

# Extractive continuous process gas analytics

## Series 6

### CALOMAT 62

#### Overview



The CALOMAT 62 gas analyzer is primarily used for quantitative determination of one gas component (e.g. H<sub>2</sub>, N<sub>2</sub>, Cl<sub>2</sub>, HCl, NH<sub>3</sub>) in binary or quasi-binary gas mixtures.

The CALOMAT 62 is specially designed for use in corrosive gas mixtures.

#### Benefits

- Universally applicable hardware platform
- Integrated correction of cross-interference, no external calculation required
- Open interface architecture (RS 485, RS 232, PROFIBUS)
- SIPROM GA network for maintenance and servicing information (option)
- Electronics and analyzer unit: gas-tight isolation, purging is possible, IP65, long service life even in harsh environments (field device)

#### Application

- Chlorine-alkali electrolysis
- Metallurgy (steel production and processing)
- Ammonia synthesis
- Fertilizer production
- Petrochemicals

#### Special versions

##### Special applications

In addition to the standard combinations, special applications are also available on request (e.g. higher sample gas pressure up to 2 000 hPa absolute).

## Design

### 19" rack unit

- With 4 U for installation
  - In hinged frame
  - In cabinets with or without telescopic rails
  - With closed or flow-type reference chambers
- Front plate can be swung down for servicing purposes (laptop connection)
- IP20 degree of protection, with purging gas connection
- Internal gas paths: Stainless steel pipe (mat. no. 1.4571)
- Gas connections for sample gas inlet and outlet and for reference gas: Female thread 1/8"-27 NPT
- Purging gas connections: Pipe diameter 6 mm or 1/4"
- With closed or flow-type reference chambers

### Field device

- Two-door enclosure (IP65) for wall mounting with gas-tight separation of analyzer and electronic parts, purgeable
- Individually purgeable enclosure halves
- Gas path with pipe union made of stainless steel (mat. no. 1.4571), or Hastelloy C22
- Purging gas connections: Pipe diameter 10 mm or 3/8"
- Gas connections for sample gas inlet and outlet and for reference gas: Female thread 1/8"-27 NPT
- With closed or flow-type reference chambers

### Display and operator panel

- Large LCD panel for simultaneous display of:
  - Measured value (digital and analog displays)
  - Status bar
  - Measuring ranges
- Contrast of LCD panel adjustable using menu
- Permanent LED backlighting

- Washable membrane keyboard with five softkeys
- Menu-driven operation for parameterization, test functions, adjustment
- User help in plain text
- Graphic display of concentration trend; programmable time intervals
- Bilingual operating software German/English, English/Spanish, French/English, Spanish/English, Italian/English

### Inputs and outputs

- One analog output per medium (from 0, 2, 4 to 20 mA; NAMUR parameterizable)
- Two analog inputs configurable (e.g. correction of cross-interference or external pressure sensor)
- Six digital inputs freely configurable (e.g. for measuring range switchover, processing of external signals from sample preparation)
- Six relay outputs, freely configurable (e.g. failure, maintenance demanded, limit alarm, external solenoid valves)
- Expansion by eight additional digital inputs and eight additional relay outputs each (e.g. for autocalibration with up to four calibration gases)

### Communication

RS 485 present in the basic unit (connection at the rear; for the rack unit also behind the front plate).

### Options

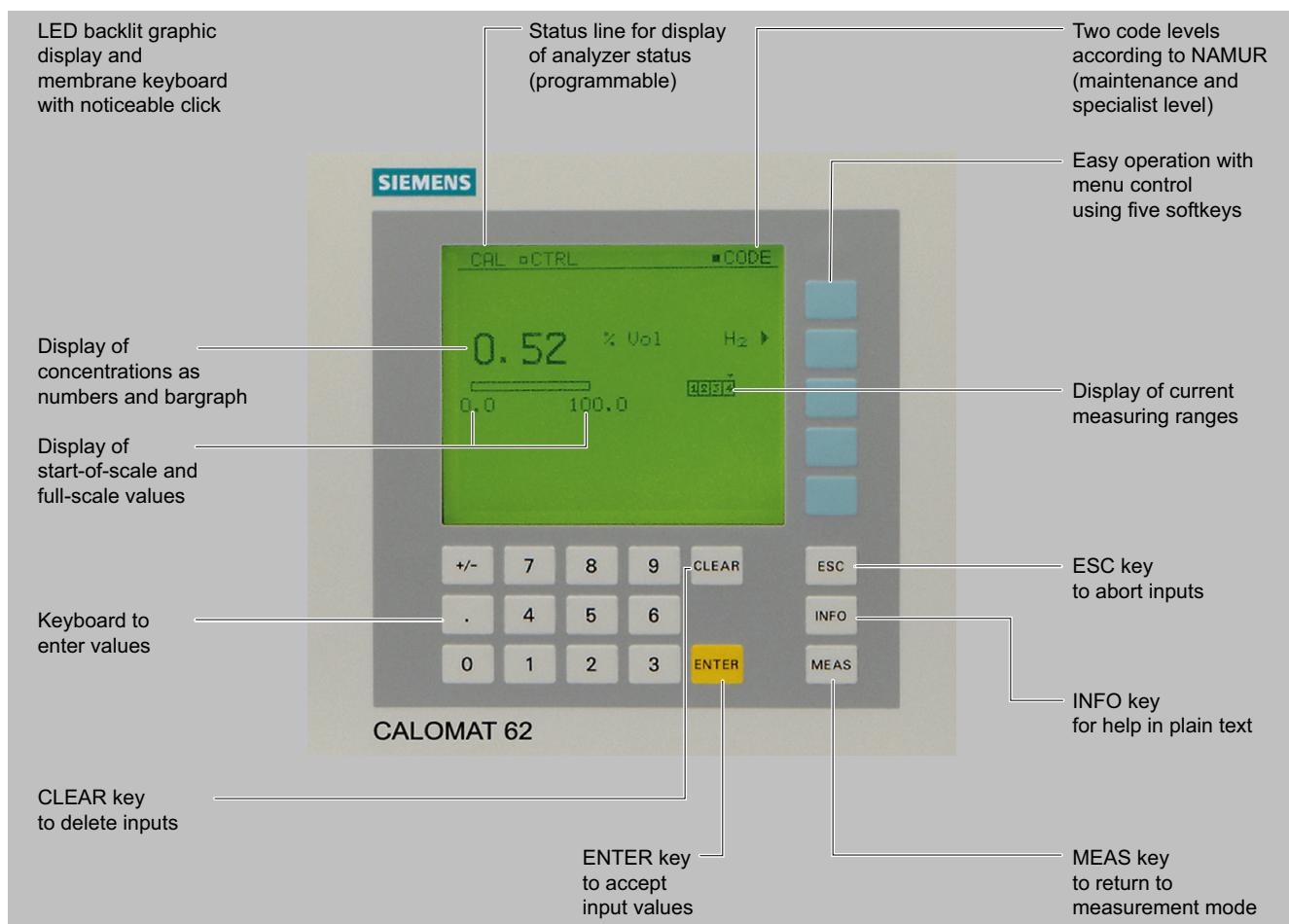
- RS 485/RS 232 converter
- RS 485/Ethernet converter
- RS 485/USB converter
- Connection to networks via PROFIBUS DP/PA interface
- SIPROM GA software as the service and maintenance tool

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#### Design (continued)

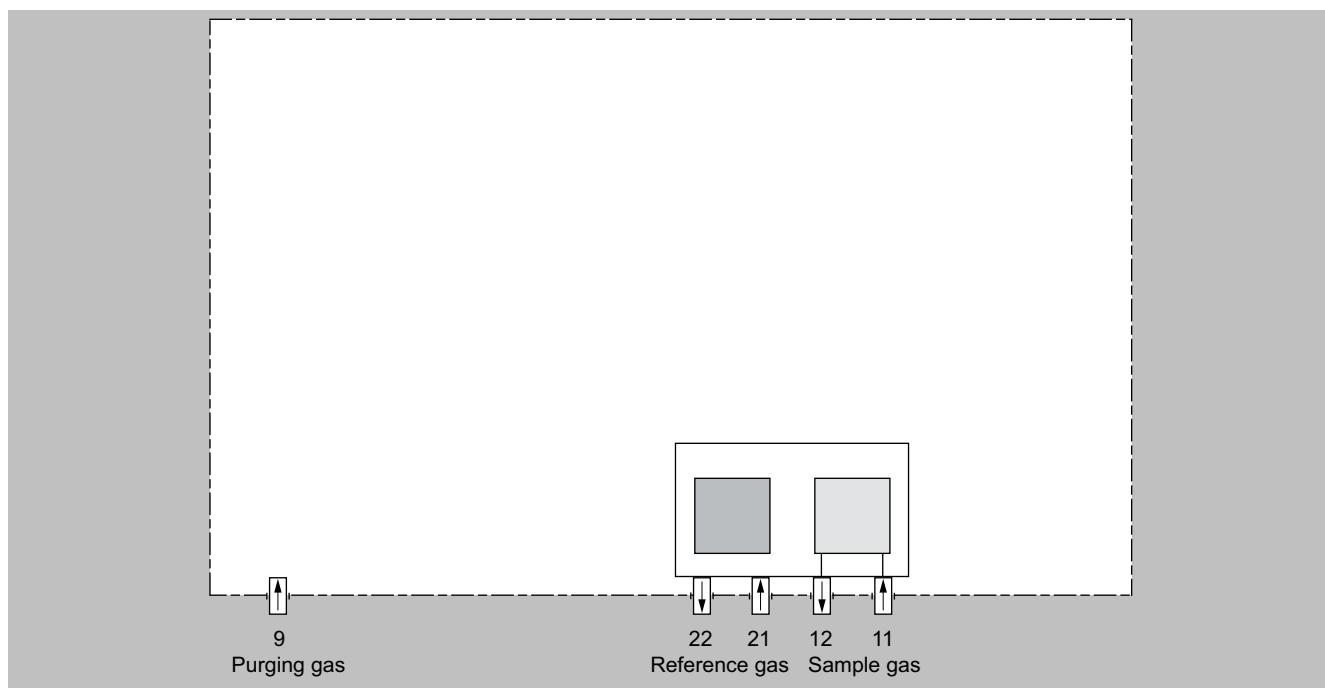


CALOMAT 62, membrane keyboard and graphic display

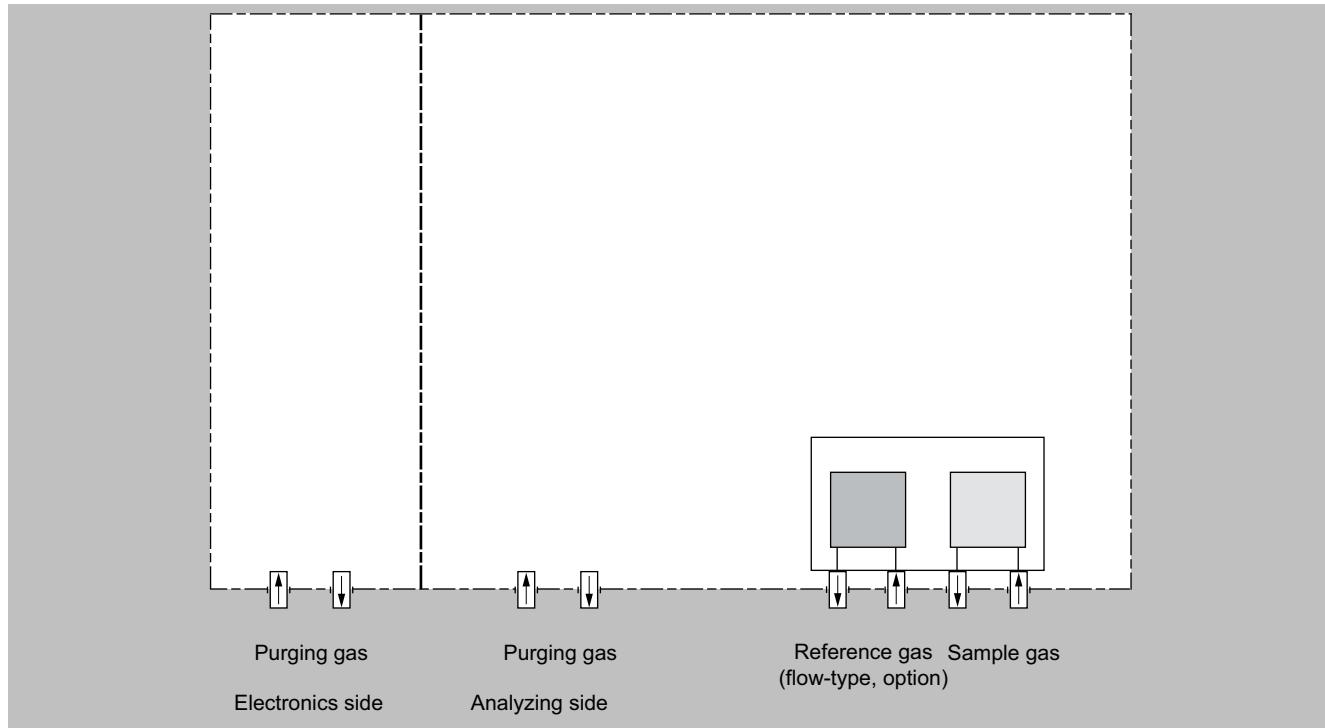
#### Designs – parts wetted by sample gas

Gas connection	19" rack unit	Field device
Input block with gas connection	Stainless steel, mat. no. 1.4571	Stainless steel, mat. no. 1.4571
Gasket	FPM (e.g. Viton) or FFFPM	FPM (e.g. Viton) or FFFPM
Sensor	Glass	Glass
Input block with gas connection		Hastelloy C22
Gasket		FFPM (e.g. Kalrez)
Sensor		Glass

## Design (continued)



CALOMAT 62, 19" rack unit, gas path



CALOMAT 62, field device, gas path

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#### Mode of operation

The measuring principle is based on the different thermal conductivity of gases.

The temperature rise of a heated resistor surrounded by gas is determined by the thermal conductivity of the gas. Four such resistors are connected as a bridge.

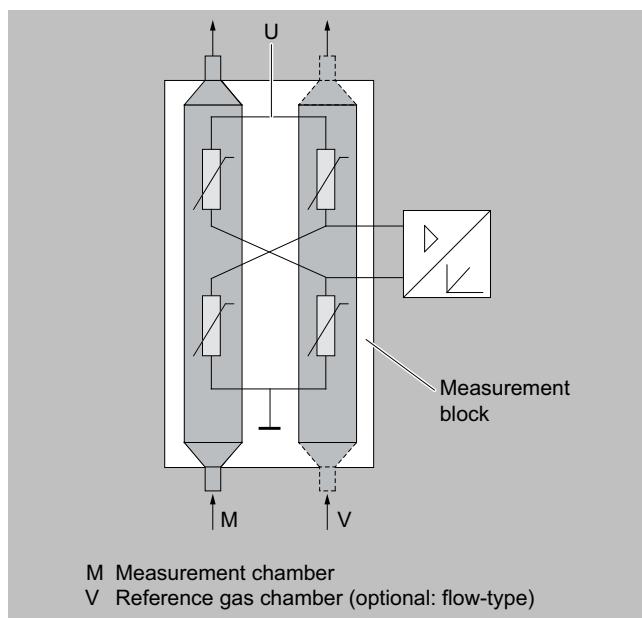
Sample gas flows around two of them, reference gas surrounds the other two. A constant DC voltage heats the resistances above the temperature of the transducer block.

The different thermal conductivity of the sample and reference gases result in different temperatures of the resistances. A change in the composition of the sample gas thus also causes a change in the resistance values.

The electrical equilibrium of the measuring bridge is disrupted, and a voltage is generated in the bridge diagonal. This is a measure of the concentration of the measured component.

#### Note

The sample gases must be fed into the analyzers free of oil, grease, and dust. The formation of condensation in the sample chambers (dew point of sample gas < ambient temperature) must be avoided. Therefore, gas prepared for the respective task must be provided in most applications.



CALOMAT 62, principle of operation, example of a non-flow-type reference chamber

#### Function

##### Main features

- Four measuring ranges which can be freely configured, even with suppressed zero point; all measuring ranges are linear
- Smallest measuring spans down to 1% H<sub>2</sub> (with suppressed zero point: 99 to 100% H<sub>2</sub>) possible
- Measuring range identification
- Electrically isolated measured value output 0/2/4 through to 20 mA (including inverted)
- Automatic or manual measuring range switchover selectable; remote switching is also possible
- Storage of measured values possible during calibration
- Wide range of selectable time constants (static/dynamic noise damping); i.e. the response time of the device can be adapted to the respective measuring task
- Short response time
- Low long-term drift
- Measuring point switchover for up to 6 measuring points (parameterizable)
- Measuring point identification
- External pressure sensor can be connected – for correction of variations in sample gas pressure
- Possibility for correcting the influence of accompanying gases (correction of cross-interference)
- Automatic measuring range calibration parameterizable
- Operation based on NAMUR recommendation
- Two control levels with separate authorization codes for the prevention of accidental and unauthorized operator interventions
- Simple handling using a numerical membrane keyboard and operator prompting
- Custom-made device designs, such as:
  - Customer acceptance
  - TAG plates
  - Drift recording
  - Clean for O<sub>2</sub> service

##### Measuring spans

The smallest and largest possible measuring spans depend on both the measured component (gas type) and the respective application (see ordering data).

##### Cross-interferences

Knowledge of the sample gas composition is necessary to determine the cross-interference of accompanying gases with multiple interference gas components.

The zero offsets in % H<sub>2</sub> which result from 1% accompanying gas (interference gas) are listed in the following table; the specified values are approximate values.

It should be noted that the cross-interference is not linear to their concentration. Knowledge of the sample gas composition is necessary to determine the cross-interference of accompanying gases with multiple interference gas components.

## Function (continued)

### Effect of 1% accompanying gas component with nitrogen as the residual gas, expressed in % H<sub>2</sub>

Ar	Approx. - 0.15%
O <sub>2</sub>	Approx. + 0.02%
CO <sub>2</sub>	Approx. - 0.13%
CH <sub>4</sub>	Approx. + 0.17%
SO <sub>2</sub>	Approx. - 0.31%
Air (dry)	Approx. + 0.25%

Moreover, it must be noted that - in addition to a zero offset - the gradient of the characteristic curve can also be affected by the accompanying gas. However, this effect is negligible in the case of variations in the interference gas concentration below 10%.

Taking these facts into consideration and due to the fact that the interference gas analyzers cause further measuring inaccuracies, a larger measuring error occurs than with binary gas mixtures despite correction of cross-interference.

### Specification for the interface cable

Surge impedance	100 ... 300 $\Omega$ , with a measuring frequency of > 100 kHz
Cable capacitance	Typ. < 60 pF/m
Core cross-section	> 0.22 mm <sup>2</sup> , corresponds to AWG 23
Cable type	Twisted pair, 1 x 2 conductors of cable section
Signal attenuation	Max. 9 dB over the whole length
Shielding	Copper braided shield or braided shield and foil shield
Connection	Pin 3 and pin 8

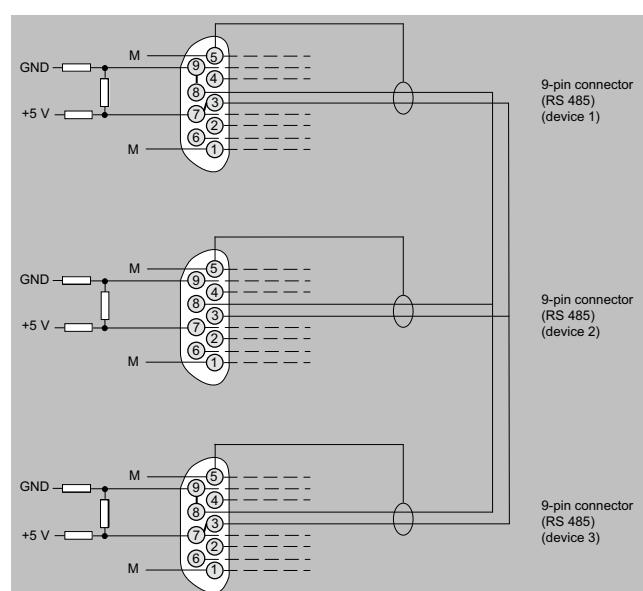
### Bus terminating resistors

Pins 3-7 and 8-9 of the first and last plugs of bus cables must be bridged (see Graphic "Bus line with plug connection, example").

#### Note

It is advisable to install a repeater on the device side in the case of a cable length of more than 500 m or with high interferences.

Up to four components can be corrected via the ELAN bus, correction of cross-interference can be carried out for one or two components via the analog input.



Bus cable with plug connections, example

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### CALOMAT 62 / 19" rack unit

#### Selection and ordering data

		Article No.																			
CALOMAT 62 gas analyzer 19" rack unit for installation in cabinets		7MB2541-	●	●	●	●	-	●	A	●	●										
Click on the Article No. for online configuration in the PIA Life Cycle Portal.																					
<i>Unavailable combinations are shown in PIA Life Cycle Portal as "not permitted".</i>																					
<b>Material of sample gas path</b>																					
Purging gas stub 6 mm																					
• Stainless steel, mat. No. 1.4571; non-flow-type reference chamber, 1/8"-27 NPT																					
Purging gas stub 1/4"																					
• Stainless steel, mat. No. 1.4571; non-flow-type reference chamber, 1/8"-27 NPT																					
<b>Application</b>		Possible with measuring range identification																			
H <sub>2</sub> in N <sub>2</sub>		0; 5																			
SO <sub>2</sub> in air		1; 6																			
CO <sub>2</sub> in H <sub>2</sub>		0; 5																			
CO <sub>2</sub> in N <sub>2</sub>		1; 6																			
<b>Smallest measuring range</b>		<b>Largest measuring range</b>		<b>Reference gas or filling gas</b>																	
0 ... 1%		0 ... 100%		Accompanying gas component																	
0 ... 5%		0 ... 100%																			
100 ... 99%		100 ... 0%																			
100 ... 95%		100 ... 0%																			
<b>Add-on electronics</b>																					
Without																					
AUTOCAL function with 8 additional digital inputs/outputs each																					
AUTOCAL function with 8 additional digital inputs/outputs each and PROFIBUS PA interface																					
AUTOCAL function with 8 additional digital inputs/outputs each and PROFIBUS DP interface																					
<b>Auxiliary power</b>																					
100 ... 120 V AC, 48 ... 63 Hz																					
200 ... 240 V AC, 48 ... 63 Hz																					
<b>Explosion protection</b>																					
Without																					
<b>Language of the operating software</b>																					
German																					
English																					
French																					
Spanish																					
Italian																					

Options	Order code
Add "-Z" to article number and then add order code.	
<b>Settings</b>	
Tag plates (specific inscription based on customer information)	B03
Clean for O <sub>2</sub> service (specially cleaned gas path)	Y02
Measuring range indication in plain text, if different from default setting	Y11
Special setting (only together 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

Accessories	Article No.
RS 485/Ethernet converter	A5E52327218
RS 485/RS 232 converter	A5E52327214
RS 485/USB converter	A5E52327216
AUTOCAL function with 8 digital inputs/outputs	C79451-A3480-D511
AUTOCAL function with 8 digital inputs/outputs and PROFIBUS PA	A5E00057307
AUTOCAL function with 8 digital inputs/outputs and PROFIBUS DP	A5E00057312
Set of Torx screwdrivers	A5E34821625

## Technical specifications

## CALOMAT 62, 19" rack unit

General information	Based on EN 61207/IEC 1207. All data based on H <sub>2</sub> in N <sub>2</sub> binary mixture
Measuring ranges	4, internally and externally switchable; automatic measurement range switchover also possible
Measuring span	Application-dependent (see ordering data)
Measuring ranges with suppressed zero point	Application-dependent (see ordering data)
Service position	Front wall, vertical
Conformity	CE mark in accordance with EN 50081-1/EN 50081-2 and RoHS
Design, enclosure	
Degree of protection	IP20 according to EN 60529
Weight	Approx. 13 kg
Electrical characteristics	
EMC interference immunity (electromagnetic compatibility)	In accordance with standard requirements of NAMUR NE21 (08/98) and EN 61326
Electrical safety	In accordance with EN 61010-1; overvoltage category II
Auxiliary power (see nameplate)	100 V AC -10% ... 120 V AC +10%, 48 ... 63 Hz or 200 AC -10% ... 240 V AC +10%, 48 ... 63 Hz
Power consumption	Approx. 30 VA
Fuse ratings	100 ... 120 V: 1.0T/250 200 ... 240 V: 0.63T/250
Gas inlet conditions	
Sample gas pressure	800 ... 1 100 hPa (absolute)
Sample gas flow	30 ... 90 l/h
Sample gas temperature	Min. 0 ... max. 50 °C, but above the dew point
Temperature of the measuring cell	70 °C
Time response	The time and measuring response refers to the measurement of H <sub>2</sub> in N <sub>2</sub>
Warm-up period	< 30 min at room temperature (the technical specification will be met after 2 hours)
Delayed display (T <sub>90</sub> )	Approx. 35 s (including dead time)
Damping (electrical time constant)	0 ... 100 s, configurable
Dead time (the diffusion to the probes is the determining variable)	Approx. 34 s
Measuring response	The time and measuring response refers to the measurement of H <sub>2</sub> in N <sub>2</sub> (based on the sample gas pressure 1 000 hPa absolute, sample gas flow 0.5 l/min, and ambient temperature 25 °C)
Output signal fluctuation (3σ value)	< ± 1% of the smallest possible measuring span according to nameplate with electronic damping constant of 1 s
Zero point drift	< ± 1% of the current measuring span/week
Measured-value drift	< ± 1% of the smallest possible measuring span (according to nameplate)/week
Repeatability	< ± 1% of the current measuring span
Detection limit	1% of the smallest possible measuring span according to nameplate
Linearity error	< ± 1% of the current measuring span
Influencing quantities	Based on sample gas pressure 1 000 hPa absolute, 0.5 l/min sample gas flow and 25 °C ambient temperature
Ambient temperature	< 2%/10 K referred to smallest possible measuring span according to nameplate
Accompanying gases	Zero point deviation (for influence of accompanying gas, see "Cross-interferences")

## Technical specifications (continued)

## CALOMAT 62, 19" rack unit

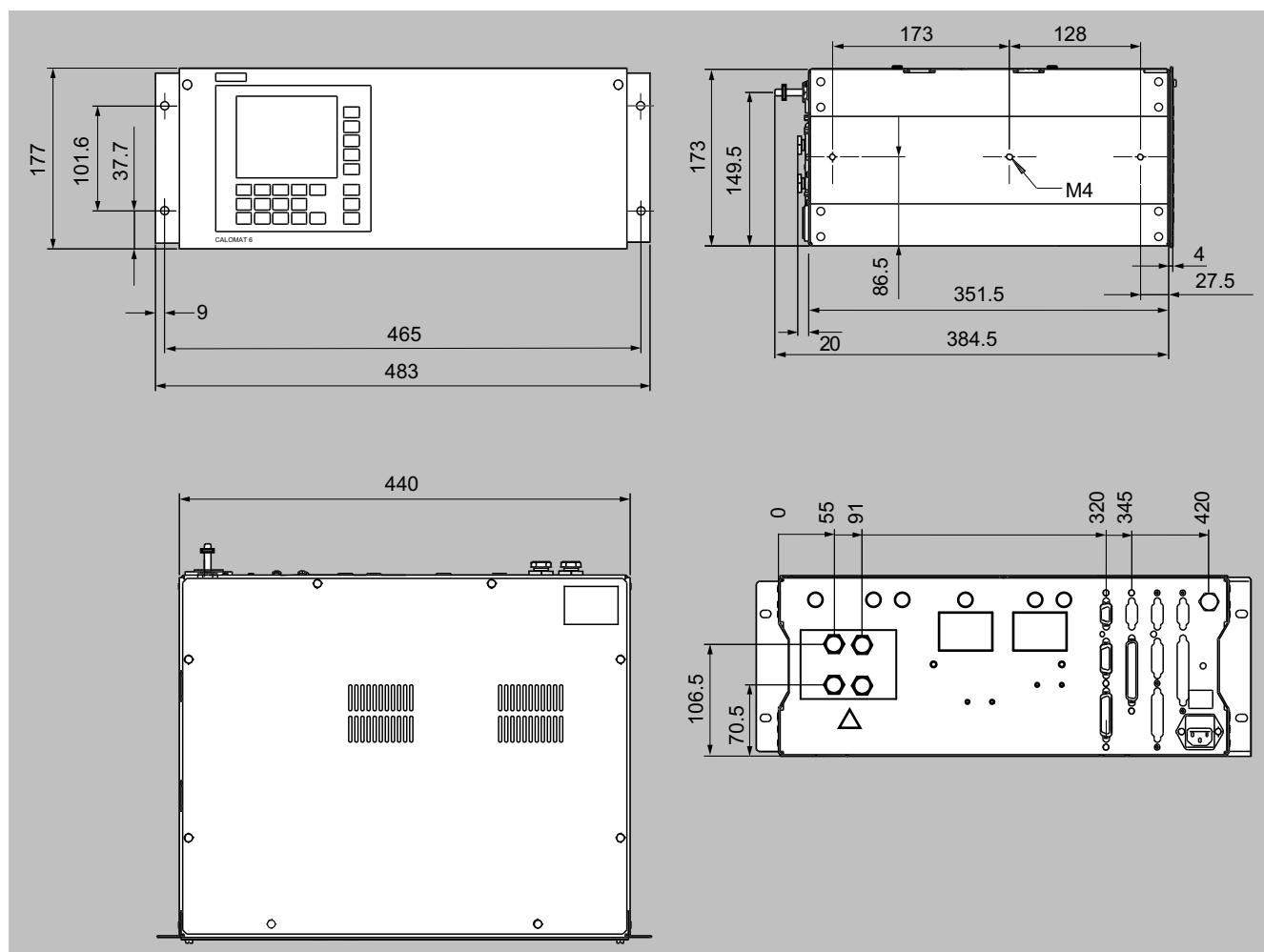
Sample gas flow	0.2% of the current measuring span with a change in flow of 0.1 l/min within the permissible flow range
Sample gas pressure	< 1% of the current measuring span with a pressure variation of 100 hPa
Auxiliary power	< 0.1% of the current measuring span with nominal voltage ± 10%
Electrical inputs and outputs	
Analog output	0/2/4 ... 20 mA, floating; max. output load 750 Ω
Relay outputs	6, with changeover contacts, freely configurable, e.g. for measuring range identification; load rating: 24 V AC/DC/1 A, floating
Analog inputs	2, dimensioned for 0/2/4 ... 20 mA for external pressure sensor and correction of cross-interference
Digital inputs	6, designed for 24 V, floating, freely configurable, e.g. for measurement range switchover
Serial interface	RS 485
Options	AUTOCAL function with 8 additional digital inputs and relay outputs, also with PROFIBUS PA (on request) or PROFIBUS DP (on request)
Climatic conditions	
Permissible ambient temperature	-40 ... +70 °C during storage and transportation, 5 ... 45 °C during operation
Permissible humidity (must not fall below dew point)	< 90% relative humidity as annual average during storage and transportation

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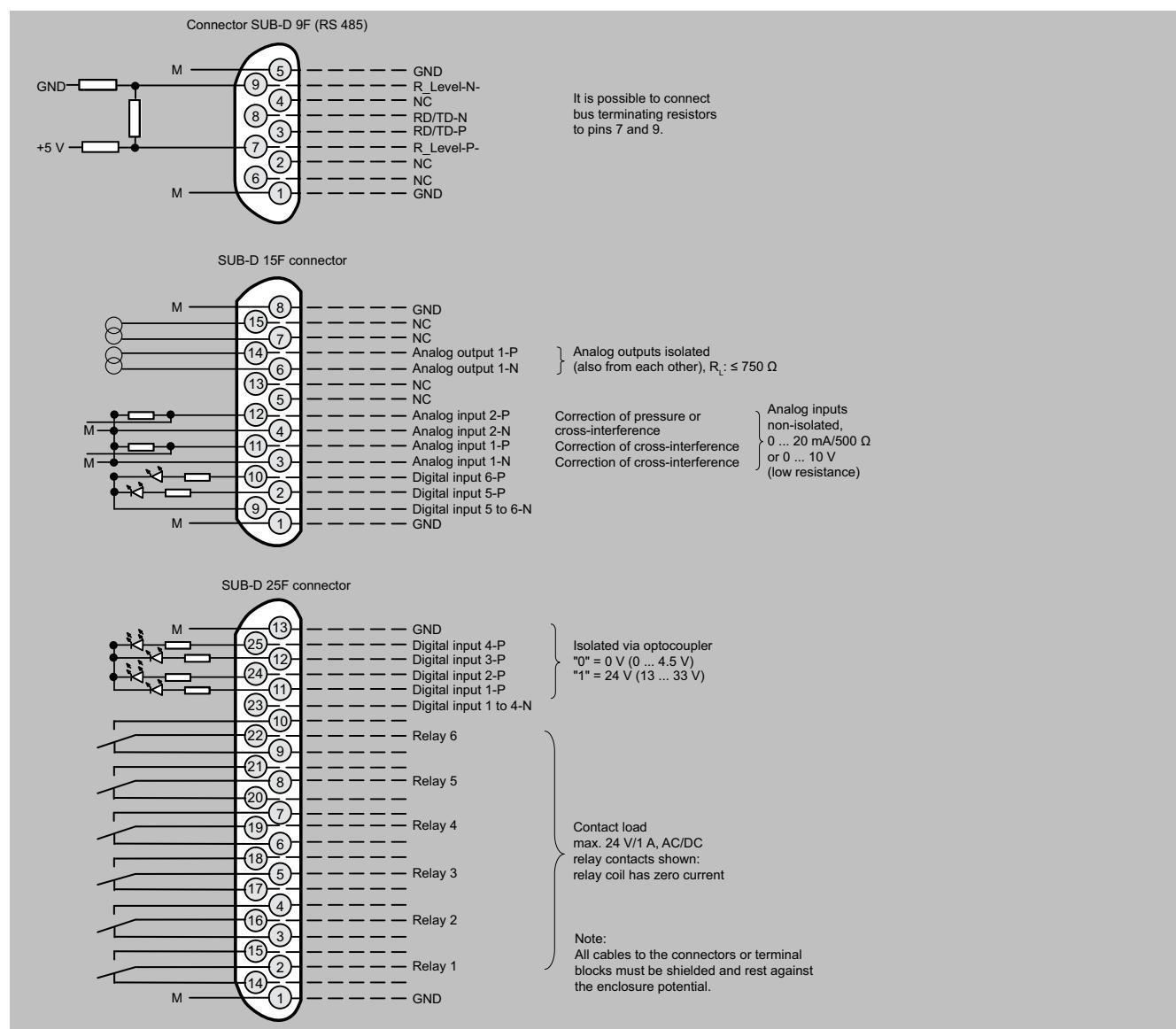
### CALOMAT 62 / 19" rack unit

#### Dimensional drawings



CALOMAT 62, 19" rack unit, dimensions in mm

## Circuit diagrams



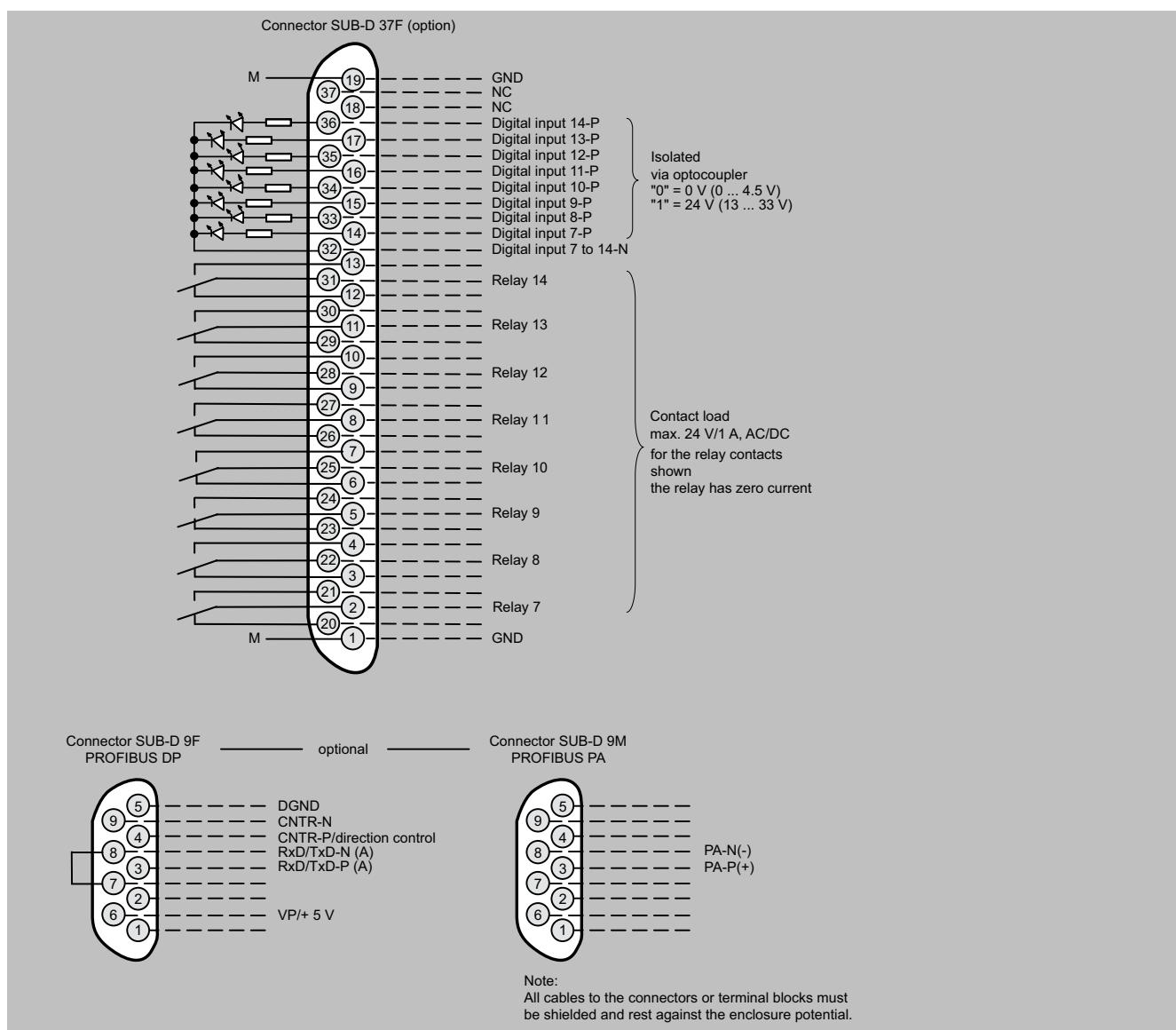
CALOMAT 62, 19" rack unit, pin assignment

# Extractive continuous process gas analytics

## Series 6

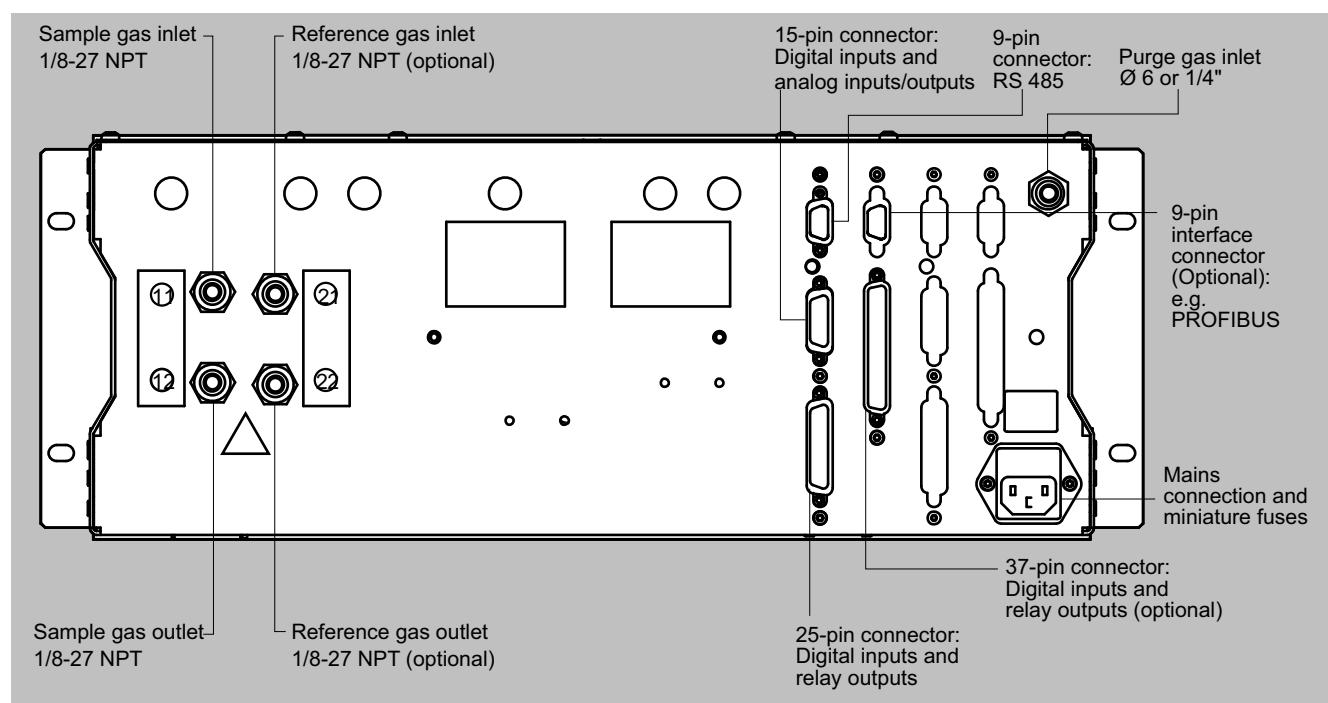
### CALOMAT 62 / 19" rack unit

#### Circuit diagrams (continued)



CALOMAT 62, 19" rack unit, pin assignment of AUTOCAL board and PROFIBUS plugs

## Circuit diagrams (continued)



CALOMAT 62, 19" rack unit, gas and electrical connections

# Extractive continuous process gas analytics

## Series 6

### CALOMAT 62 / Field device

#### Selection and ordering data

		Article No. 7MB82531- ● ● ● ● ● - ● ● ● ● ●
<b>CALOMAT 62 gas analyzer For field-mount installation</b>		
Click on the Article No. for online configuration in the PIA Life Cycle Portal. <i>Unavailable combinations are shown in PIA Life Cycle Portal as "not permitted".</i>		
<b>Material of sample gas path</b>		
Purging gas stub 10 mm		
• Stainless steel, mat. No. 1.4571; non-flow-type reference chamber, 1/8"-27 NPT		0
• Hastelloy C22; non-flow-type reference chamber, 1/8"-27 NPT		2
• Hastelloy C22; flow-type reference chamber, 1/8"-27 NPT		3
Purging gas stub 3/8"		
• Stainless steel, mat. No. 1.4571; non-flow-type reference chamber, 1/8"-27 NPT		4
• Hastelloy C22; non-flow-type reference chamber, 1/8"-27 NPT		6
• Hastelloy C22; flow-type reference chamber, 1/8"-27 NPT		7
<b>Application</b>		<b>Possible with measuring range identification</b>
H <sub>2</sub> in N <sub>2</sub>		0; 5
H <sub>2</sub> in Cl <sub>2</sub>		0; 5
Cl <sub>2</sub> in air		1; 6
HCl in air		1; 6
SO <sub>2</sub> in air		1; 6
CO <sub>2</sub> in H <sub>2</sub>		0; 5
CO <sub>2</sub> in N <sub>2</sub>		1; 6
<b>Smallest measuring range</b>		<b>Largest measuring range</b>
0 ... 1%		0 ... 100%
0 ... 5%		0 ... 100%
0 ... 5%		0 ... 60%
0 ... 10%		0 ... 100%
0 ... 20%		0 ... 40%
100 ... 99%		100 ... 0%
100 ... 95%		100 ... 0%
100 ... 90%		100 ... 0%
100 ... 80%		100 ... 60%
<b>Add-on electronics</b>		<b>Reference gas or filling gas</b>
Without		Accompanying gas component
AUTOCAL function with 8 additional digital inputs/outputs each		0
AUTOCAL function with 8 additional digital inputs/outputs each and PROFIBUS PA interface		1
AUTOCAL function with 8 additional digital inputs/outputs each and PROFIBUS DP interface		6
AUTOCAL function with 8 additional digital inputs/outputs each and HART interface		7
<b>Auxiliary power</b>		
100 ... 120 V AC, 48 ... 63 Hz		0
200 ... 240 V AC, 48 ... 63 Hz		1
<b>Heating of internal gas paths and analyzer unit</b>		
Without		A
With (max. 80 °C)		B
<b>Explosion protection</b>		
Without		A
According to ATEX II 3G		
• Restrictive breathing for Zone 2		B
• Simplified pressurized enclosure (pz) for Zone 2		C
According to ATEX II 2G		
• Continuous purging <sup>1)</sup>		F
According to ATEX II 3D		
• Dust Ex enclosure for Zone 22		G
According to ATEX II 3D or 3G		
• Zone 22 or restrictive breathing for Zone 2		H
• Zone 22 or simplified pressurized enclosure for Zone 2		J
<b>Language of the operating software</b>		
German		0
English		1

## Selection and ordering data (continued)

CALOMAT 62 gas analyzer For field-mount installation		Article No. 7MB82531-	●	●	●	●	-	●	●	●	●
French											2
Spanish											3
Italian											4

<sup>1)</sup> Only in connection with an approved purging unit.

Options	Order code
Add "Z" to article number and then add order code.	
<b>Settings</b>	
Tag plates (specific inscription based on customer information)	<b>B03</b>
BARTEC Ex p purging unit for use in ATEX or IEC-Ex Zone 1	<b>E74</b>
• BARTEC Ex p control unit for continuous flow	
• BARTEC Ex control station with bypass key-switch	
BARTEC Ex purging unit for use in ATEX or IEC-Ex Zone 1	<b>E75</b>
• BARTEC Ex p control unit for continuous flow	
• BARTEC Ex control station with bypass key-switch	
• Operator display for visualization of system states	
Clean for O <sub>2</sub> service (specially cleaned gas path)	<b>Y02</b>
Measuring range indication in plain text, if different from default setting	<b>Y11</b>

Options	Order code
Special setting (only together with an application no., e.g. extended measuring range)	<b>Y12</b>
Extended special setting (only in conjunction with an application no., e.g. determination of cross-interferences)	<b>Y13</b>
Accessories	Article No.
RS 485/Ethernet converter	<b>A5E52327218</b>
RS 485/RS 232 converter	<b>A5E52327214</b>
RS 485/USB converter	<b>A5E52327216</b>
AUTOCAL function with 8 digital inputs/outputs	<b>A5E00064223</b>
AUTOCAL function with 8 digital inputs/outputs and PROFIBUS PA	<b>A5E00057315</b>
AUTOCAL function with 8 digital inputs/outputs and PROFIBUS DP	<b>A5E00057318</b>
Set of Torx screwdrivers	<b>A5E34821625</b>

# Extractive continuous process gas analytics

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### CALOMAT 62 / Field device

#### Technical specifications

##### CALOMAT 62, field device

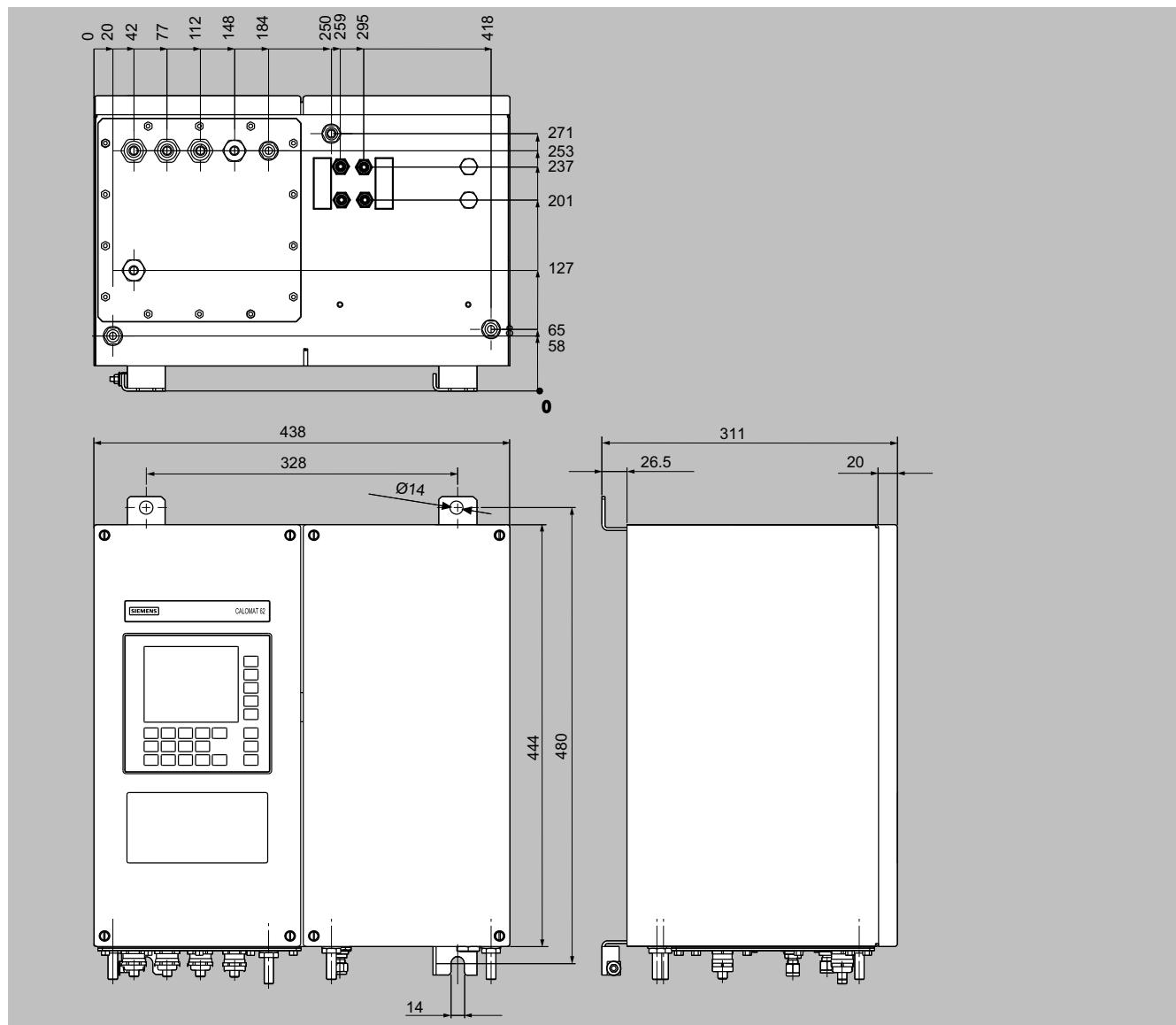
General information	Based on EN 61207/IEC 1207. All data based on H <sub>2</sub> in N <sub>2</sub> binary mixture
Measuring ranges	4, internally and externally switchable; automatic measurement range switchover also possible
Measuring span	Application-dependent (see ordering data)
Measuring ranges with suppressed zero point	Application-dependent (see ordering data)
Service position	Front wall, vertical
Conformity	CE mark in accordance with EN 50081-1/EN 50081-2 and RoHS
Design, enclosure	
Degree of protection	IP65 according to EN 60529
Weight	Approx. 25 kg
Electrical characteristics	
EMC interference immunity (electromagnetic compatibility)	In accordance with standard requirements of NAMUR NE21 (08/98) and EN 61326
Electrical safety	In accordance with EN 61010-1; overvoltage category II
Auxiliary power (see nameplate)	100 V AC -10% ... 120 V AC +10%, 48 ... 63 Hz or 200 AC -10% ... 240 V AC +10%, 48 ... 63 Hz
Power consumption	• Approx. 25 VA (gas connection block unheated) • Approx. 330 VA (gas connection block heated)
Fuse ratings (gas connection unheated)	100 ... 120 V: F3 1T/250, F4 1T/250 200 ... 240 V: F3 0.63T/250, F4 0.63T/250
Fuse ratings (gas connection heated)	100 ... 120 V: F1 1T/250, F2 4T/250, F3 4T/250, F4 4T/250 200 ... 240 V: F1 0.63T/250, F2 2.5T/250, F3 2.5T/250, F4 2.5T/250
Gas inlet conditions	
Sample gas pressure	800 ... 1 100 hPa (absolute)
Sample gas flow	30 ... 90 l/h
Sample gas temperature	Min. 0 ... max. 50 °C, but above the dew point
Temperature	
• of the measuring cell (sensor)	70 °C
• of the measuring cell block (base)	80 °C (heated)
Sample gas humidity	< 90% relative humidity
Purging gas pressure	
• Permanent	165 hPa above atmospheric pressure
• For short periods	Max. 250 hPa above ambient pressure
Time response	The dynamic and measuring response refers to the measurement of H <sub>2</sub> in N <sub>2</sub> (based on the sample gas pressure 1 000 hPa absolute, sample gas flow 0.5 l/min, and ambient temperature 25 °C)
Warm-up period	< 30 min at room temperature (the technical specification will be met after 2 hours)
Delayed display (T <sub>90</sub> )	Approx. 35 s (including dead time)
Electrical damping	0 ... 100 s, configurable
Dead time (the diffusion to the probes is the determining variable)	Approx. 34 s
Measuring response	The dynamic and measuring response refers to the measurement of H <sub>2</sub> in N <sub>2</sub> (based on the sample gas pressure 1 000 hPa absolute, sample gas flow 0.5 l/min, and ambient temperature 25 °C)
Output signal fluctuation (3σ value)	< ± 1% of the smallest possible measuring span according to nameplate with electronic damping constant of 1 s
Zero point drift	< ± 1% of the current measuring span/week

#### Technical specifications (continued)

##### CALOMAT 62, field device

Measured-value drift	< ± 1% of the smallest possible measuring span (according to nameplate)/week
Repeatability	< ± 1% of the current measuring span
Detection limit	1% of the smallest possible measuring span according to nameplate
Linearity error	< ± 1% of the current measuring span
Influencing quantities	Based on sample gas pressure 1 000 hPa absolute, 0.5 l/min sample gas flow and 25 °C ambient temperature
Ambient temperature	< 2%/10 K referred to smallest possible measuring span according to nameplate
Accompanying gases	Zero point deviation (for influence of accompanying gas, see "Cross-interferences")
Sample gas flow	0.2% of the current measuring span with a change in flow of 0.1 l/min within the permissible flow range
Sample gas pressure	< 1% of the measuring span with a pressure variation of 100 hPa
Auxiliary power	< 0.1% of the output signal span with nominal voltage ± 10%
Electrical inputs and outputs	
Analog output	0/2/4 ... 20 mA, floating; output load max. 750 Ω
Relay outputs	6, with changeover contacts, freely configurable, e.g. for measuring range identification; load rating: 24 V AC/DC/1 A, floating
Analog inputs	2, dimensioned for 0/2/4 ... 20 mA for external pressure sensor and correction of cross-interference
Digital inputs	6, designed for 24 V, floating, freely configurable, e.g. for measurement range switchover
Serial interface	RS 485
Options	AUTOCAL function with 8 additional digital inputs and relay outputs, also with PROFIBUS PA (on request) or PROFIBUS DP (on request)
Climatic conditions	
Permissible ambient temperature	-40 ... +70 °C during storage and transportation, 5 ... 45 °C during operation
Permissible humidity (must not fall below dew point)	< 90% relative humidity as annual average during storage and transportation

## Dimensional drawings



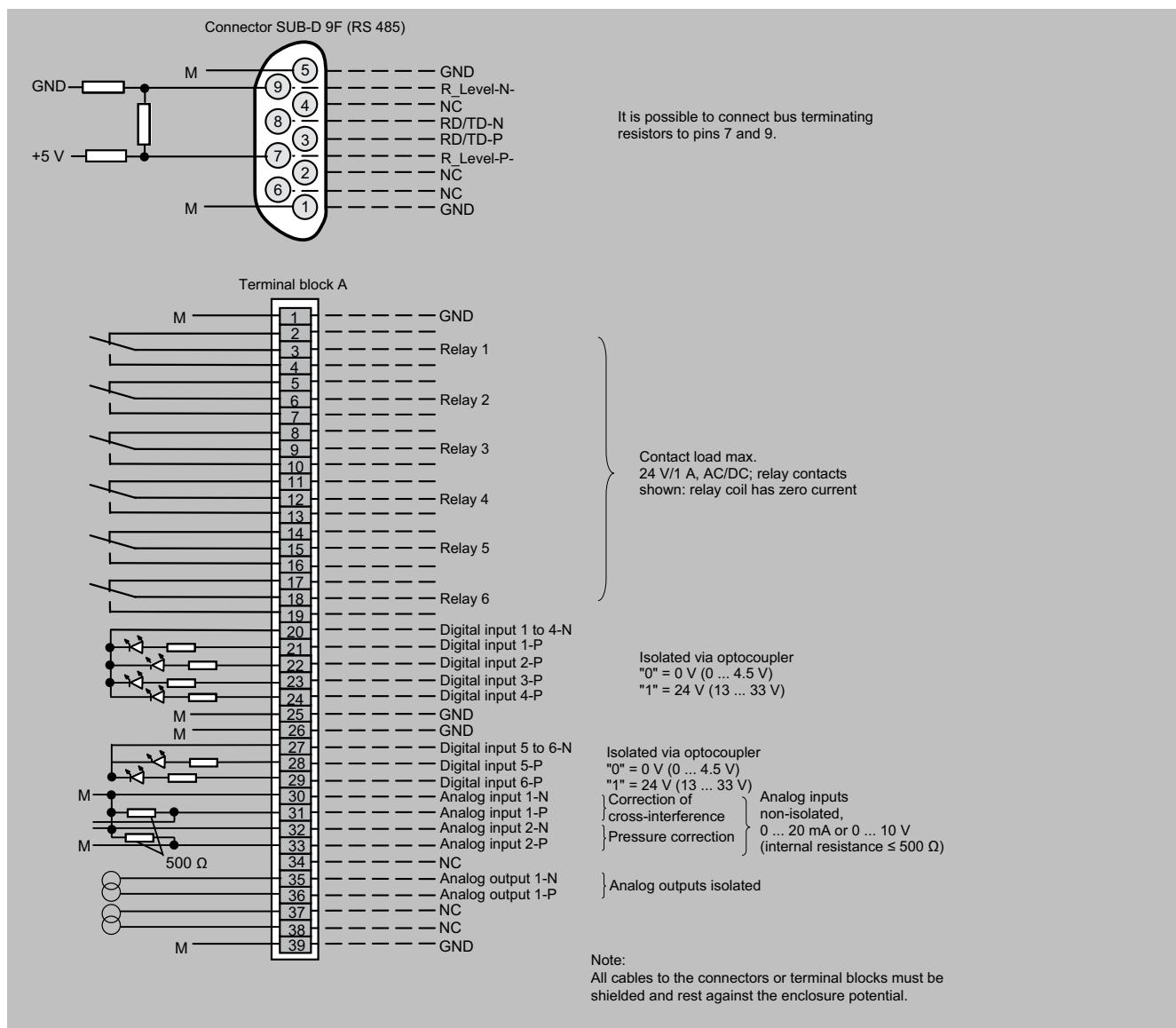
CALOMAT 62, field device, dimensions in mm

# Extractive continuous process gas analytics

## Series 6

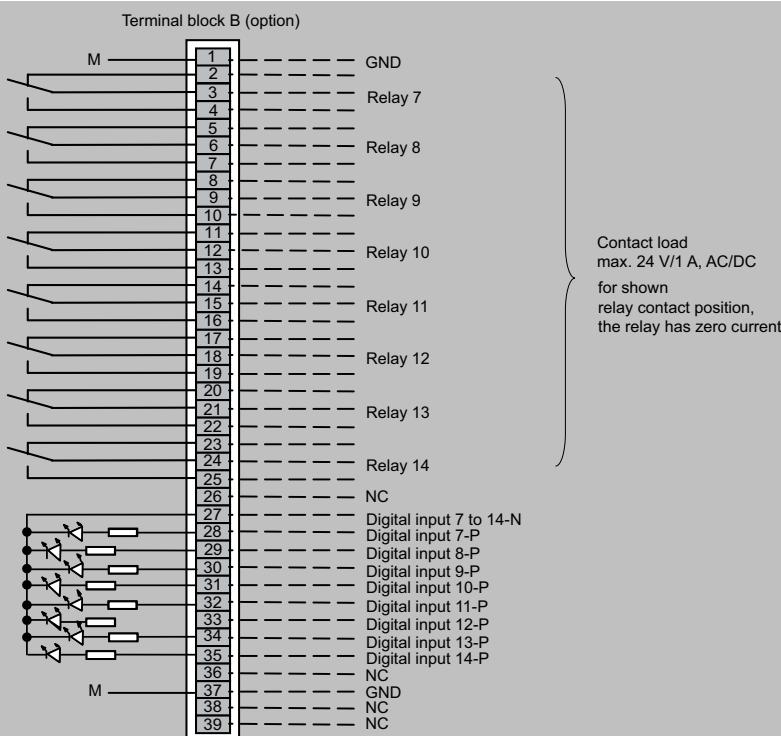
### CALOMAT 62 / Field device

#### Circuit diagrams

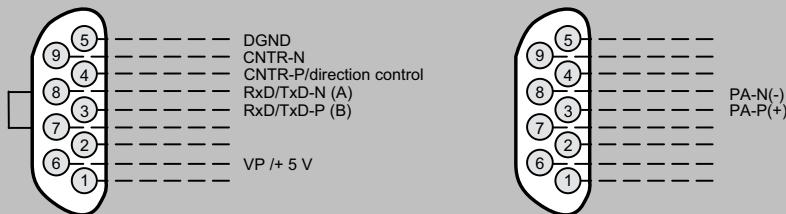


CALOMAT 62, field device, pin and terminal assignment

## Circuit diagrams (continued)



Connector SUB-D 9F-X90 PROFIBUS DP optional Connector SUB-D 9M-X90 PROFIBUS PA



Note:  
All cables to the connectors or terminal blocks must  
be shielded and rest against the enclosure potential.

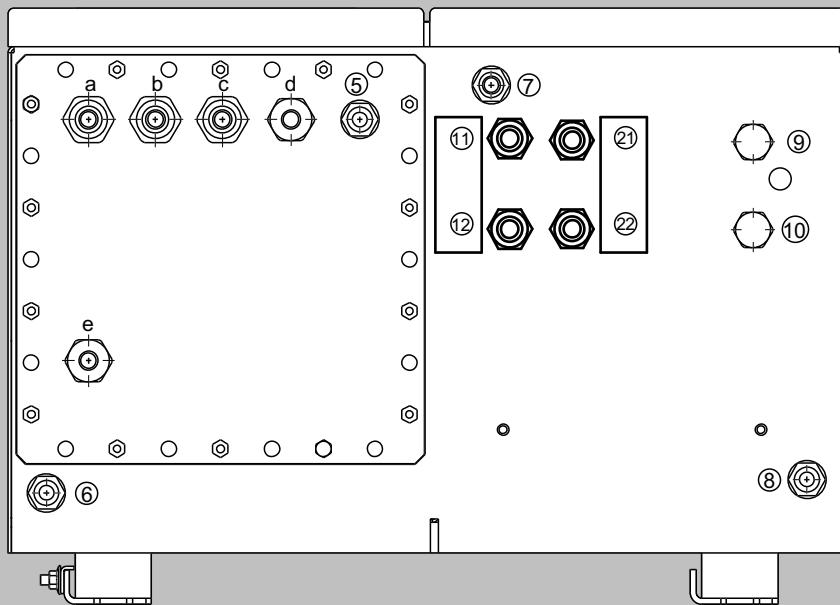
CALOMAT 62, field device, pin and terminal assignment of the AUTOCAL board and PROFIBUS plugs

## Extractive continuous process gas analytics

## Series 6

## CALOMAT 62 / Field device

## Circuit diagrams (continued)



## Gas connections

(11)	Sample gas inlet	Internal thread 1/8" - 27 NPT
(12)	Sample gas outlet	
(21)	Reference gas inlet	
(22)	Reference gas outlet	
(5) ... (8)	Purge gas inlets/outlets	Fittings Ø 10 mm or 3/8"
(9)	Unassigned	
(10)	Unassigned	

## Electrical connections

a - c	Signal cable (Ø 10 ... 14 mm) (analog + digital): cable gland M20x1.5
d	Interface connection: (Ø 7 ... 12 mm) cable gland M20x1.5
e	Power supply: (Ø 7 ... 12 mm) cable gland M20x1.5

CALOMAT 62, field device, gas connections and electrical connections

## Selection and ordering data

Description	7MB2541	7MB2531	2 years (unit)	5 years (unit)	Article No.
Temperature limiter		x	-	1	A5E00891855
Adapter plate, LC display/keyboard	x	x	1	1	C79451-A3474-B605
Temperature sensor		x	-	1	C79451-A3480-B25
LC display	x		-	1	A5E31474846
Line transformer, 115 V	x	x	-	1	W75040-B21-D80
Line transformer, 230 V	x	x	-	1	W75040-B31-D80
Fuse, T 0.63 A, line voltage 200 ... 240 V	x	x	2	3	W79054-L1010-T630
Fuse, T 1 A, line voltage 100 ... 120 V	x	x	2	3	W79054-L1011-T100
Heating cartridge		x	-	1	W75083-A1004-F120