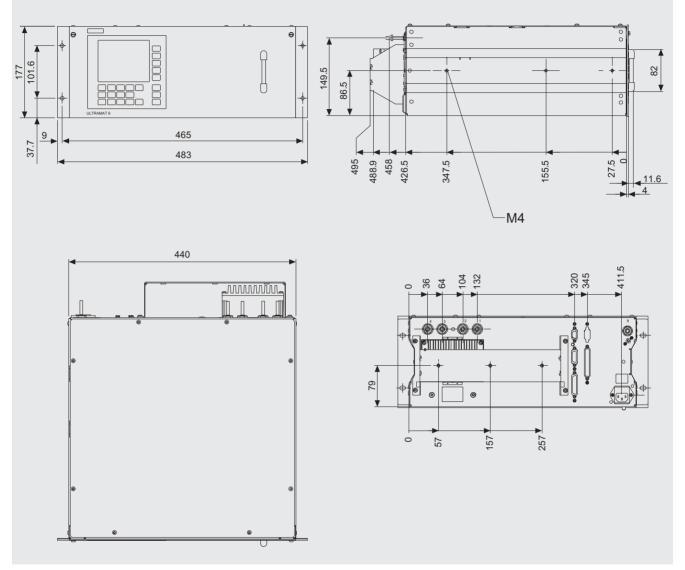
Example for ordering

ULTRAMAT 6, 2-channel, TÜV Component Measuring range with hoses, non-flow-type reference compartment without automatic adjustment (Autocal) 230 V AC; English **7MB2124-0AA00-1NC1-Z +Y17+Y18**

Note: for 3 components take both tables into consideration.

19" unit

Dimensional drawings

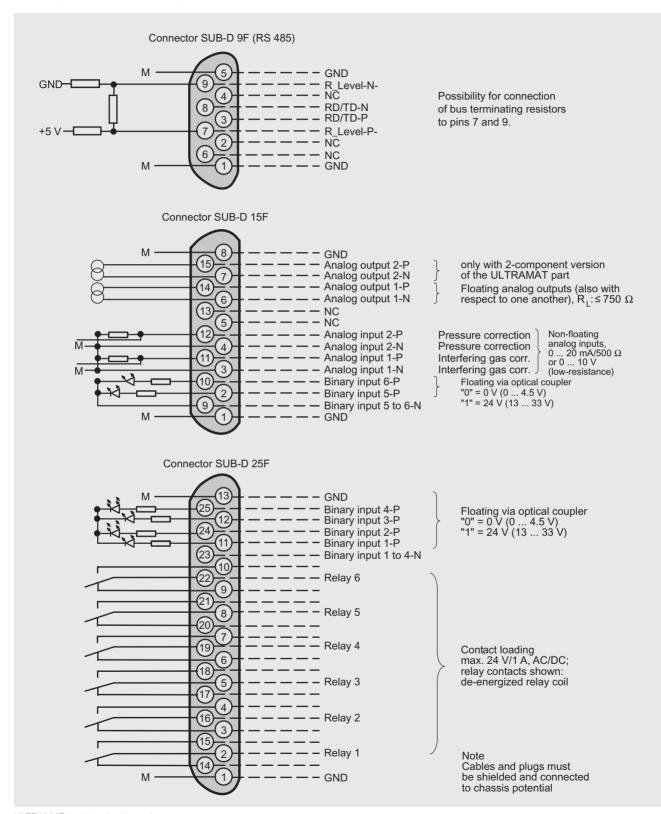


ULTRAMAT 6, 19" unit, dimensions in mm

19" unit

Schematics

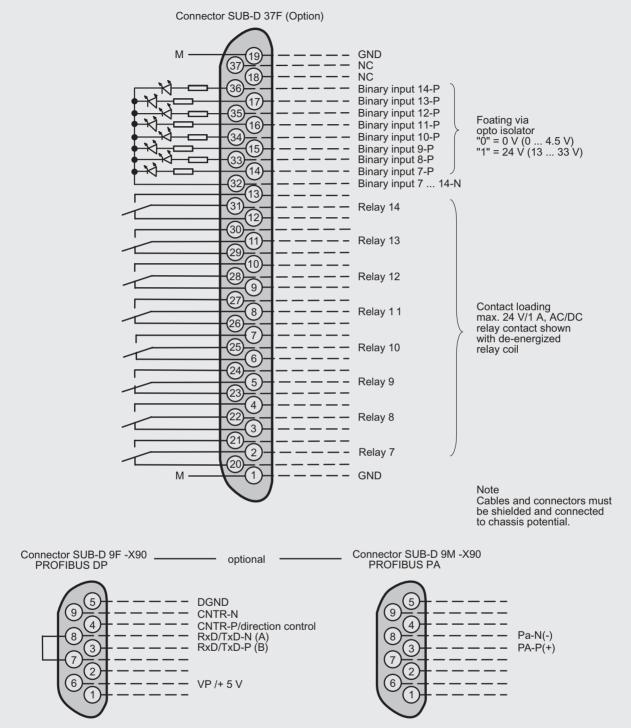
Pin assignment (electrical and gas connections)



ULTRAMAT 6, 19" unit, pin assignment

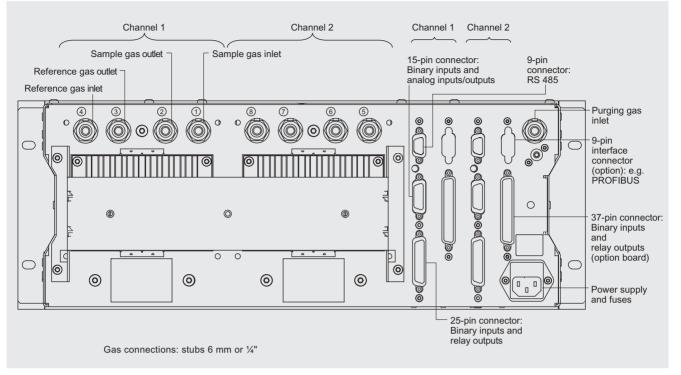
2

2





19" unit



ULTRAMAT 6, 19" unit, gas and electrical connections (example: 2-channel version)

Field unit

•		
General Measuring ranges	4, switchable internally and exter-	Damping (elec
Smallest possible measuring range	nally; autoranging is also possible Depending on application, e.g.	Dead time (pur in analyzer at 1
	CO: 0 10 vpm, CO ₂ : 0 5 vpm	Time for interna
Largest possible measuring range	Depending on application	Pressure corr
Measuring range with suppressed	Any zero point within 0 100 %	Pressure sense
zero	can be achieved; smallest possible span 20 %	internalexternal
Heated version	max. 65 °C	Measuring res
Characteristic	Linearized	Output signal f
Position of use	Front panel vertical	
Conformity	CE identification EN 50081-1, EN 50082-2	
Design, enclosure		7 1.10
Weight	Approx. 32 kg	Zero drift
Degree of protection	IP65 according to EN 60529, restricted breathing to EN 50021	Measured-valu Repeatability
Electrical characteristics		
Power supply	100 120 V AC (rated range 90 132 V), 48 63 Hz or 200 240 V AC (rated range 180 264 V), 48 63 Hz	Minimum detec Linearity error Influencing va
Power consumption	Approx. 35 VA; approx. 330 VA with heated version	pressure, 0.5 l/ Ambient tempe
EEMC interference immunity (ElectroMagnetic Compatibility)	According to standard require- ments of NAMUR NE21 (08/98)	
Electrical safety	According to EN 61010-1	Sample gas pr
 heated units 	overvoltage category II	
 unheated units 	overvoltage category III	Sample gas flo
Fuse links (unit without heater)		Power supply
• 100 120 V	F3: 1T/250; F4: 1T/250	Ambient condi
• 200 240 V	F3: 0.63T/250; F4: 0.63T/250	
Fuse links (unit with heater)		
• 100 120 V	F1: 1T/250; F2: 4T/250 F3: 4T/250; F4: 4T/250	Electric inputs
• 200 240 V	F1: 0.63T/250; F2: 2.5T/250 F3: 2.5T/250; F4: 2.5T/250	Analog output
Gas inlet conditions		Relay outputs
Perm. sample gas pressure		
 for analyzers with hoses (without pressure switch) 	600 1500 hPa (absolute)	
 for analyzers with pipes (without pressure switch) 	600 1500 hPa (absolute)	Analog inputs
- Ex (leakage compensation)	600 1160 hPa (absolute)	
- Ex (continuous purging)	600 1500 hPa (absolute)	Binary inputs
Purging gas pressure		
Permanent	< 165 hPa above ambient	Serial interface
For short periods	250 hPa above ambient	Options
Sample gas flow	18 90 l/h (0.3 1.5 l/min)	
Sample gas temperature	0 50 °C; with heated version: 0 80 °C	Ambient cond
Sample gas humidity	< 90% RH (relative humidity) or depending on application	Permissible arr
Time response		

With amb. temperature < 30 min

(maximum accuracy achieved after 2 hours); heated version: approx. 90 min

Warm-up	period

Response time (T ₉₀ time)	Dependent on length of analyzer cell, sample gas line and damping
Damping (electric time constant)	0 100 s, programmable
Dead time (purging time of gas path in analyzer at 1 l/min)	Approx. 0.5 5 s, depending on version
Time for internal signal processing	< 1 s
Pressure correction range	
Pressure sensor	
• internal	600 1200 hPa absolute
• external	600 1500 hPa absolute
Measuring response (maximum acc	curacy achieved after 2 hours)
Output signal fluctuation	\pm 0.1% \pm 1% of smallest possible measuring range specified on rating plate, depending on application with the unit specific electronic time constant (corresponds to \pm 0.33% at 2 σ)
Zero drift	< 1% of measuring range/week
Measured-value drift	< 1% of measuring range/week
Repeatability	Between 0.1% and 1% of respec- tive measuring range
Minimum detection limit	1% of smallest measuring range
Linearity error	< 0.5% of full-scale value
Influencing variables (referred to 10 pressure, 0.5 I/min sample gas flow a	
Ambient temperature	< 1% of measuring range/10 K (for a constant temperature of the reception cell)
Sample gas pressure	With pressure compensation: < 0.15% of setpoint/1% change in atmospheric pressure
Sample gas flow	Negligible
Power supply	< 0.1% of output signal span at rated voltage \pm 10%
Ambient conditions	Application-dependent influenc- ing of measurement if ambient air contains measured component or cross-sensitive gases
Electric inputs and outputs	
Analog output	0/2/4 20 mA. floating; max. load 750 Ω
Relay outputs	6, with changeover contacts, freely selectable, e.g. for range identification; loading capacity: 24 V AC/DC / 1 A floating, non sparking
Analog inputs	2, designed for 0/2/4 20 mA, for ext. pressure sensor and correc- tion of influence of residual gas (correction of cross-interference)
Binary inputs	6, designed for 24 V, floating, freely selectable, e.g. for range switching
Serial interface	RS 485
Options	Autocal function with 8 additional binary inputs and 8 relay outputs, also with PROFIBUS PA and PROFIBUS DP
Ambient conditions	
Permissible ambient temperature	-30 +70 °C during storage and transport, +5 +45 °C during operation
Permissible humidity	< 90 % RH (relative humidity) as annual average, during storage and transport)dew point must not

Field unit

Selection and Ordering Data			Order No.		
ULTRAMAT 6 gas analyzer for field mounting, single-channel, 1 component			7MB2111-	cannot be combined	
Gas connections			_		
Ferrule screw connecti Ferrule screw connecti			0 1	0	
Measured component		possible with range codes			
СО		11 30	А		
CO (highly selective (w CO (TÜV; see Table TÜ		12 30	B X		
CO ₂		10 30	С		
CH ₄		13 30 15 30	DE		
C_2H_2 C_2H_4		15 30	F		
C_2H_6		14 30	Ġ		
C ₃ H ₆		14 30	Ĥ		
C ₃ H ₈		13 30	J		
C ₄ H ₆		15 30	К		
C ₄ H ₁₀		14 30	L		
C ₆ H ₁₄ SO (TIÏIV: soo Tabla TI	C ₆ H ₁₄ 14 30 SO ₂ (TÜV; see Table TÜV, single component) 13 30		M		
NO (TÜV; see Table TÜ		14 20, 22	P		
NH_3 (dry)	v, ungle compenenty	14 30	Q	Q	
H ₂ O 17 20; 22		17 20; 22	R	R	
		(17 24, 26; heated)			
N ₂ O		13 30	S		
Smallest meas. range	Largest meas, range	U			
0 5 vpm	0 100 vpm	10	A		
0 10 vpm 0 20 vpm	0 200 vpm 0 400 vpm	11 12	B		
0 50 vpm	0 1000 vpm	13	B C D E F G H		
0 100 vpm	0 1000 vpm	14	Ē		
0 300 vpm	0 3000 vpm	15	F		
0 500 vpm	0 5000 vpm	16	G		
0 1000 vpm	0 10000 vpm	17	J		
0 3000 vpm 0 3000 vpm	0 10000 vpm 0 30000 vpm	19 19	J K		
0 5000 vpm	0 15000 vpm	20	Ê		
0 5000 vpm	0 50000 vpm	21	м		
0 1%	03%	22	N		
0 1%	0 10%	23	Р		
0 3%	0 10%	24	Q		
03%	030%	25	Q R S T		
0 5% 0 5%	0 15% 0 50%	26 27	5		
0	030%	28	Ů		
0 10%	0 100%	29	v		
0 30%	0 100%	30	W		

Field unit

Selection and Orde	ering Data		Order No.	
ULTRAMAT 6 gas analyzer for field mounting, single-channel, 1 component Internal gas paths Sample cell ¹) Reference cell			7 M B 2 1 1 1 - A A	cannot be combined
Hose made of FKM (Viton)	<u>(lining)</u> Aluminum	(flow-type) Non-flow-type	0	↓ 0 0 0 → A28, A29
Pipe made of titanium	Aluminum Tantalum Tantalum	Flow-type Non-flow-type Flow-type	1 2 2	1 1
Pipe made of SS (type No. 1.4571)	Aluminum	Non-flow-type Non-flow-type	5 6 8	$\begin{array}{c} 3 \\ 6 \\ \hline \end{array} \\ A28, A29 \\ 8 \\ \hline \end{array} \\ A28, A29 \\ \end{array}$
Additional electronics Without Autocal board • With 8 additional bina • With 8 binary inputs/c • With 8 binary inputs/c	outputs and PROFI outputs and PROFI	BUS DP interface	0 1 6 7 8	6 7 8
Power supply 100 120 V AC, 48 200 240 V AC, 48 (operating mode: leaka 200 240 V AC, 48 (operating mode: leaka 100 120 V AC, 48 (operating mode: conti 200 240 V AC, 48 (operating mode: conti	63 Hz 63 Hz, acc. to ATE age compensation, 63 Hz, acc. to ATE age compensation, 63 Hz, acc. to ATE nuous purging) 63 Hz, acc. to ATE) EX II 2G ²) EX II 2G ²)	0 1 2 3 6 7	$\begin{vmatrix} \downarrow \\ 0 \\ 1 \\ 2 \\ 2 \\ - \\ - \\ - \\ - \\ - \\ - \\ - \\ -$
<u>Heating of the internal</u> Without With (max. 65 °C)	gas paths and ana	alyzer section	A B	
Operating software and German English French Spanish Italian	d documentation		0 1 2 3 4 4	

Only for sample cell length 20 ... 180 mm.
 Only in relation with an approved purging unit.

Field unit

2

Selection and Ordering Data		
Further versions	Order code	cannot be combined
Please add "-Z" to Order No. and specify Order code.		
Interface converter from RS 485 to RS 232	A11	→ E20
Flow-type reference compartment with reduced flow, 6 mm	A28	
Flow-type reference compartment with reduced flow, 1/4"	A29	
Set of Torx tools, socket spanner	A32	
TAG labels (customer-defined inscriptions)	B03	
Kalrez gaskets in sample gas path	B04	
Ex versions		
Combination possibilities s. Table Ex configurations in "Ex versions"		
ATEX II 3G certificate; restricted breathing, non-flammable gases	E11	
ATEX II 3G certificate; flammable gases ¹)	E12	
CSA certificate – Class I Div. 2	E20	
ATEX II 3D certificate; dust Ex areas and additionnally:		
• in non-hazardous gas zone	E40	
• in Ex zone acc. ATEX II 3G, and non-flammable gases	E41	
• in Ex zone acc. ATEX II 3G, and flammable gases ¹)	E42	
Clean for O ₂ -Service (specially cleaned gas path)	Y02	
Measuring range in plain text, if different from standard setting	Y11	
Special setting (only in conjunction with an application No., e.g. extended measuring range)	Y12	
Extended special setting (only in conjunction with an application No., e.g. determination of cross-interferences)	Y13	
TÜV version according to 17. BlmSch	Y17	
Additional units for explosion-proof versions Category ATEX II 2G (Zone 1)	Order No.	
BARTEC EEx p control unit, 230 V, "leakage compensation"	7MB8000-2BA	
BARTEC EEx p control unit, 115 V, "leakage compensation"	7MB8000-2BB	
BARTEC EEx p control unit, 230 V, "continuous purging"	7MB8000-2CA	
BARTEC EEx p control unit, 115 V, "continuous purging"	7MB8000-2CB	
Explosion-protected isolation amplifier	7MB8000-3AA	
Explosion-protected isolating relay, 230 V	7MB8000-4AA	
Explosion-protected isolating relay, 110 V	7MB8000-4AB	
Differential pressure switch for corrosive gases	7MB8000-5AA	
Differential pressure switch for non-corrosive gases	7MB8000-5AB	
Flame arrester made of stainless steel	7MB8000-6BA	
Flame arrestor made of Hastelloy	7MB8000-6BB	
Category ATEX II 3G (Zone 2)		
BARTEC EEx p control unit (flammable gases)	7MB8000-1BA	
FM/CSA (Class Div. 2)		
Ex purging unit MiniPurge FM	7MB8000-1AA	
Retrofitting sets		
RS 485/Ethernet converter	C79451-A3364-	D61
RS 485/RS 232 converter	C79451-Z1589-	U1
Autocal function with 8 binary inputs/outputs	A5E00064223	
Autocal function with 8 binary inputs/outputs and PROFIBUS PA	A5E00057315	
Autocal function with 8 binary inputs/outputs and PROFIBUS DP	A5E00057318	
Autocal function with 8 binary inputs/outputs and PROFIBUS PA Ex i (requires Firmware 4.1.10)	A5E00057317	

1) Only in relation with an approved purging unit.

Field unit

Selection and Orde			Order No.	
ULTRAMAT 6 gas analy for field mounting, single	yzer e-channel 2 compon	ents	7 M B 2 1 1 2 - C C C C C A	cannot be combined
Gas connections	5 Sharmon, 2 Gomponi			
Ferrule screw connect	ion for pipe, outer d	iameter 6 mm	0	0 — A29
Ferrule screw connect	ion for pipe, outer d	iameter ¼"	1	1 — A28
Measured component	Smallest meas. ran	ge Largest meas. range	_	
CO	0 100 vpm	0 1000 vpm	AA	
NO	0 100 vpm	0 1000 vpm		
CO	0 300 vpm	0 3000 vpm	AB	
NO	0 300 vpm	0 3000 vpm		
00	0 1000 vpm	0 10000 vpm	A C	
	0 1000 vpm	0 10000 vpm		
for CO/NO (TÜV; see Ta CO ₂	able TUV, 2 compon 0 100 vpm	ents) 0 1000 vpm	ВА	
20 ₂ 20	0 100 vpm	0 1000 vpm	DA	
CO ₂	0 300 vpm	0 3000 vpm	ВВ	
CO ²	0 300 vpm	0 3000 vpm		
CO ₂	0 1000 vpm	0 10000 vpm	ВС	
co	0 1000 vpm	0 10000 vpm		
CO ₂	0 3000 vpm	0 30000 vpm	B D	
CO	0 3000 vpm	0 30000 vpm		
CO ₂	01%	0 10%	BE	
00	01%	010%		
CO ₂ CO	0 3% 0 3%	0 30% 0 30%	BF	
CO ₂	0 3% 0 10%	0 100%	BG	
CO	0 10%	0 100%	B u	
CO ₂	0 10%	0 100%	CG	
CH ₄	0 10%	0 100%		
CO ₂	0 100 vpm	0 1000 vpm	DA	
NO	0 100 vpm	0 1000 vpm		
CO ₂	0 300 vpm	0 3000 vpm	DB	
NO	0 300 vpm	0 3000 vpm		
Internal gas paths	Sample cell ¹)	Reference cell		
Hose made of FKM	<u>(lining)</u> Aluminum	<u>(flow-type)</u> Non-flow-type	0	0 0 — A28, A29
(Viton)				
	Aluminum	Flow-type	1	1
Pipe made of titanium	Tantalum Tantalum	Non-flow-type Flow-type	2 3	2> A28, A29, Y02 3> Y02
Pipe made of SS	Aluminum	Non-flow-type	6	6 A28, A29
(type No. 1.4571)				
	Tantalum	Non-flow-type	8	8 — 🕨 A28, A29
Additional electronics				
Without			0	
Autocal board • With 8 additional binar	rv inputs/outputs		1	
 With 8 binary inputs/or 		S PA interface	6	6
 With 8 binary inputs/or 	utputs and PROFIBUS	S DP interface	7 8	7
 With 8 binary inputs/or 	utputs and PROFIBUS	S PA Ex i	8	8
Power supply				
100 120 V AC, 48 6 200 240 V AC, 48 6			0	
200 240 V AC, 48 6 100 120 V AC, 48 6		$2G^{2}$	1	2 2 — A11
operating mode: leakag		200)		Î Î
200 240 V AC, 48 6		2G ²)	3	3 3 → A11
(operating mode: leakag 100 120 V AC, 48 6		$2G^{2}$)	6	6 6 — A11
	uous purging)	- /		
		2G ²)	7	7 7 — A11
200 240 V AC, 48 6	HOUS DURAINA)			
200 240 V AC, 48 6 (operating mode: contin	,	vragation		
(operating mode: contin 200 240 V AC, 48 6 (operating mode: contin <u>Heating of the internal g</u> Without	,	er section	Δ	
200 240 V AC, 48 6 (operating mode: contin	,	er section	A B	
200 240 V AC, 48 6 (operating mode: contin <u>Heating of the internal g</u> Without	as paths and analyze	er section		
200 240 V AC, 48 6 (operating mode: contin Heating of the internal g Without With (max. 65 °C) Operating software and German	as paths and analyze	er section		
200 240 V AC, 48 6 (operating mode: contin Heating of the internal g Without With (max. 65 °C) Operating software and German English	as paths and analyze	er section	B 0 1	
200 240 V AC, 48 6 (operating mode: contin Heating of the internal g Without With (max. 65 °C) Operating software and German	as paths and analyze	er section	B	

Only for measuring cell length 20 ... 180 mm.
 Only in relation with an approved purging unit.

Field unit

Selection and Ordering Data		
Further versions	Order code	cannot be combined
Please add "-Z" to Order No. and specify Order code.		
Interface converter from RS 485 to RS 232	A11	→ E20
Flow-type reference compartment with reduced flow, 6 mm	A28	
Flow-type reference compartment with reduced flow, 1/4"	A29	
Set of Torx tools, socket spanner	A32	
TAG labels (customer-definde inscriptions)	B03	
Kalrez gaskets in sample gas path	B04	
Ex versions		
Combination possibilities s. Table Ex configurations in "Ex versions"		
ATEX II 3G certificate; restricted breathing, non-flammable gases	E11	
ATEX II 3G certificate; flammable gases ¹)	E12	
CSA certificate – Class I Div. 2	E20	
ATEX II 3D certificate; dust Ex areas and additionnally:		
• in non-hazardous gas zone	E40	
• in Ex zone acc. ATEX II 3G, and non-flammable gases	E41	
• in Ex zone acc. ATEX II 3G, and flammable gases ¹)	E42	
Clean for O ₂ -Service (specially cleaned gas path)	Y02	
Measuring range in plain text, if different from standard setting	Y11	
Special setting (only in conjunction with an application No., e.g. extended measuring range)	Y12	
Extended special setting (only in conjunction with an application No., e.g. determination of cross-interferences)	Y13	
TÜV version according to 17. BlmSch	Y17	
Additional units for explosion-proof versions Category ATEX II 2G (Zone 1)	Order No.	
BARTEC EEx p control unit, 230 V, "leakage compensation"	7MB8000-2BA	
BARTEC EEx p control unit, 115 V, "leakage compensation"	7MB8000-2BB	
BARTEC EEx p control unit, 230 V, "continuous purging"	7MB8000-2CA	
BARTEC EEx p control unit, 115 V, "continuous purging"	7MB8000-2CB	
Explosion-protected isolation amplifier	7MB8000-3AA	
Explosion-protected isolating relay, 230 V	7MB8000-4AA	
Explosion-protected isolating relay, 110 V	7MB8000-4AB	
Differential pressure switch for corrosive gases	7MB8000-5AA	
Differential pressure switch for non-corrosive gases	7MB8000-5AB	
Flame arrester made of stainless steel	7MB8000-6BA	
Flame arrester made of Hastelloy	7MB8000-6BB	
Category ATEX II 3G (Zone 2)		
BARTEC EEx p control unit (flammable gases)	7MB8000-1BA	
FM /CSA (Class I Div. 2)		
Ex purging unit MiniPurge FM	7MB8000-1AA	
Retrofitting sets	Order No.	
RS 485/Ethernet converter	C79451-A3364-	-D61
RS 485/RS 232 converter	C79451-Z1589-	U1
Autocal function with 8 binary inputs/outputs	A5E00064223	
Autocal function with 8 binary inputs/outputs and PROFIBUS PA	A5E00057315	
Autocal function with 8 binary inputs/outputs and PROFIBUS DP	A5E00057318	
Autocal function with 8 binary inputs/outputs and PROFIBUS PA Ex i (requires Firmware 4.1.10)	A5E00057317	

1) Only in relation with an approved purging unit.

Field unit

TÜV, single component (only with supplement Y (Y17, Y18)

Component	nponent CO (TÜV)		SO ₂	(TÜV)	NO (TÜV)		
Measuring range identification	Smallest measuring range from 0 to	Largest measuring range from 0 to	Smallest measuring range from 0 to	Largest measuring range from 0 to	Smallest measuring range from 0 to	Largest measuring range from 0 to	
С			75 mg/m ³	1500 mg/m ³			
D	50 mg/m ³	1000 mg/m ³	300 mg/m ³	3000 mg/m ³			
E			500 mg/m ³	5000 mg/m ³	100 mg/m ³	2000 mg/m ³	
F	300 mg/m ³	3000 mg/m ³	1000 mg/m ³	10000 mg/m ³	300 mg/m ³	3000 mg/m ³	
G	500 mg/m ³	5000 mg/m ³			500 mg/m ³	5000 mg/m ³	
Н	1000 mg/m ³	10000 mg/m ³	3000 mg/m ³	30000 mg/m ³	1000 mg/m ³	10000 mg/m ³	
К	3000 mg/m ³	30000 mg/m ³	10 g/m ³	100 g/m ³	3000 mg/m ³	30000 mg/m ³	
Ρ	10 g/m ³	100 g/m ³	30 g/m ³	300 g/m ³	10 g/m ³	100 g/m ³	
R	30 g/m ³	300 g/m ³	100 g/m ³	1000 g/m ³	30 g/m ³	300 g/m ³	
V	100 g/m ³	1160 g/m ³	300 g/m ³	2630 g/m ³	100 g/m ³	1250 g/m ³	

Example for ordering

ULTRAMAT 6, TÜV (1-component unit) Component CO Measuring range 0 ... 50/1000 mg/m³ with hoses, non-flow-type reference compartment without automatic adjustment (Autocal) 230 V AC; without heating, English **7MB2111-0XD00-1AA1-Z +Y17**

TÜV, 2 components in series

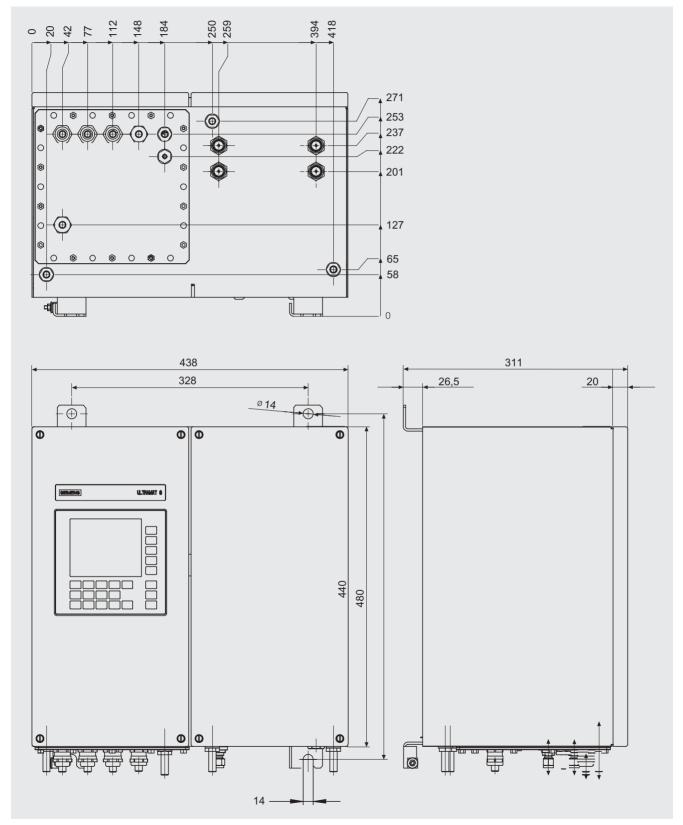
Component	CC	D (TÜV)	NO (TÜV)			
Measuring range identification			Smallest measuring range from 0 to	Largest measuring range from 0 to		
АА	75 mg/m ³	1000 mg/m ³	200 mg/m ³	2000 mg/m ³		
AB	300 mg/m ³	3000 mg/m ³	300 mg/m ³	3000 mg/m ³		
AC	1000 mg/m ³	10000 mg/m ³	1000 mg/m ³	10000 mg/m ³		

Example for ordering

ULTRAMAT 6, TÜV (2 components in series) Components CO/NO Measuring range CO: 0 ... 75/1000 mg/m³ NO: 0 ... 200/2000 mg/m³ with hoses, non-flow-type reference compartment without automatic adjustment (Autocal) 230 V AC; without heating, English **7MB2112-0AA00-1AA1-Z +Y17**

Field unit

Dimensional drawings

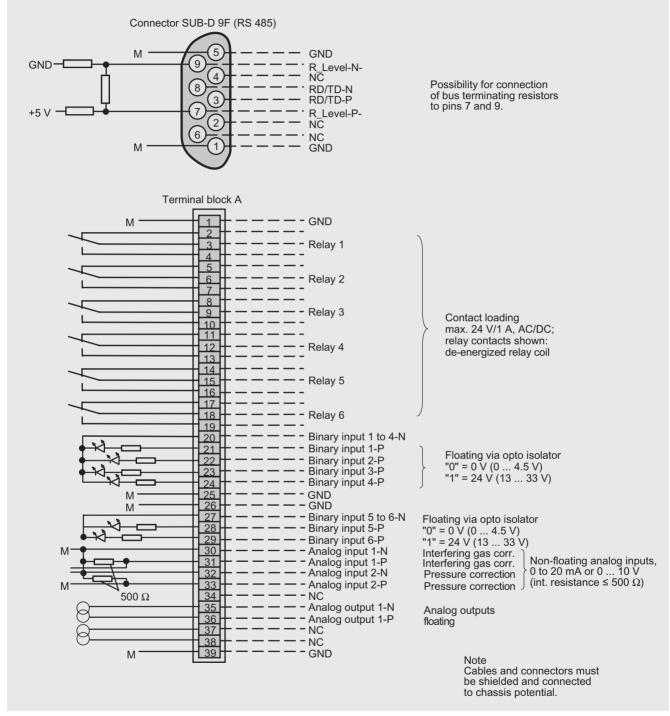


ULTRAMAT 6, field unit, dimensions in mm

Field unit

Schematics

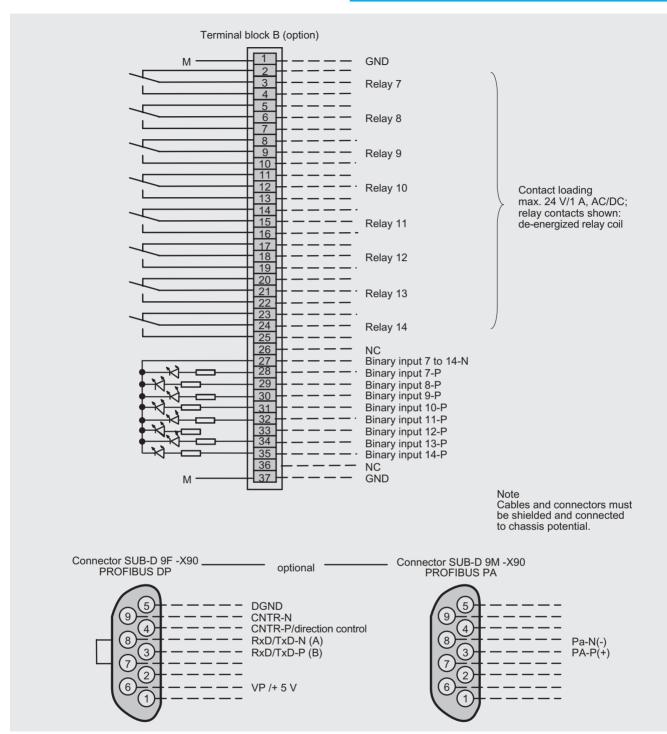
Pin assignment (electrical and gas connections)





2

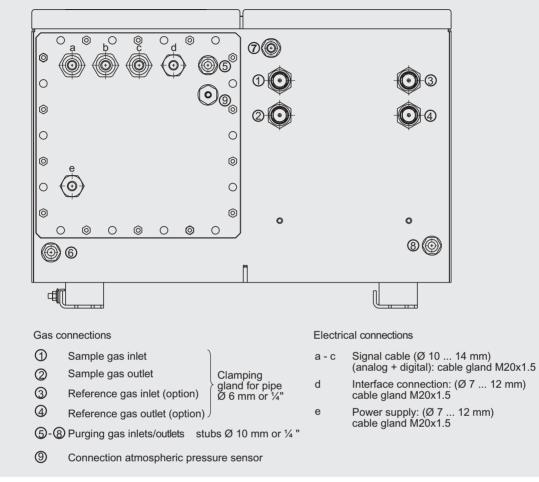
Field unit





Field unit





ULTRAMAT 6, field unit, gas and electrical connections

Documentation

Selection and Ordering Data

•	
Manual	Order No.
ULTRAMAT 6 / OXYMAT 6	C79000-G5200-C143
Gasanalysengerät für IR-absor- bierende Gase und Sauerstoff (German)	
ULTRAMAT 6 / OXYMAT 6	C79000-G5276-C143
Gas Analyzers for IR-absorbing Gases and Oxygen (English)	
ULTRAMAT 6 / OXYMAT 6	C79000-G5277-C143
Analyseurs de gaz pour la mesure de composants infra- rouges et doxygène (French)	
ULTRAMAT 6 / OXYMAT 6	C79000-G5278-C143
Analizadores para gases absor- bentes de infrarrojo y oxígeno (Spanish)	
ULTRAMAT 6 / OXYMAT 6	C79000-G5272-C143
Analizzatori per i gas assorbenti raggi infrarossi ed ossigeno (Italian)	

Proposition of spare parts

Selection and Ordering Data

Description	7MB- 2121	7MB- 2123	7MB- 2124		7MB- 2112	7MB- 2111/2 Ex	2 years (qty)	5 years (qty)	Order No.
Analyzer section									
O-ring for hose cell	х	х	х	х	х	х	1	2	C75121-Z101-C1
O-ring behind hose cell	Х	х	х	х	х	х	1	2	C75121-Z101-C2
O-ring for reflector	х	х	х	х	х	х	1	2	C75121-Z101-C3
O-ring for cover (window, front side)	х	х	х	х	х	х	2	2	C75121-Z101-C4
O-Ring for cooler element	х	х	х	х	х	х	1	1	C75121-Z101-C5
O-ring for cover (window, rear side)	х	х	х	х	х	х	2	4	C79121-Z100-A24
IR source	х	х	х	х	х	х	1	1	C79451-A3462-B12
Window (cell length 20 mm 180 mm)	х	х	х	х	х	х	2	2	C79451-A3462-B151
Window (cell length 0.2 mm 6 mm)	х	х	х	х	х	х	2	2	C79451-A3462-B152
O-rings, set	х	х	х	х	х	х		1	C79451-A3462-D501
Sample gas circuit									
O-ring (stubs)				х	х	х	2	4	C71121-Z100-A159
O-ring (chopper)	х	х	х	х	х	х	1	2	C75121-Z100-C3
Pressure switch	х	х	х						C79302-Z1210-A2
Flowmeter	х	х	х						C79402-Z560-T1
Stub	х	х	х	х	х	х		1	C79451-A3478-C9
Heating cartridge (heated unit)				х	х	х		1	W75083-A1004-F120
Electronics									
Temperature fuse (heated unit)				х	х			1	A5E00023094
Fuse link (heated unit)						х	1	2	A5E00061501
Temperature controller - electronic, 230 V AC				х	х			1	A5E00118527
Temperature controller - electronic, 115 V AC				х	х			1	A5E00118530
Fan, 24 V DC (heated unit)				х	х	х		1	A5E00302916
Front plate with keyboard	Х	х	х				1	1	C79165-A3042-B504
Temperature sensor				х	х	х		1	C79165-A3044-B176
Adapter board, LCD/ keyboard	Х	х	х	х	х		1	1	C79451-A3474-B605
Motherboard, without firmware	Х	х	х	х	х	х		1	C79451-A3474-B620
LC display	Х	х	х	х	х		1	1	W75025-B5001-B1
Connector filter	Х	х	х	х	х			1	W75041-E5602-K2
Fuse link, T 0.63/250 V	Х		х	х	х	х	2	3	W75054-L1010-T630
Fuse link, 1 A, 110/220 V	х	х	х				2	3	W75054-L1011-T100
Fuse link, 1,6 A, 250 V		х	х	х	х	х	2	3	W75054-L1011-T160
Fuse link, 2,5 A, 250 V				х	х	х	2	3	W75054-L1011-T250

If the ULTRAMAT 6 was delivered with specially cleaned gas path for high oxygen content (so-called "Cleaned for O₂ service"), please absolutely specify it for a spare part order. This is the only way to guarantee that the gas path furthermore corresponds to the special requirements for this variant.