OPERATING INSTRUCTIONS

CONTROL UNIT GC 9000 VC

ANALYTICAL COMPUTER SYSTEM

Status: 07/07 << GC 9000 VC version 6.00 >>

CONTENTS

1 Introduction to the GC 9000 VC

The operating concept:
The operating concept has been chosen in such a way that the operator can easily use the device without wasting too much time reading a manual.

The function keys:
The most important data for the operator can be directly selected via function keys. There are function keys for

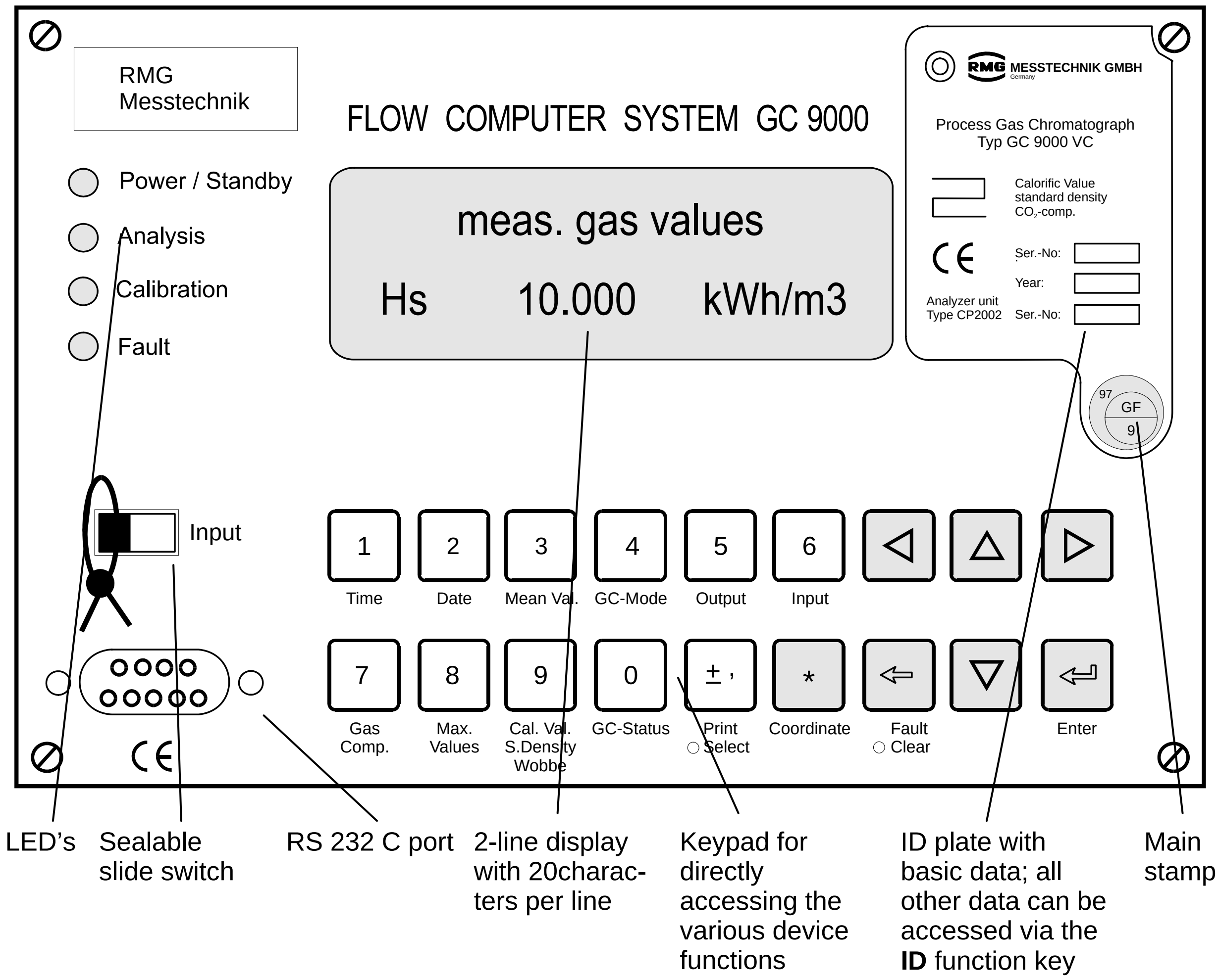
Time
Date
Mean values
Mode
Outputs
Inputs
Gas components
Maximum values
Status
Superior Calorific Value, Standard Density, Wobbe Index

The system of coordinates:
A system of coordinates makes it easy for the operator to access all configuration data, measured values and operands by means of a table.
The system of coordinates is based on 26 columns and 46 lines. Columns are marked A to Z, while lines run from 1 to 46. The operator can reach every value in this system of coordinates via cursor keys (arrows).

The display field:
An alphanumeric 2-line display with 20 characters per line enables data and measured values to be indicated together with their short designations and units. The display field consists of a fluorescent display in blue and is easily readable even from a distance.

The system:
A complete Flow Computer System has been developed taking the size of a Eurocard as a basis and using the most advanced SMD technology with large-scale integrated components. A fully assembled printed circuit board incorporates all inputs required for a complex corrector.
The GC model incorporates a second CPU card to increase the computing power. This CPU mainly performs arithmetic operations and gives interface reports, whereas the standard CPU continues to carry out all measuring tasks.
An interface module has been plugged onto the back of this CPU in order to provide the device with another four data interfaces. One of these interfaces is dedicated to the DSfG application, for example.

2 GC 9000 VC Front panel



3 Operating the GC 9000 VC

Distribution of the function keys

Key	Function
Time	Indication of the TIME.
Date	Indication of the DATE.
Mean Values	Indication of MEAN VALUES. When you press the cursor keys, you can scroll in the mean value memory.
GC Mode	Indication of the MODE and when pressing the ↑↓ keys all mode-related values.
Output	Indication of the current output No. 1 and when pressing the ↑↓ keys all values related to this current output. Press the → key to switch over to current outputs 2, 3 and 4.
Input (Test)	Indication of the carrier gas pressure and pressure of the gas to be analyzed and when pressing the ↑↓ keys all values related to these inputs.
Cas Comp.	Indication of gas components, areas and unnormalized sums.
Max. Values	Indication of MAXIMUM VALUES. When you press the cursor keys, you can scroll in the maximum value memory.
Cal. Val. S. Density Wobbe	Indication of the SUPERIOR CALORIFIC VALUE, WOBBE INDEX, STANDARD DENSITY, RELATIVE DENSITY, CO2 and Hs/CO2 default values.
GC Status	Indication of the GC STATUS and when pressing the ↑↓ keys all values related to the GC status.
Print ➡ Select	Calibration report, analytical report, graphical report.

4 Special-Function keys

↑ ↓ ← → Clear Enter Select

Arrow up / down

↑ ↓

To scroll up or down by lines within a column.

Arrow to the right / left

→ ←

To scroll to the right or left by columns within a line. If you press the ← key, you can jump via the first column to the last column. If you press the → key, you can jump via the last column to the first column. These keys fulfill a special function in the mean-value column.

The following applies to cursor keys in general:
Unoccupied line fields within a column and unoccupied columns within a line are automatically skipped. If the column jumped to is occupied but the line field is empty, the line number is automatically increased until an occupied field is found. When you jump to the next column, the initial line number is selected again.

Clear / Fault

⇐

a) To clear incorrect inputs in the programming mode. The state prior to inputting the first digit is restored.

b) To indicate faults in the normal mode.

c) Special function (clear fault and code number reset).

Enter

To initiate and complete a data input. All data inputted are accepted.

Select

*

To switch over from short designations to coordinates and vice versa. Switching over is possible in almost all fields (also in the programming mode).

5 Display fault / Clear Fault Function

Display fault

The occurrence of a fault is indicated by the **Fault** LED on the front panel of the device or by an isolated contact at the terminal block. The LED flashes if faults are pending. If faults are no longer pending, the LED turns to steady light.

To display fault texts, you must press the **CLEAR / FAULT** key. After you have pressed this key, the display field shows ***error*** and the bottom line shows the fault texts at 3-second intervals. All messages are consecutively shown in the display field. As long as the Fault LED flashes, there is still at least one fault pending. If the Fault LED shows steady light, all indicated fault messages are no longer valid and the device has returned to fault-free operation.

Clear fault

You cannot clear fault messages unless you have selected the **CLEAR FAULT ?** field (R 5) using the **ENTER** key.

The time and date of the fault occurred are shown in the fields R3 and R4. If there is more than one fault pending, the time and date of the first fault occurred are shown.

6 Summary of Coordinates for the GC 9000 VC

6.1 Coordinates from A - E

	GC Mode				
	A / 01	**B / 02**	**C / 03**	**D / 04**	**E / 05**
1	PGC activity	Calibration values	Multi-level coeff.	Calibration data	Mean values
2	Mode	New response factor	N2 A	Number	MV:
3		N2	N2 B	Time	Selection
4		Meth	N2 C	Date	
5		CO2	N2 D	Interval	
6		Eth	Meth A	Total number	Delete
7		Prop	Meth B	Averaging from	
8		iBut	Meth C		
9	Hs unit	nBut	Meth D		Hs
10	Current mode	neoP	CO2 A		Hi
11	day starts at	i-Pe	CO2 B	Cal. gas concentration	Wo
12		n-Pe	CO2 C	N2	rho
13		C6+	CO2 D	Meth	d
14	Resp. fact. at zero	New retention time	Eth A	CO2	CO2
15	N2	N2	Eth B	Eth	Error
16	Meth	Meth	Eth C	Prop	No
17	CO2	CO2	Eth D	iBut	
18	Eth	Eth	Prop A	nBut	
19	Prop	Prop	Prop B	neoP	
20	iBut	iBut	Prop C	i-Pe	
21	nBut	nBut	Prop D	n-Pe	
22	neoP	neoP	iBut A	C6+	
23	i-Pe	i-Pe	iBut B	Hs	
24	n-Pe	n-Pe	iBut C	rho	
25	C6+	C6+	iBut D		
26		Retent. time at zero	nBut A	Fixed components	
27		N2	nBut B	He	
28		Meth	nBut C	O2	
29		CO2	nBut D	H2	
30		Eth	neoP A	Ar	
31		Prop	neoP B		
32		iBut	neoP C	Viscosity	
33		nBut	neoP D	A	
34		neoP	i-Pe A	B	
35		i-Pe	i-Pe B	C	
36		n-Pe	i-Pe C	D	
37		C6+	i-Pe D		
38		Last calibration	n-Pe A		
39		Date, time ok / nok	n-Pe B		
40			n-Pe C		
41			n-Pe D		
42			C6+ A		
43			C6+ B		
44			C6+ C		
45			C6+ D		
46					

Locked via calibration switch | Locked via code number | No locking

6.2 Coordinates from F - J

	Output F / 06	Output G / 07	Output H / 08	Output I / 09	Output J / 10
1	Phys. value	Phys. value	Phys. value	Phys. value	Front-RS 232
2	I 1	I 2	I 3	I 4	300 - 9600 baud
3	A1<	A2<	A3<	A4<	7 / 8 bits
4	A1>	A2>	A3>	A4>	Parity = even/odd/no
5	I1E	I2E	I3E	I4E	
6	A1A	A2A	A3A	A4A	C1-RS232
7	I1-K	I2-K	I3-K	I4-K	2400 - 19200 baud
8	I1-M	I2-M	I3-M	I4-M	7 / 8 bits
9	I1 mod	I2 mod	I3 mod	I4 mod	Parity = even/odd/no
10				I4-P	C2-RS232 Printer
11					Mode
12					300 - 19200 baud
13					7 / 8 bits
14					Parity = even/odd/no
15					C3-RS485 DSfG
16					300 - 19200 baud
17					7 / 8 bits
18					Parity = even/odd/no
19					Menue
20					Status Text
21					C4-RS232 Laptop
22					300 - 19200 baud
23					7 / 8 bits
24					Parity = even/odd/no
25					
26					C5-RS232/485 CP4002
27					300 - 19200 baud
28					7 / 8 bits
29					Parity = even/odd/no
30					
31					
32					
33					
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45					
46					

Locked via calibration switch | Locked via code number | No locking

6.3 Coordinates from K - O

	Gas Components		Hs / Wo / rho	GC Status	Print
	K / 11	L / 12	M / 13	N / 14	O / 15
1	Components	Day max	Gas val. meas. gas	Micro GC	Print
2	N2	Hs	Hs	Ready to run	Selection
3	Meth	Day min	Ws	Specified time	
4	CO2	Hs	rho	Current time	Every ... analysis
5	Eth		d	A. No.:	Scale_A Cal
6	Prop		CO2	Column temperature	Scale_B Cal
7	iBut	Month max	Hi	A specified value	Scale_A Ana
8	nBut	Hs	Wi	A setting	Scale_B Ana
9	neoP	Month min	Zn	B specified value	Manual print
10	i-Pe	Hs		B setting	Automatic print
11	n-Pe				Print cal. data
12	C6+			Column pressure	Logger: C2/DSfG
13	He			A specified value	
14	O2		Default / limit. values	A setting	
15	H2		Hs def	B specified value	
16	Ar		Hs <	B setting	
17			Hs >		
18	Unnormalized sum		CO2 def	Permissible deviations	
19			CO2 <	Temperature	
20	Area		CO2 >	Pressure	
21	N2		Ws def	Superior calorific value	
22	Meth		Ws <	rho	
23	CO2		Ws >	Retention time	
24	Eth		rho def	Response factor	
25	Prop		rho <	Unnormalized sum	
26	iBut		rho >	CO2	
27	nBut			Total area	
28	neoP			Parameter	
29	i-Pe		Current Gas values	Sample factor	
30	n-Pe		Job	Continuous sweeping	
31	C6+		Hs		
32	Sum cal		Ws		
33	Sum b-cal		rho		
34			d		
35			CO2		
36			Hi		
37			Wi		
38			Zn		
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42					
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44					
45					
46					

Locked via calibration switch   Locked via code number   No locking

6.4 Coordinates from P - U

	Date	Time	Fault		Input (Test)	Input (Test)
	P / 16	Q / 17	R / 18	S / 19	T / 20	U / 21
1	Calendar	Clock	Error	DSfG	Carrier gas	Gas for analysis
2	Date:DD-MM-YY	Time: hh-mm-ss	Fault display	Address	Meas. value (bar)	Meas. value (bar)
3	Day No.	GC ID:	Time	Preset	Meas. value (mA)	Meas. value (mA)
4			Date	Delete	P <	P <
5			Clear fault ?	Ref.Cnt	P >	P >
6					P specified value	P specified value
7					P deviation (%)	P deviation (%)
8					Correction factor	Correction factor
9					Mode	Mode
10				Multistream		Err. Time
11				Mode		
12				L		
13				Count		
14				n		
15						
16						
17			Clearing mode			
18						
19						
20				Curr. Stream		
21						
22						
23						
24						
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Locked via calibration switch | Locked via code number | No locking

6.5 Coordinates from V - X

	V / 22	W / 23	X / 24	Y / 25
1	Hs (j)	Hi (j)	Root B (j)	Modus
2	N2	N2	N2	RMG Messtechnik
3	Meth	Meth	Meth	Mode
4	CO2	CO2	CO2	Code
5	Eth	Eth	Eth	Operating hours
6	Prop	Prop	Prop	
7	iBut	iBut	iBut	
8	nBut	nBut	nBut	
9	neoP	neoP	neoP	
10	i-Pe	i-Pe	i-Pe	Display mode
11	n-Pe	n-Pe	n-Pe	
12	C6+	C6+	C6+	
13	He	He	He	
14	O2	O2	O2	
15	H2	H2	Ar	
16	Ar	Ar		
17	Molar mass (j)	Constants		CPU-I
18	N2	Z a		CPU-II
19	Meth	M a		Ver. 186 CPU
20	CO2	R		Ver. 9000 CPU
21	Eth	tn		GC No.
22	Prop	tB		
23	iBut	Pn		
24	nBut			
25	neoP			Oscillation frequency
26	i-Pe			fD
27	n-Pe			Lamp test
28	C6+			Lamp test
29	He			
30	O2			
31	H2			
32	Ar			
33				
34	Lower limit comp.	Upper limit comp.		
35	N2	N2		
36	Meth	Meth		
37	CO2	CO2		
38	Eth	Eth		
39	Prop	Prop		
40	iBut	iBut		
41	nBut	nBut		
42	neoP	neoP		
43	i-Pe	i-Pe		
44	n-Pe	n-Pe		
45	C6+	C6+		
46				

Locked via calibration switch | Locked via code number | No locking

7 Summary of Device Functions to Be Called up with Function Keys

7.1 Description of the matrix structure

Function key on
the ERZ 9000

Sequence of key operations
to reach the desired column

Mean Values

Designation of the column
A .... 1st column of the matrix
(01) .. Programming value for this column

↓ Direct access

		A (01)	Description of coordinates	Unit	Comment(s)
1	D	mean values	Heading		
2	D	MV:	MV: xy_z-10.08.94_03		1) 2)
3	D	selection:	Selection: MM / TM / SM (monthly / daily / hourly mean values)		2) 3)
6	C	delete (!):	Selection: Yes / No		4)
9	D	Hs	Superior calorific value	MJ/m3	2)

Short description
of the coordinate

Abbreviation of the coordinate
(Display of the ERZ 9000)

Unit of the value displayed
or programmed

Data protection level:
D ... Display value
C ... Data which the user can be modify using a code number
S ... Data which can be modified via the slide switch (sealable)

Designation of the line
9 ... 9th line column A

Explanatory notes
on the coordinate

7.2 Device-Specific Functions

7.2.1 GC Mode

GC Mode

↓ Direct access

		GC Mode	Function key		
		A / 01	**Coordinate**	**Unit**	**Comment(s)**
1	**D**	PGC activity	Heading		
2	**C**	mode	GC 9000 VC oper. mode: AUTORUN / REF-GAS / EZCHROM / STOP / BASIC-CAL / NORM-CAL		1)
3	**C**	run	Internal status message		
9	**C**	Hs unit	Switching the unit for Hs (MJ/m^3 or kWh/m^3)		1)
10	**C**	I-Mode	Fault mode of current outputs: NAMUR / DEF. VAL / MEAS. VAL		1) 2)
11	**C**	day starts at:	Start of day (0 to 12 am)		
14	**D**	resp.fact.at.zero	Heading		
15	**S**	N2	Response factor determined during basic calibration		
16	**S**	Meth	Response factor determined during basic calibration		
17	**S**	CO2	Response factor determined during basic calibration		
18	**S**	Eth	Response factor determined during basic calibration		
19	**S**	Prop	Response factor determined during basic calibration		
20	**S**	iBut	Response factor determined during basic calibration		
21	**S**	nBut	Response factor determined during basic calibration		
22	**S**	neoP	Response factor determined during basic calibration		
23	**S**	i-Pe	Response factor determined during basic calibration		
24	**S**	n-Pe	Response factor determined during basic calibration		
25	**S**	C6+	Response factor determined during basic calibration		

1) Rolling texts! Press the **SELECT** key to make your changes.

2) Fault mode of current outputs:

NAMUR	current output:	is switched to 0 or 3 mA (0/4 ... 20 mA mode)
	display:	M2 to M6 are set to default values
MEAS. VAL	current output:	the last measured value is held
	display:	M2 to M6, the last measured value is held
DEF.VAL	current output:	the default values (M8, M11, M14, M17) are used
	display:	M2 to M6, the default values (M8, M11, M14, M17) are used

Note: You can switch the mode at any time. Due to the fact that the measuring gas is in the column, the current analysis cannot be interrupted, i.e. an internal mode switching will only be performed at the end of the current analysis.

7.2.2 Calibration Values

☞ GC Mode

Indirect access by pressing the → key

			Function key		
		B / 02	**Coordinate**	**Unit**	**Comment(s)**
1	**D**	Calibration values	Heading		
2	**D**	new response factor	Heading		
3	**D**	N2	Response factor after calibration for nitrogen		
4	**D**	Meth	Response factor after calibration for methane		
5	**D**	CO2	Response factor after calibration for carbon dioxide		
6	**D**	Eth	Response factor after calibration for ethane		
7	**D**	Prop	Response factor after calibration for propane		
8	**D**	iBut	Response factor after calibration for i-butane		
9	**D**	nBut	Response factor after calibration for n-butane		
10	**D**	neoP	Response factor after calibration for neo-pentane		
11	**D**	i-Pe	Response factor after calibration for i-pentane		
12	**D**	n-Pe	Response factor after calibration for n-pentane		
13	**D**	C6+	Response factor after calibration for C6+		
14	**D**	new retention time	Heading		
15	**D**	N2	New retention time for nitrogen		
16	**D**	Meth	New retention time for methane		
17	**D**	CO2	New retention time for carbon dioxide		
18	**D**	Eth	New retention time for ethane		
19	**D**	Prop	New retention time for propane		
20	**D**	iBut	New retention time for i-butane		
21	**D**	nBut	New retention time for n-butane		
22	**D**	neoP	New retention time for neo-pentane		
23	**D**	i-Pe	New retention time for i-pentane		
24	**D**	n-Pe	New retention time for n-pentane		
25	**D**	C6+	New retention time for C6+		
26	**D**	retent. time at zero	Heading		
27	**D**	N2	Retention time from the method for nitrogen		
28	**D**	Meth	Retention time from the method for methane		
29	**D**	CO2	Retention time from the method for carbon dioxide		
30	**D**	Eth	Retention time from the method for ethane		
31	**D**	Prop	Retention time from the method for propane		
32	**D**	iBut	Retention time from the method for i-butane		
33	**D**	nBut	Retention time from the method for n-butane		
34	**D**	neoP	Retention time from the method for neo-pentane		
35	**D**	i-Pe	Retention time from the method for i-pentane		
36	**D**	n-Pe	Retention time from the method for n-pentane		
37	**D**	C6+	Retention time from the method for C6+		
38	**D**	last calibration	Heading		
39	**D**	date / time	Indication of date and time of last calibration		

7.2.3 Multi-Level Coefficients

☞ GC Mode

Indirect access by pressing the → key twice

			Function key		
		C / 03	**Coordinate**	**Unit**	**Comment(s)**
1	**D**	Multi-level coeff.	Heading		
2	**D**	N2 A	A - Coefficient for calculating the concentration of nitrogen		1)
3	**D**	N2 B	B - Coefficient for calculating the concentration of nitrogen		1)
4	**D**	N2 C	C - Coefficient for calculating the concentration of nitrogen		1)
5	**D**	N2 D	D - Coefficient for calculating the concentration of nitrogen		1)
6	**D**	Meth A	A - Coefficient for calculating the concentration of methane		1)
7	**D**	Meth B	B - Coefficient for calculating the concentration of methane		1)
8	**D**	Meth C	C - Coefficient for calculating the concentration of methane		1)
9	**D**	Meth D	D - Coefficient for calculating the concentration of methane		1)
10	**D**	CO2 A	A - Coefficient for calculating the concentration of carbon dioxide		1)
11	**D**	CO2 B	B - Coefficient for calculating the concentration of carbon dioxide		1)
12	**D**	CO2 C	C - Coefficient for calculating the concentration of carbon dioxide		1)
13	**D**	CO2 D	D - Coefficient for calculating the concentration of carbon dioxide		1)
14	**D**	Eth A	A - Coefficient for calculating the concentration of ethane		1)
15	**D**	Eth B	B - Coefficient for calculating the concentration of ethane		1)
16	**D**	Eth C	C - Coefficient for calculating the concentration of ethane		1)
17	**D**	Eth D	D - Coefficient for calculating the concentration of ethane		1)
18	**D**	Prop A	A - Coefficient for calculating the concentration of propane		1)
19	**D**	Prop B	B - Coefficient for calculating the concentration of propane		1)
20	**D**	Prop C	C - Coefficient for calculating the concentration of propane		1)
21	**D**	Prop D	D - Coefficient for calculating the concentration of propane		1)
22	**D**	iBut A	A - Coefficient for calculating the concentration of i-butane		1)
23	**D**	iBut B	B - Coefficient for calculating the concentration of i-butane		1)
24	**D**	iBut C	C - Coefficient for calculating the concentration of i-butane		1)
25	**D**	iBut D	D - Coefficient for calculating the concentration of i-butane		1)
26	**D**	nBut A	A - Coefficient for calculating the concentration of n-butane		1)
27	**D**	nBut B	B - Coefficient for calculating the concentration of n-butane		1)
28	**D**	nBut C	C - Coefficient for calculating the concentration of n-butane		1)
29	**D**	nBut D	D - Coefficient for calculating the concentration of n-butane		1)
30	**D**	neoP A	A - Coefficient for calculating the concentration of neo-pentane		1)
31	**D**	neoP B	B - Coefficient for calculating the concentration of neo-pentane		1)
32	**D**	neoP C	C - Coefficient for calculating the concentration of neo-pentane		1)
33	**D**	neoP D	D - Coefficient for calculating the concentration of neo-pentane		1)
34	**D**	i-Pe A	A - Coefficient for calculating the concentration of i-pentane		1)
35	**D**	i-Pe B	B - Coefficient for calculating the concentration of i-pentane		1)
36	**D**	i-Pe C	C - Coefficient for calculating the concentration of i-pentane		1)
37	**D**	i-Pe D	D - Coefficient for calculating the concentration of i-pentane		1)
38	**D**	n-Pe A	A - Coefficient for calculating the concentration of n-pentane		1)
39	**D**	n-Pe B	B - Coefficient for calculating the concentration of n-pentane		1)
40	**D**	n-Pe C	C - Coefficient for calculating the concentration of n-pentane		1)
41	**D**	n-Pe D	D - Coefficient for calculating the concentration of n-pentane		1)
42	**D**	C6+ A	A - Coefficient for calculating the concentration of C6+		1)
43	**D**	C6+ B	B - Coefficient for calculating the concentration of C6+		1)
44	**D**	C6+ C	C - Coefficient for calculating the concentration of C6+		1)
45	**D**	C6+ D	D - Coefficient for calculating the concentration of C6+		1)

1) Concentration [n] = A + B x (Area [n]) + C x $(\text{Area }[n])^2$ + D x $(\text{Area }[n])^3$
These coefficients are determined during basic calibration.

7.2.4 Calibration Data

☞ GC Mode

Indirect access by pressing the → key three times

			Function key		
		D / 04	**Coordinate**	**Unit**	**Comment(s)**
1	**D**	calibration data	Heading		
2	**D**	number	Number of calibration runs already completed		
3	**S**	time	Time of calibration	hh:mm:sss	1)
4	**S**	date	Date of calibration	DD-MM-YY	1)
5	**S**	interv.	Calibration interval in days (1-32)		1)
6	**S**	total number	Number of calibration runs per calibration cycle (3-20)		
7	**S**	averaging from	First usable calibration run (3-20)		
11	**D**	cal. gas concentr.	Heading		
12	**S**	N2	Specified value for the nitrogen concentration of the calibration gas	%	
13	**S**	Meth	Specified value for the methane concentration of the calibration gas	%	
14	**S**	CO2	Specified value for the carbon dioxide concentr. of the calibration gas	%	
15	**S**	Eth	Specified value for the ethane concentration of the calibration gas	%	
16	**S**	Prop	Specified value for the propane concentration of the calibration gas	%	
17	**S**	iBut	Specified value for the i-butane concentration of the calibration gas	%	
18	**S**	nBut	Specified value for the n-butane concentration of the calibration gas	%	
19	**S**	neoP	Specified value for the neo-pentane concentration of the calibration gas	%	
20	**S**	i-Pe	Specified value for the i-pentane concentration of the calibration gas	%	
21	**S**	n-Pe	Specified value for the n-pentane concentration of the calibration gas	%	
22	**S**	C6+	Specified value for the C6+ concentration of the calibration gas	%	
23	**S**	Hs	Superior calorific value of the calibration gas	2)	
24	**S**	rho	Standard density of the calibration gas	kg/m³	
26	**D**	fixed components	Heading		
27	**S**	He	Set value for "fixed" concentrations in the gas to be analyzed	%	3)
28	**S**	O2	Set value for "fixed" concentrations in the gas to be analyzed	%	3)
29	**S**	H2	Set value for "fixed" concentrations in the gas to be analyzed	%	3)
30	**S**	Ar	Set value for "fixed" concentrations in the gas to be analyzed	%	3)
32	**D**	viscosity	Heading		
33	**D**	A	A Coefficient to correct dependence on viscosity		
34	**D**	B	B Coefficient to correct dependence on viscosity		
35	**D**	C	C Coefficient to correct dependence on viscosity		
36	**D**	D	D Coefficient to correct dependence on viscosity		

1) You can deactivate calibration by entering an invalid time (e.g. 24-00-00, 99-99-99).
The interval takes priority over the date, i.e. if no valid calibration date is found after the calibration interval has elapsed, calibration is performed nevertheless.
After calibration has been performed, the current date is written into the coordinate D 4.
Calibration does not interrupt an analytical run, so that it may be delayed by several minutes.

2) You can switch the unit via the coordinate A 9.

3) These components are always at zero (in the mode approved by the German Office of Weights and Measures)

7.2.5 Mean Values

Mean Values

↓ Direct access

			Function key		
		E / 05	**Coordinate**	**Unit**	**Comment(s)**
1	**D**	mean values	Heading		
2	**D**	MV:	MV: xy_z-10.08.94_03		1) 2)
3	**D**	selection:	Selection: MM / TM / SM (monthly / daily / hourly mean values)		2) 3)
6	**C**	delete (!):	Selection: Yes / No		4)
9	**D**	Hs		MJ/m3	2)
10	**D**	Hi		MJ/m3	2)
11	**D**	Wo		MJ/m3	2)
12	**D**	rho		kg/m3	2)
13	**D**	d			2)
14	**D**	CO2		%	2)
15	**D**	Error	Display: Yes / No		2)
16	**D**	No	The number of the input in the mean-value memory		2)

1) xy = Number of measured values
z = H: Hourly mean values
D: Daily mean values
M: Monthly mean values

2) Scrolling is possible by pressing the cursor keys (right / left).

3) Rolling texts! Press the **SELECT** key to make your changes.

4) Delete YES: The complete mean-value memory will be deleted.

Description:
After you have selected the E column by pressing the appropriate function key, you can scroll in the mean-value memory by pressing the cursor keys (arrow to the right / left).

If you have NOT reached the E column by pressing the appropriate function key, the cursor keys (arrow to the right / left) will fulfill their normal function (i.e. scrolling in the matrix).

7.2.6 Current Outputs

Mean Values

Direct access

↓ → → →

		Output F / 06	Output G / 07	Output H / 08	Output I / 09	Function key Coordinate	Unit	Comment(s)
1	**D**	I1A	I2A	I3A	I4A	Physical value for output n	variable	5)
2	**D**	I1	I2	I3	I4	Indication of current for output n	mA	5)
3	**S**	A1<	A2<	A3<	A4<	Lower limiting value for output n	variable	2)
4	**S**	A1>	A2>	A3>	A4>	Upper limiting value for output n	variable	2)
5	**S**	I1E	I2E	I3E	I4E	Calibrating current default value	mA	3)
6	**S**	A1A	A2A	A3A	A4A	Selection of coordinate		4)
7	**S**	I1-K	I2-K	I3-K	I4-K	Correction factor (D/A converter)		
8	**S**	I1-M	I2-M	I3-M	I4-M	Averaging factor (damping)		
9	**S**	I1-mod	I2-mod	I3-mod	I4-mod	Mode: operating mode = Off / 0-20mA / 4-20mA / calib. current		1)
10	**S**				I4-P	Programming mode: calibration switch / user code I 1234 – user I 4 – FRONTKEY I 34 – FRONTKEY I 234 – FRONTKEY I 1234 FRONTKEY		

1) Rolling texts! Press the **SELECT** key to make your changes.
2) Assigning physical limits to 0/4 mA or 20 mA.
3) If the "calibration" mode is selected under I(n) mod, the corresponding output (n) operates as a current transmitter. The current default value for this field will be outputted.
4) Selection of the measured value to be outputted as current. Preselect the value via its coordinate. Example: see Annex B.
5) If a fault occurs, the current displayed will not correspond to the converted physical value. Depending on the set mode, the current will be calculated from the default value or the last measured value, or it will be zero (0).

7.2.7 Interfaces

☞ GC Mode

Indirect access by pressing the ← key

			Function key		
		J / 10	Coordinate	Unit	Comment(s)
1	D	Front-RS232	Heading		
2	C	baudrate:	Bit rate (300, 1200, 2400, 4800, 9600) RS 232		1)
3	C	databit:	Setting 7 / 8 data bits		1)
4	C	parity:	Parity bit setting (even, odd, no)		1)
6	D	C1-RS232	Heading		
7	C	baudrate:	Bit rate (2400, 4800, 9600, 19200) RS 232		1)
8	C	databit:	Setting 7 / 8 data bits		1)
9	C	parity:	Parity bit setting (even, odd, no)		1)
10	D	Printer	Heading		
11	C	mode	Target device setting (terminal, Epson, HP DeskJet , Data storage, DS901)		1) 2)
12	C	baudrate:	Bit rate (300, 1200, 2400, 4800, 9600, 19200) RS 232		1)
13	C	databit:	Setting 7 / 8 data bits		1)
14	C	parity:	Parity bit setting (even, odd, no)		1)
15	D	Bus interface	Heading		
16	S	baudrate:	Bit rate (300, 1200, 2400, 4800, 9600, 19200) RS 485		
17	S	databit:	Setting 7 / 8 data bits		
18	S	parity:	Parity bit setting (even, odd, no)		
19	S	mode	Selection of bus type (e.g. RMG-Bus)		3)
20	D	status text	Status indications		
21	D	C4-Laptop	Heading		
22	D	baudrate:	Bit rate (300, 1200, 2400, 4800, 9600, 19200) RS 232		
23	D	databit:	Setting 7 / 8 data bits		
24	D	parity:	Parity bit setting (even, odd, no)		
26	D	C5-CP4002	Heading		
27	D	baudrate:	Bit rate (300, 1200, 2400, 4800, 9600, 19200) RS 232 / 485		
28	D	databit:	Setting 7 / 8 data bits		
29	D	parity:	Parity bit setting (even, odd, no)		

1) Rolling texts! Press the **SELECT** key to make your changes.

2) A "serial/parallel converter" may be necessary (for HP DeskJet).

3) A change of this mode is only possible via DIL switches (on the CPU card).
Possible Settings: RMG-BUS, DSfG-BUS, RMG-BUS-E and OFF

7.2.8 Gas Components

Gas Comp.

↓ Direct access

		Gas Components	Function key		
		K / 11	**Coordinate**	**Unit**	**Comment(s)**
1	**D**	components	Heading		
2	**D**	N2	Concentration after normalization	%	
3	**D**	Meth	Concentration after normalization	%	
4	**D**	CO2	Concentration after normalization	%	
5	**D**	Eth	Concentration after normalization	%	
6	**D**	Prop	Concentration after normalization	%	
7	**D**	iBut	Concentration after normalization	%	
8	**D**	nBut	Concentration after normalization	%	
9	**D**	neoP	Concentration after normalization	%	
10	**D**	i-Pe	Concentration after normalization	%	
11	**D**	n-Pe	Concentration after normalization	%	
12	**D**	C6+	Concentration after normalization	%	
13	**D**	He	Concentration after normalization (fixed value see D-27)	%	
14	**D**	O2	Concentration after normalization (fixed value see D-28)	%	
15	**D**	H2	Concentration after normalization (fixed value see D-29)	%	
16	**D**	Ar	Concentration after normalization (fixed value see D-30)	%	
18	**D**	unnorm. sum:	Sum of concentrations prior to normalization	%	
20	**D**	area	Heading		
21	**D**	N2	Area of the gas peak in the chromatogram		
22	**D**	Meth	Area of the gas peak in the chromatogram		
23	**D**	CO2	Area of the gas peak in the chromatogram		
24	**D**	Eth	Area of the gas peak in the chromatogram		
25	**D**	Prop	Area of the gas peak in the chromatogram		
26	**D**	iBut	Area of the gas peak in the chromatogram		
27	**D**	nBut	Area of the gas peak in the chromatogram		
28	**D**	neoP	Area of the gas peak in the chromatogram		
29	**D**	i-Pe	Area of the gas peak in the chromatogram		
30	**D**	n-Pe	Area of the gas peak in the chromatogram		
31	**D**	C6+	Area of the gas peak in the chromatogram		
32	**D**	sum cal	Sum of all areas for calibration		
33	**S**	sum b-cal	Sum of all areas for basic calibration		

7.2.9 Maximum Values

Max.
Values

↓ Direct access

		Cal. value	Function key		
		L / 12	Coordinate	Unit	Comment(s)
1	D	day-max	Heading		
2	D	Hs	Hourly max. value per day	MJ/m3	
3	D	day-min	Heading		
4	D	Hs	Hourly min. value per day	MJ/m3	
7	D	mon-max	Heading		
8	D	Hs	Hourly max. value per month	MJ/m3	
9	D	mon-min	Heading		
10	D	Hs	Hourly min. value per month	MJ/m3	

In the mode GC-9000 Multistream theese min. / max. values are available only for stream 1!

7.2.10 Superior Calorific Value, Wobbe Index, Standard Density

Cal. Val.
S. Density
Wobbe

↓ Direct access

		Hs/Wo/rho	Function key		
		M / 13	Coordinate	Unit	Comment(s)
1	D	meas. gas stream	Heading (values of the last analysis of the meas. gas) and stream no.		
2	D	Hs	Super. cal. value of the measuring gas determ. via the gas concent.		1) 2)
3	D	Ws	Sup. Wobbe index of the measuring gas determ. via the gas concentr.		1) 2)
4	D	rho	rho of the measuring gas determined via the gas concentrations	kg/m3	2)
5	D	d	d of the measuring gas determined via the gas concentrations		2)
6	D	CO2	Carbon dioxide concentration of the measuring gas	%	
7	D	Hi	Infer. cal. value of the measuring gas determ. via the gas concent.		1) 2)
8	D	Wi	Inf. Wobbe index of the measuring gas determ. via the gas concentr.		1) 2)
9	D	Zn	Real gas factor of the measuring gas determ. via the gas concentr.		
10	D	MZ	Methane number of the measuring gas determ. via the gas concentr.		5)
12	S	MZ-d	MZ default value for MZ min / max error		3) 5)
13	S	MZ <	Lower limiting value for the methane number of the meas. gas		5)
14	S	MZ >	Upper limiting value for the methane number of the meas. gas		5)
15	S	Hs-d	Hs default value for Hs min / max error		3)
16	S	Hs <	Lower limiting value for the superior calorific val. of the meas. gas		1)
17	S	Hs >	Upper limiting value for the superior calorific val. of the meas. gas		1)
18	S	CO2-d	CO_2 default value for CO_2 min / max error	%	3)
19	S	CO2 <	Lower limiting value for CO_2 concentration of the measuring gas	%	
20	S	CO2 >	Upper limiting value for CO_2 concentration of the measuring gas	%	
21	S	Wo-d	Wo default value for Wo min / max error		1) 3)
22	S	Wo <	Lower limiting value for Wo of the measuring gas		1)
23	S	Wo >	Upper limiting value for Wo of the measuring gas		1)
24	S	rho-d	rho default value for rho min / max error	%	3)
25	S	rho <	Lower limiting value for rho of the measuring gas	%	
26	S	rho >	Upper limiting value for rho of the measuring gas	%	
29	D	Gas values	Heading; values of the last calculation (meas. gas, ref. gas, cal. gas)		
30	D	Job	indicates which data shown in the following coordinates (M31 ... M38)		4)
31	D	Hs	Superior calorific value determined via the gas concentrations		1) 2)
32	D	Ws	Superior Wobbe index determined via the gas concentrations		1) 2)
33	D	rho	rho determined via the gas concentrations	kg/m3	2)
34	D	d	d determined via the gas concentrations		2)
35	D	CO2	Carbon dioxide concentration	%	
36	D	Hi	Inferior calorific value determined via the gas concentrations		1) 2)
37	D	Wi	Inferior Wobbe index determined via the gas concentrations		1) 2)
38	D	Zn	Real gas factor determined via the gas concentrations		
39	D	MZ	Methane number determined via the gas concentrations		

1) You can switch the unit via the coordinate A 9.
2) Calculation and gas-specific constants in accordance with ISO 6976.
3) Also applicable to current outputs (if a fault occurs and “DEF.VAL“ is selected in the coord. A 10).
4) The following “jobs“ are indicated: K-GAS (calibration gas), A_GAS (measuring fas) and R_GAS (reference gas). Additionally to “A-GAS“ the stream no. is displayed.
5) Option, activated by hardware setting in the factory

Note:
The coordinates M31 to M38 always show the calculated values (no default values).
The coordinates M31 to M38 show the results for calibration gas, measuring gas and reference gas.
The coordinates M2 to M9 show the results of the last analysis of the measuring gas.
In case of a fault these coordinates may show measured or default values.
see also coordinates: A10, M8, M11, M14, M17

In case of a multistream PGC the coordinates M2 to M9 show the results of the last analysis of the measuring gas, the stream number is shown in coordinate M01.

7.2.11 GC Status

☞ GC Status

↓ Direct access

		GC Status	Function key		
		N / 14	**Coordinate**	**Unit**	**Comment(s)**
1	**D**	micro GC	Heading		
2	**D**	ready to run	At present always 0		
3	**D**	spec. time	Measuring period	sec	
4	**D**	curr. time	Current duration of analysis (indication 0 to measuring period)	sec	
6	**D**	column temp.	Heading		
7	**D**	A spec.	Specified temperature for column A	°C	
8	**D**	A set.	Actual temperature for column A	°C	
9	**D**	B spec.	Specified temperature for column B	°C	
10	**D**	B set.	Actual temperature for column B	°C	
12	**D**	col. pressure	Heading		
13	**S**	A spec.	Specified pressure for column A	bar	
14	**D**	A set.	Actual pressure for column A	bar	
15	**S**	B spec.	Specified pressure for column B	bar	
16	**D**	B set.	Actual pressure for column B	bar	
18	**D**	permis. deviations	Heading		
19	**S**	temperature:	Permissible deviation of column temperatures A and B	%	
20	**S**	pressure:	Permissible deviation of column pressures A and B	%	
21	**S**	Hs:	Permissible deviation of the superior calorific value (measuring gas)	%	
22	**S**	rho:	Permissible deviation of the standard density (measuring gas)	%	
23	**S**	retent. time:	Permissible deviation of the retention time	%	
24	**S**	resp. factor:	Permissible deviation of the response factor	%	
25	**S**	unnorm. sum:	Permissible deviation of the unnormalized sum	%	
26	**S**	CO2:	Permissible deviation of the CO_2 concentration (measuring gas)	%	
27	**S**	total area	Permissible deviation of the total area between calibration / basic calib.	%	
28	**D**	Parameters	Heading		
29	**C**	sample fact.	Sample time factor		1)

1) This factor results in an acceleration of the gas change.
The sample time can be between 0 and 255 seconds.

2) The line system including the injector (sample loop) is continuously swept.

7.2.12 Print

Print
⇒ Mode

↓ Direct access

		Print	Function key		
		O / 15	Coordinate	Unit	Comment(s)
1	D	print	Heading		
2	C	select.:	Selection of print report		1)
4	C	every	To define after how many analyses printing is to be performed		
5	C	scale-A cal	To format graphic data of channel A calibration gas		2)
6	C	scale-B cal	To format graphic data of channel B calibration gas		2)
7	C	scale-A ana	To format graphic data of channel A gas for analysis		2)
8	C	scale-B ana	To format graphic data of channel B gas for analysis		2)
9	C	manual print	On / Off		
10	C	auto. print	On / Off		
11	C	cal. print	Reduced / complete / all		3)
12	S	data logger	Interface to connect data logger		4)

1) Menu:

CHANNEL	Channel report
GRAPH-CAL	Graphical printout for the calibration gas
GRAPH-MEAS.	Graphical printout for the measuring gas
CALIB	Calibration report
H-VALUES	Hourly mean values
D-VALUES	Daily mean values
M-VALUES	Monthly mean values
FORMFEED	begins a new page with heading
NONE	

2) The graphic data are stored in compressed form so that they can be accessed at any time. The values for scale_A and scale_B can only be applied to uncompressed data, i.e. any changes of these values will not be taken into account before the next analysis is made.

3) REDUCED: Only the data for fiscal metering (Hs, rho) are printed
COMPLETE: **In addition** the gas components are printed
ALL: After a calibration every chromatogram will be printed. (coordinate O-04 should be = 1)

After an analysis of the measuring gas where data are printed, every chromatogram will be printed.

After an analysis of the reference gas every chromatogram will be printed.

4) C2: For data logger type DS 900 or printer
DSfG: For MRG 2201, MRG 2202 or MRG 2203

7.2.13 Date

☞ Date

↓ Direct access

		Date	Function key		
		P / 16	Coordinate	Unit	Comment(s)
1	D	calendar	Heading		
2	S	date:	Calendar date	DD-MM-YY	
3	D	day no.	1 - 365 or 366		

7.2.14 Time

☞ Time

↓ Direct access

		Time	Function key		
		Q / 17	Coordinate	Unit	Comment(s)
1	D	clock	Heading		
2	S	time:	Time of day	hh:mm:ss	
3	C	GC id:	GC identification		

7.2.15 Fault

☞ Fault

↓ Direct access

		Fault	Function key		
		R / 18	Coordinate	Unit	Comment(s)
1	D	error	Heading		
2	D	Fault display	Fault indication at one-second intervals		
3	D	f.-time:	Time of the first fault occurring		
4	D	f.-date:	Date of the first fault occurring		
5	D	clear fault ?	Fault reset via the ENTER key		
17	D	clearing mode	Fault clearing mode = direct / indirect		

7.2.16 Inputs

Time

Indirect access by pressing the → key twice

			Function key		
		S / 19	**Coordinate**	**Unit**	**Comment(s)**
1	**D**	DSFG	Heading		
2	**S**	address:	DSfG bus address		
3	**S**	preset:	Preset for CRC		
4	**S**	delete	Deletes the DSfG-archives		
5	**C**	Ref.Cnt	Number of reference gas analyses if started per DSfG		
10	**D**	Multistream	Heading		
11	**C**	Mode:	Mode of multistream (off / 1:1 / binary / list / special)		1) 3)
12	**C**	L:	Succession of the streams (as a list)		3)
13	**C**	Count:	Number of analysis runs per stream		3)
14	**C**	n:	After the switch to the next stream “n“ analysis runs will be cancelled (dummys)		3)
20	**D**	Curr. stream	Number of the stream which is presently analyzed		2)

1) Mode:
- OFF — PGC 9000 VC works with only one measuring gas
- LIST — PGC 9000 VC works with the list in coordinate S12
- 1:1 — External signals are used for switching the streams
- BINARY — External signals are used for switching the streams
- SPECIAL — Switching according to customer´s specification

(see Annex MULTISTREAM)

2) This stream number shows, which stream is analyzed at the moment and may be different from the stream number in column and from the valve position.

3) It is necessary, to make changes of these parameters in the correct order! For this see Annex MULTISTREAM.

Input

↓ Direct access

		Input	Input	Function key		
		T / 20	**U / 21**	**Coordinate**	**Unit**	**Comment(s)**
1	**D**	carrier gas	gas for analysis	Heading		
2	**D**	P =	P =	Measured value	bar	
3	**D**	I =	I =	Measured value	mA	
4	**S**	P <	P <	Lower adjusting value	bar	
5	**S**	P >	P >	Upper adjusting value	bar	
6	**S**	P-s	P-s	Specified value	bar	
7	**S**	P-d	P-d	Permissible deviation from the specified value	%	
8	**S**	P-c	P-c	Correction factor: A/D converter adjustment		
9	**S**	Mode	Mode	Mode: 0-20 mA / 4-20 mA / Off (no monitoring of specified values)		1)
10	**S**		Err. Time	Period of time for which an analysis error will be suppressed, e.g. after a stream switch	sec	

1) Rolling texts! Press the SELECT key to make your changes.

7.2.17 Gas Constants

7.2.17.1 Specific Superior Calorific Value / Molar Mass

☞ Input

Indirect access by pressing the → key twice

			Function key		
		V / 22	**Coordinate**	**Unit**	**Comment(s)**
1	**D**	Hs (j)	Heading	MJ/kmol	
2	**D**	N2	Specific superior calorific value (ISO 6976)		
3	**D**	Meth	Specific superior calorific value (ISO 6976)		
4	**D**	CO2	Specific superior calorific value (ISO 6976)		
5	**D**	Eth	Specific superior calorific value (ISO 6976)		
6	**D**	Prop	Specific superior calorific value (ISO 6976)		
7	**D**	iBut	Specific superior calorific value (ISO 6976)		
8	**D**	nBut	Specific superior calorific value (ISO 6976)		
9	**D**	neoP	Specific superior calorific value (ISO 6976)		
10	**D**	i-Pe	Specific superior calorific value (ISO 6976)		
11	**D**	n-Pe	Specific superior calorific value (ISO 6976)		
12	**D**	C6+	Specific superior calorific value (ISO 6976)		
13	**D**	He	Specific superior calorific value (ISO 6976)		
14	**D**	O2	Specific superior calorific value (ISO 6976)		
15	**D**	H2	Specific superior calorific value (ISO 6976)		
16	**D**	Ar	Specific superior calorific value (ISO 6976)		
17	**D**	mol. m. (j)	Heading	kg/kmol	
18	**D**	N2	Specific molar mass (ISO 6976)		
19	**D**	Meth	Specific molar mass (ISO 6976)		
20	**D**	CO2	Specific molar mass (ISO 6976)		
21	**D**	Eth	Specific molar mass (ISO 6976)		
22	**D**	Prop	Specific molar mass (ISO 6976)		
23	**D**	iBut	Specific molar mass (ISO 6976)		
24	**D**	nBut	Specific molar mass (ISO 6976)		
25	**D**	neoP	Specific molar mass (ISO 6976)		
26	**D**	i-Pe	Specific molar mass (ISO 6976)		
27	**D**	n-Pe	Specific molar mass (ISO 6976)		
28	**D**	C6+	Specific molar mass (ISO 6976)		
29	**D**	He	Specific molar mass (ISO 6976)		
30	**D**	O2	Specific molar mass (ISO 6976)		
31	**D**	H2	Specific molar mass (ISO 6976)		
32	**D**	Ar	Specific molar mass (ISO 6976)		
34	**D**	low. lim. comp.	Heading		
35	**S**	N2	Lower limit of concentration	%	1)
36	**S**	Meth	Lower limit of concentration	%	1)
37	**S**	CO2	Lower limit of concentration	%	1)
38	**S**	Eth	Lower limit of concentration	%	1)
39	**S**	Prop	Lower limit of concentration	%	1)
40	**S**	iBut	Lower limit of concentration	%	1)
41	**S**	nBut	Lower limit of concentration	%	1)
42	**S**	neoP	Lower limit of concentration	%	1)
43	**S**	i-Pe	Lower limit of concentration	%	1)
44	**S**	n-Pe	Lower limit of concentration	%	1)
45	**S**	C6+	Lower limit of concentration	%	1)

1) A fault will occur if this limit is violated downwards. This will not have any effect on further analyses.

7.2.17.2 Specific Inferior Calorific Value

☞ Input

Indirect access by pressing the → key three times

			Function key		
		W / 23	**Coordinate**	**Unit**	**Comment(s)**
1	**D**	Hi (j)	Heading	MJ/kmol	
2	**D**	N2	Specific inferior calorific value (ISO 6976)		
3	**D**	Meth	Specific inferior calorific value (ISO 6976)		
4	**D**	CO2	Specific inferior calorific value (ISO 6976)		
5	**D**	Eth	Specific inferior calorific value (ISO 6976)		
6	**D**	Prop	Specific inferior calorific value (ISO 6976)		
7	**D**	iBut	Specific inferior calorific value (ISO 6976)		
8	**D**	nBut	Specific inferior calorific value (ISO 6976)		
9	**D**	neoP	Specific inferior calorific value (ISO 6976)		
10	**D**	i-Pe	Specific inferior calorific value (ISO 6976)		
11	**D**	n-Pe	Specific inferior calorific value (ISO 6976)		
12	**D**	C6+	Specific inferior calorific value (ISO 6976)		
13	**D**	He	Specific inferior calorific value (ISO 6976)		
14	**D**	O2	Specific inferior calorific value (ISO 6976)		
15	**D**	H2	Specific inferior calorific value (ISO 6976)		
16	**D**	Ar	Specific inferior calorific value (ISO 6976)		
17	**D**	Constants	Heading		
18	**D**	Z a	Z Air (ISO 6976)	I	
19	**D**	M a	Molar mass of air (ISO 6976)	kg/kmol	
20	**D**	R	Molar gas constant (ISO 6976)	J/mol Kl	
21	**D**	tn	Reference temperature for standard condition	°C	
22	**D**	tB	Reference temperature for combustion	°C	2)
23	**D**	Pn	Standard pressure	kPas	
34	**D**	upp. lim. comp	Heading		
35	**S**	N2	Upper limit of concentration	%	1)
36	**S**	Meth	Upper limit of concentration	%	1)
37	**S**	CO2	Upper limit of concentration	%	1)
38	**S**	Eth	Upper limit of concentration	%	1)
39	**S**	Prop	Upper limit of concentration	%	1)
40	**S**	iBut	Upper limit of concentration	%	1)
41	**S**	nBut	Upper limit of concentration	%	1)
42	**S**	neoP	Upper limit of concentration	%	1)
43	**S**	i-Pe	Upper limit of concentration	%	1)
44	**S**	n-Pe	Upper limit of concentration	%	1)
45	**S**	C6+	Upper limit of concentration	%	1)

1) A fault will occur if this limit is exceeded. This will not have any effect on further analyses.
2) This temperature (tB) shows the reference temperature of the table values (spec. Hs, Hi, ...).

7.2.17.3 Specific Value Root B

☞ Input

Indirect access by pressing the → key four times

			Function key		
		X / 24	**Coordinate**	**Unit**	**Comment(s)**
1	**D**	root B (j)	Heading		
2	**D**	N2	Specific value root B (ISO 6976)		
3	**D**	Meth	Specific value root B (ISO 6976)		
4	**D**	CO2	Specific value root B (ISO 6976)		
5	**D**	Eth	Specific value root B (ISO 6976)		
6	**D**	Prop	Specific value root B (ISO 6976)		
7	**D**	iBut	Specific value root B (ISO 6976)		
8	**D**	nBut	Specific value root B (ISO 6976)		
9	**D**	neoP	Specific value root B (ISO 6976)		
10	**D**	i-Pe	Specific value root B (ISO 6976)		
11	**D**	n-Pe	Specific value root B (ISO 6976)		
12	**D**	C6+	Specific value root B (ISO 6976)		
13	**D**	He	Specific value root B (ISO 6976)		
14	**D**	O2	Specific value root B (ISO 6976)		
15	**D**	H2	Specific value root B (ISO 6976)		
17	**D**	Ar	Specific value root B (ISO 6976)		

7.2.18 Mode

Input

Indirect access by pressing the → key five times

			Function key		
		Y / 25	**Coordinate**	**Unit**	**Comment(s)**
1	**D**	PGC 9000 VC	Heading (after Power ON)		
2	**D**	RMG Messtechnik	Heading (after Power ON)		
3	**D**	Mode	Heading		
4	**D**	code:	8-digit code number to enable parameter input		
5	**D**	hours:	Indication of operating hours (counter) since startup		
10	**C**	display mode:	Display mode can be set to 0.5h / 6h - 18h or PERMANENT		
17	**D**	CPU-I:	Checksum of the program memory on CPU-I		
18	**D**	CPU-II:	Checksum of the program memory on CPU-II		
19	**D**	V	Version number of the software on CPU-I		
20	**D**	V	Version number of the software on CPU-II		
21	**C**	GC-no.:	Identification number of the GC (freely settable)		
25	**D**	f-sys	Parameter to adjust internal oscillator frequency	Hz	
26	**D**	f-fd	Parameter to adjust oscillator frequency for density measurement		
27	**D**	lamptest	Lamp test of top line		
28	**D**	lamptest	Lamp test of bottom line		

7.2.19 Status Messages

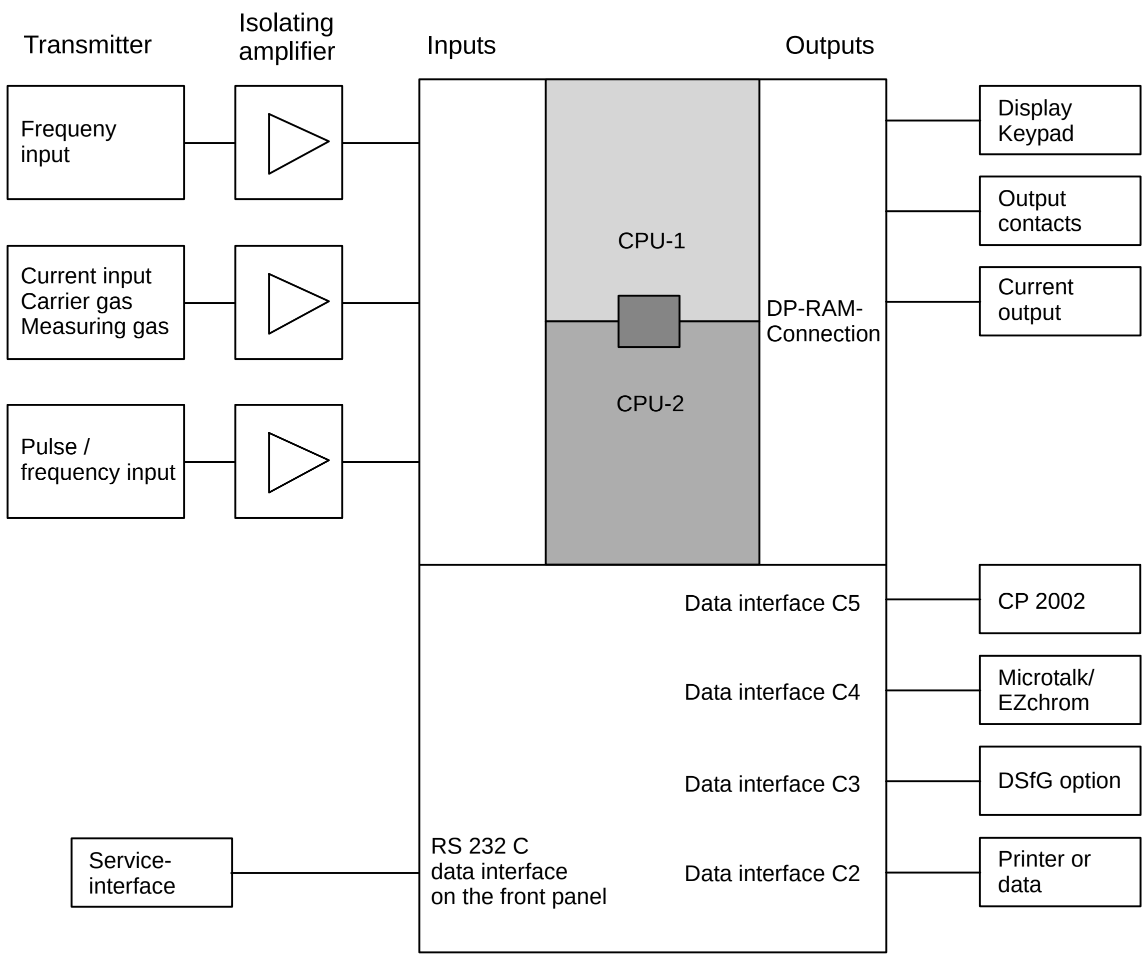
In column Z further informations for analyzing the device are displayed in the following coordinates:

Coordinate Z 15: Status CP 4002
Coordinate Z 16: Status Microtalk
Coordinate Z 17: Status dp-RAM
Coordinate Z 18: Status ext. RMG BUS

You get the status messages only if the corresponding mode is active.

Note:
If you are working with the Microtalk program, the coordinate Z 16 gives you actual informations on the data transfer. If Microtalk is not active, this message is not relevant.

Annex A Block Diagram for the GC 9000 VC



Annex B Operating Examples

Displaying measured values and constants.

<u>1st example</u>

Press the **GAS COMP**. key	components N2 10.123 %
Press ↓ twice	components CO2 8.234 %
Press ↓	components Eth 3.254 %
Press → twice	meas. gas values d 0.6478
Press ↑	meas. gas values rho 0.7968 kg/m3

<u>2nd example</u>

Press the **GC STATUS** key	micro GC ready to run 0
Press ↓ three times	column temperature A spec. 50.00 °C
Press ↓ twice	column temperature B spec. 50.00 °C
Press ↓	column pressure A spec. 1.000 bar
Press ↓	column pressure A set. 1.005 bar
Press ↓	column pressure B spec. 1.000 bar

Programming a new constant

You want to change the column pressure for channel A.

Press the **GC STATUS** key	micro GC ready to run 0
Press ↓ seven times	column pressure A spec. 1.000 bar
Set the SWITCH to "Input"	
Press the ENTER key	The bottom line of the display turns darker and the POWER / STANDBY LED flashes at one-second vals to indicate the programming mode.
Press the "1" key	column pressure A spec. 1 bar
Press the "±," "1" "5" and "0" keys consecutively	column pressure A spec. 1.150 bar
Press the **ENTER** key.	column pressure A spec. 1.150 bar — The display turns bright.

Lock the data inputted by means of the "Input" SWITCH.

Programming is completed!

General information about inputting new values:
If a value is locked with the code number (user data), you must first input the correct code number into the field Y4 in the **MODE** function. You can input values either in the short designation or coordinate display mode. Switching over is possible at any time by pressing the **SELECT** key.

Programming current outputs

You can select the desired values in the columns F6, G6, H6, I6 via the **OUTPUT** function key and the cursor keys. To input coordinates, you must input the appropriate digits (A = 01, B = 02, etc.) instead of the letters of the columns concerned (A, B, etc.).

Example: You want to output the Wobbe index (field 3, column M) to current output 1. (Column M corresponds to the number 13.)

1) Press the **OUTPUT** key.
2) Press the ↓ key four times (A1A M-2 is indicated on the bottom line of the display field.)
3) Press the **ENTER** key. (The display switches over to A1A 12-2.)
4) Input the key sequence "1" "3" "3" (for field M3) in the field F6. (The first two digits stand for the column and the third digit stands for the field.)
5) Press the **ENTER** key.

Programming a new mode

You want to change the mode of the GC 9000 VC from AUTORUN to STOP.

Press the GC MODE key

PGC activity mode: AUTORUN

Set the **SWITCH** to "Input".
The POWER / STANDBY LED flashes at one-second intervals to indicate the programming mode, and after you have pressed the **ENTER** key, the bottom line of the display turns darker.

Press the SELECT key twice

PGC activity mode: STOP

Press the ENTER key and lock the input by means of the "input" **SWITCH**.

Enabling programming

a) Code number to enable user access

Press the **GC MODE** key, then the ← key twice and ↓ one time.

Press the ENTER key and input the appropriate digits.

Mode code ****_****

Mode code *

The digits inputted remain invisible. Each digit is marked with an asterisk.

Press the **ENTER** key to complete the data input.

Mode code ****_****

If the code number is correct, the POWER / STANDBY LED on the front panel starts to flash at one-second intervals. If the code number is incorrect, the display returns to

Mode code ****_****

Repeat the operation using the correct code number!

The computer enables you to access user data. To change data, you must select the desired coordinate on the bottom line of the display and press the **ENTER** key. The brightness of the bottom line is reduced to indicate that access to the coordinate field is enabled. If you want to lock the computer again after having completed your programming, press the **CLEAR / FAULT** key twice quickly. If you forget to do so, the computer itself disables access after approx. 30 minutes. It is possible to change the code number if the sealable slide switch is in its "Input" position.

b) Sealed switch for the German Office of Weights and Measures

When the switch is operated, the POWER / STANDBY LED starts to flash at one-second intervals and access to the memories (incl. code number) is enabled. To change data, you must select the desired coordinate on the bottom line of the display and press the **ENTER** key. The brightness of the bottom line is reduced to indicate that access to the coordinate field is enabled.

Annex C Technical Data

Inputs

Analog inputs:	14½-bit resolution corresponding to 20000 steps, accuracy ± 1 bit measuring period approx. 100 ms
Frequency inputs:	23-bit resolution, reciprocal measuring method range from 0.05 Hz to 25 kHz
Digital inputs:	Status signals, passive contact mechanism (relay or open collector), load 5 V 20 mA

Outputs

Analog outputs:	14-bit resolution, accuracy ± 1 bit, load 800 ohms electrically isolated as plug-in module for each output The CPU can optionally be fitted with 1 to 4 analog outputs.
Digital outputs:	Electrically isolated open collector, 24 V 100 mA Fault / Warning Contact assemblies (principle of closed-circuit current), max. 24V 100mA

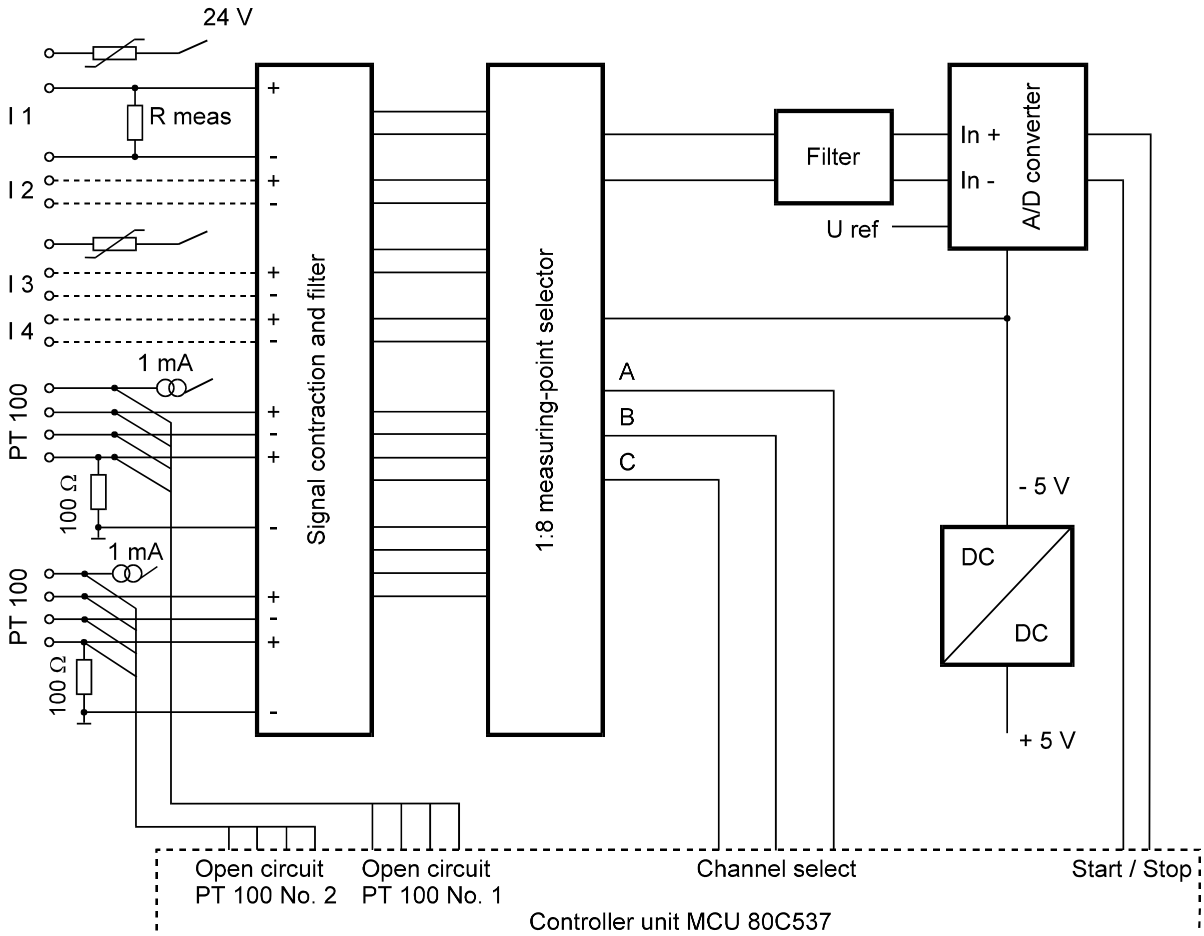
Interfaces

Front panel:	RS 232 C interface, no hardware handshake lines transmission rates from 1200 to 9600 bd 1 start bit, 1 stop bit, 8-bit data, no parity 9-pin subminiature Cannon connector
Rear panel:	Five RS 232 C interfaces (C1 and C2), no hardware handshake lines C1 interface - spare C2 interface - for printer C3 interface - for DSfG option (RS 485) C4 interface - for Microtalk / EZChrom C5 interface - for analytical device (RS 232 or RS 485) transmission rates from 300 to 19200 bd 1 start bit, 1 stop bit, 8-bit data, no parity, 9-pin subminiature Cannon connector

CPU

CPU 1:	80C537 / 12 MHz	
Memory areas:	a) Official data:	non-volatile memory C-MOS RAM 2 kilobytes
	b) User data:	non-volatile memory C-MOS RAM 2 kilobytes
	c) Program memory:	EPROM 64 / 128 kilobytes
CPU 2:	80C186 / 10 MHz	
Memory areas:	Data memory:	64 / 256 kilobytes + DPRAM 2 kilobytes
	Program memory:	EPROM 64 / 786 kilobytes + EEPROM 8 kilobytes

Block diagram of analog inputs



Analog inputs

Dual-slope analog-digital converter with 14½-bit resolution corresponding to 20000 steps. A multiplexer which can sample a maximum of 6 analog inputs is located upstream of the A/D converter. Four inputs are designed for current measurement and two inputs for resistance measurement using four-wire technology with open-circuit monitoring.

Analog outputs

Digital-analog converters with 14-bit resolution. There is one electrically isolated converter for each current output.

Digital outputs

Transistor outputs:	Open collector with protective network limiting values: 24 V 100 mA
Fault / Warning:	Contact assemblies with protective network limiting values: 24 V 100 mA

Interfaces

There are six RS 232 C / RS 485 interfaces. One is located on the front panel and five on the rear panel. The interface on the front panel and the C1 interface are without handshake lines. The rack-mounting unit is fitted with one 9-pin subminiature Cannon connector for each interface. Including back-up fuse, varistor and transient absorber (TAZ diode).

Power supply unit

Standard version	24 V DC	21 V to 27 V
Special version	230 V AC	-10% + 6%
Power input	approx.	31 W

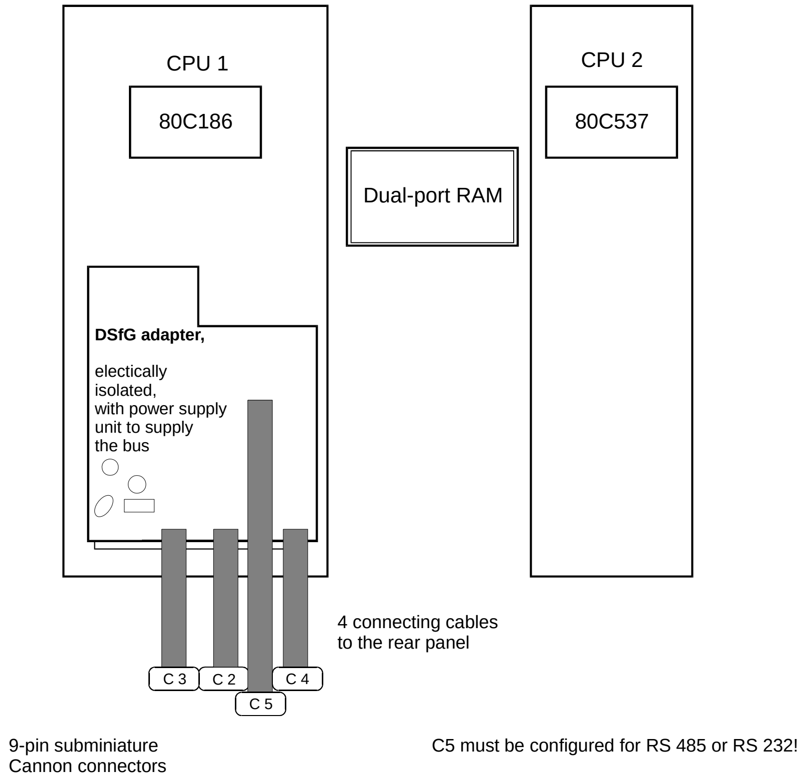
Switched-mode power supply unit with 40 kHz clock frequency. All secondary voltages are electrically isolated from each other. Charging unit for standby battery.

Rack-mounting unit

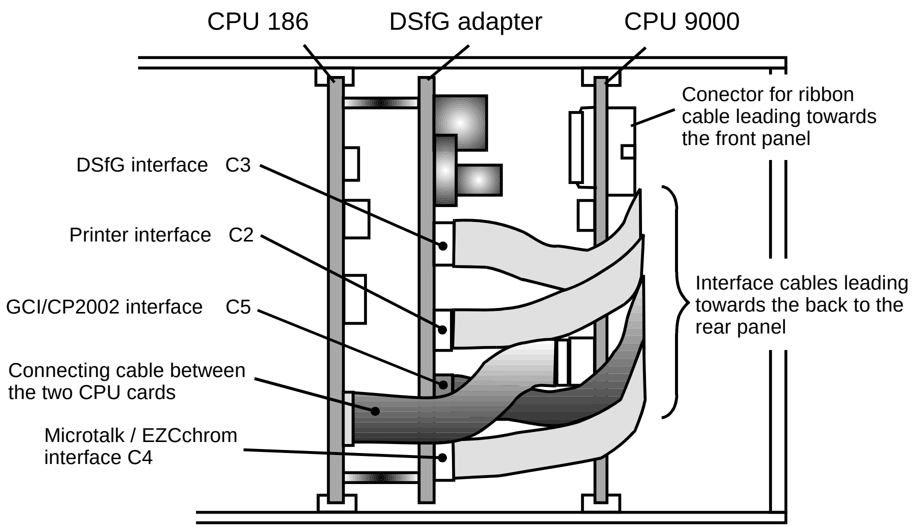
Size:	Height: 3 units / 135 mm Width: 213 mm Depth: 295 mm
Weight:	< 3.0 kg (if 24 V) < 3.5 kg (if 230 V)

Data interface option in accordance with DSfG
The adaptor card for connecting the DSfG interface (standard data communication interface) is plugged onto the back of the turbo CPU card, and connection to the C3 connector at the rear panel of the device is made by means of ribbon cable.

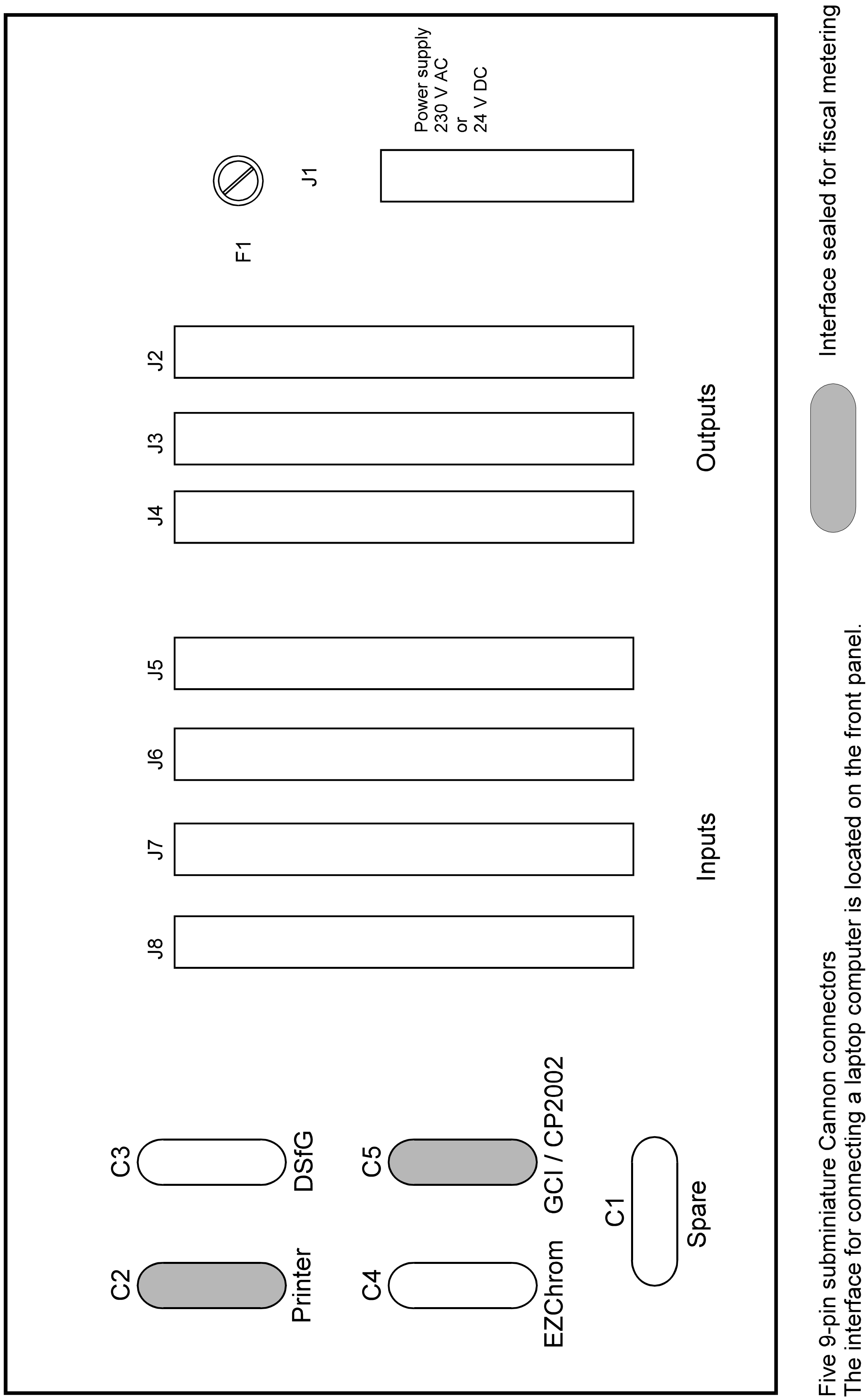
Block diagram of the DSfG interface



View of the device with the cable connections between the two CPU cards after the front panel has been removed

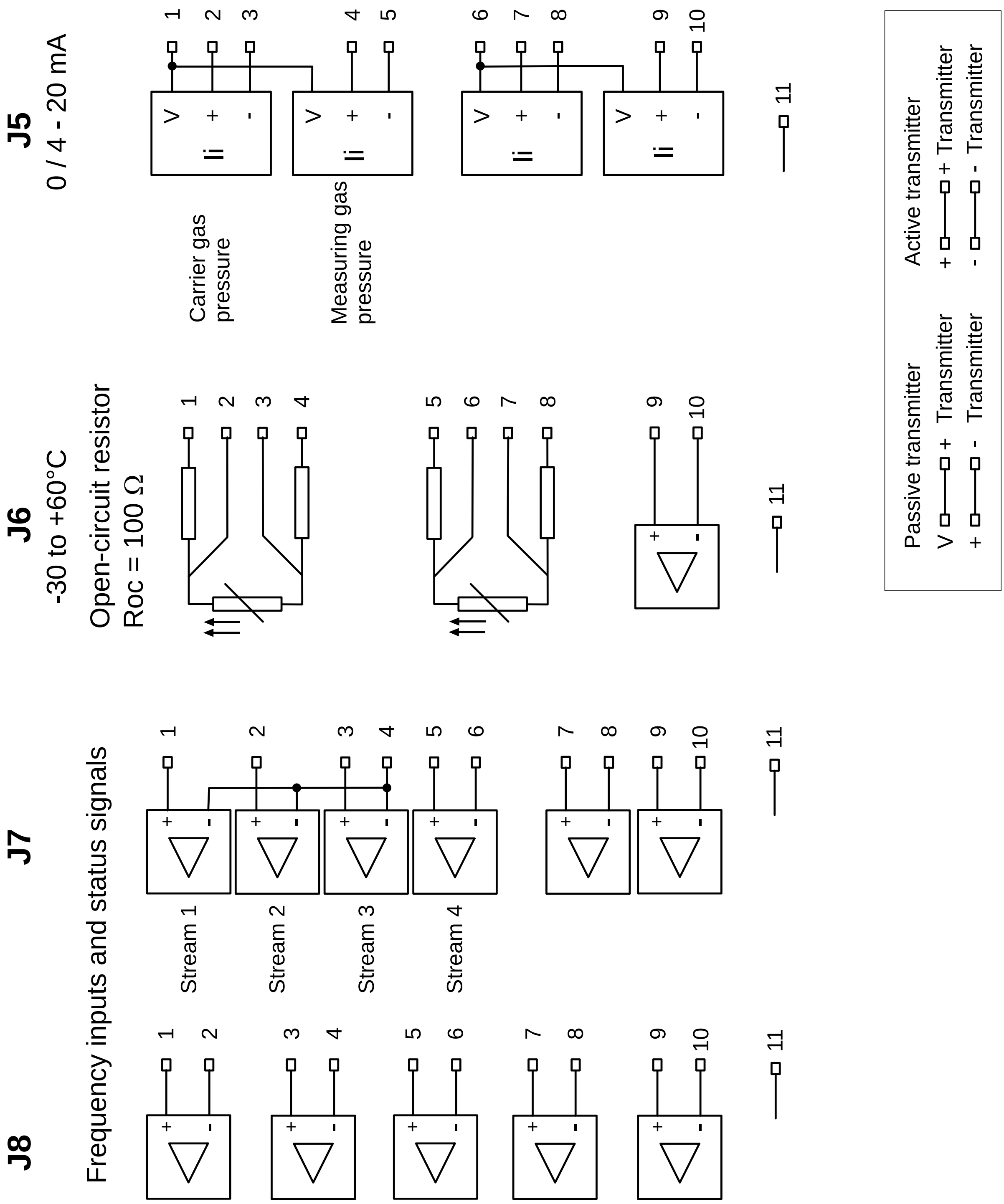


Rear panel of the GC 9000 VC

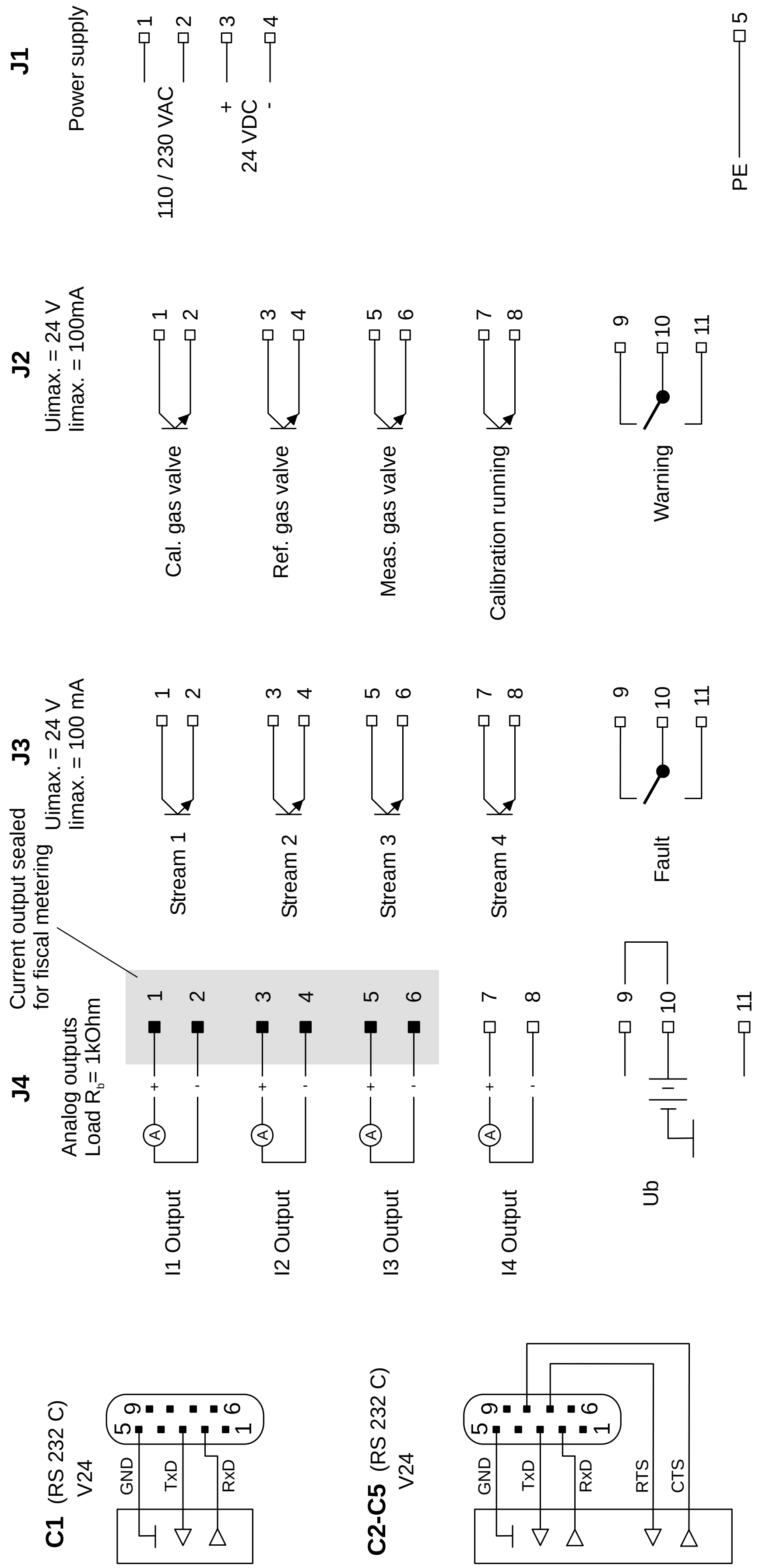


Annex D Pin Assignment Diagrams for the GC 9000 VC

Pin assignment diagram - Inputs of the rack-mounting unit



Pin assignment diagram - Outputs of the rack-mounting unit



Annex E Fault List

Number	Fault text	Signification
02	Power failure	
03	RTC fault	Hardware clock is defective
04	EEProm fault	
05	AD hardw. 517	Fault of the AD converter
06	AD hardw. 7135	Fault of the AD converter
07	Watchdog	Software fault
11	8279-fault	Keypad controller
12	DP-RAM fault	Disturbed data exchange via the dual-port RAM
	80C186 Hardware	
20	not enough RAM	Problem of memory management
21	EE Prom fault	EE-Prom fault
22	V24 HW fault	Interface installation not possible
23	unexp. interrupt	Unexpected interrupt
	80C186 SW	
30	CP sample time	After expiration of the sample time, no data received from the CP 4002
31	CP timeout	No reply from the CP 4002
32	CP data fault	CP 4002 transmits incorrect data
33	CP temperature	Specified temperature of the CP 4002 not reached (yet)
34	CP pressure	Specified pressure of the CP 4002 not available
35	Analysis timeout	No valid data received from CP 4002 for 30 minutes
36	Mic command	Incorrect command at the Microtalk interface
37	Mic timeout	Fault occurred during data exchange
38	Cal. unnorm. sum	When normalization was made for 100%, the limiting value (for calibration gas) was exceeded
39	Cal. RT fault	Retention time min/max (for calibration gas)
40	RW fault	Response factor min/max
41	RT fault	Retention time min/max (for measuring gas)
42	unnorm. sum	When normalization was made for 100%, the limiting value (for measuring gas) was exceeded
43	Calib. Hs	Specified superior calorific value not reached during calibration
44	Calib. rhon	Specified standard density value not reached during calibration
45	Calib. CO2	Specified carbon dioxide value not reached during calibration
46	no method	Invalid method
47	Hs min/max	Min./max. Hs value of the measuring gas violated
48	CO2 min/max	Min./max. CO_2 value of the measuring gas violated
49	Comp. min/max	Concentration of a component violated
50	Mathematics	Error in mathematics (division by 0)
51	Carrier gas	Min./max. carrier gas pressure
52	Gas for analysis	Min./max. pressure of the gas for analysis
53	area deviation	The total area for calibration deviates by more than the specified valuefrom the total area for basic calibration
54	Wo min / max	Min./max. Wo value of the measuring gas violated
55	Rho,n min / max	Min./max. rho,n value of the measuring gas violated
56	Printer fault	Connection to the printer disturbed / printer not ready
57	Incorr. GCI-Ver.	Incorrect GCI-Version
70	Mean values NOK	Memory for mean values contains invalid data (delete data!)
83	internal SW	Fault in a menu (incorrect language)
84	I1-Out min/max	Current < 0/2mA or > 21mA
85	I2-Out min/max	Current < 0/2mA or > 21mA
86	I3-Out min/max	Current < 0/2mA or > 21mA
87	I4-Out min/max	Current < 0/2mA or > 21mA

Annex F

Characteristics of Current Outputs and Digital Interfaces (DSfG) If A Fault Occurs

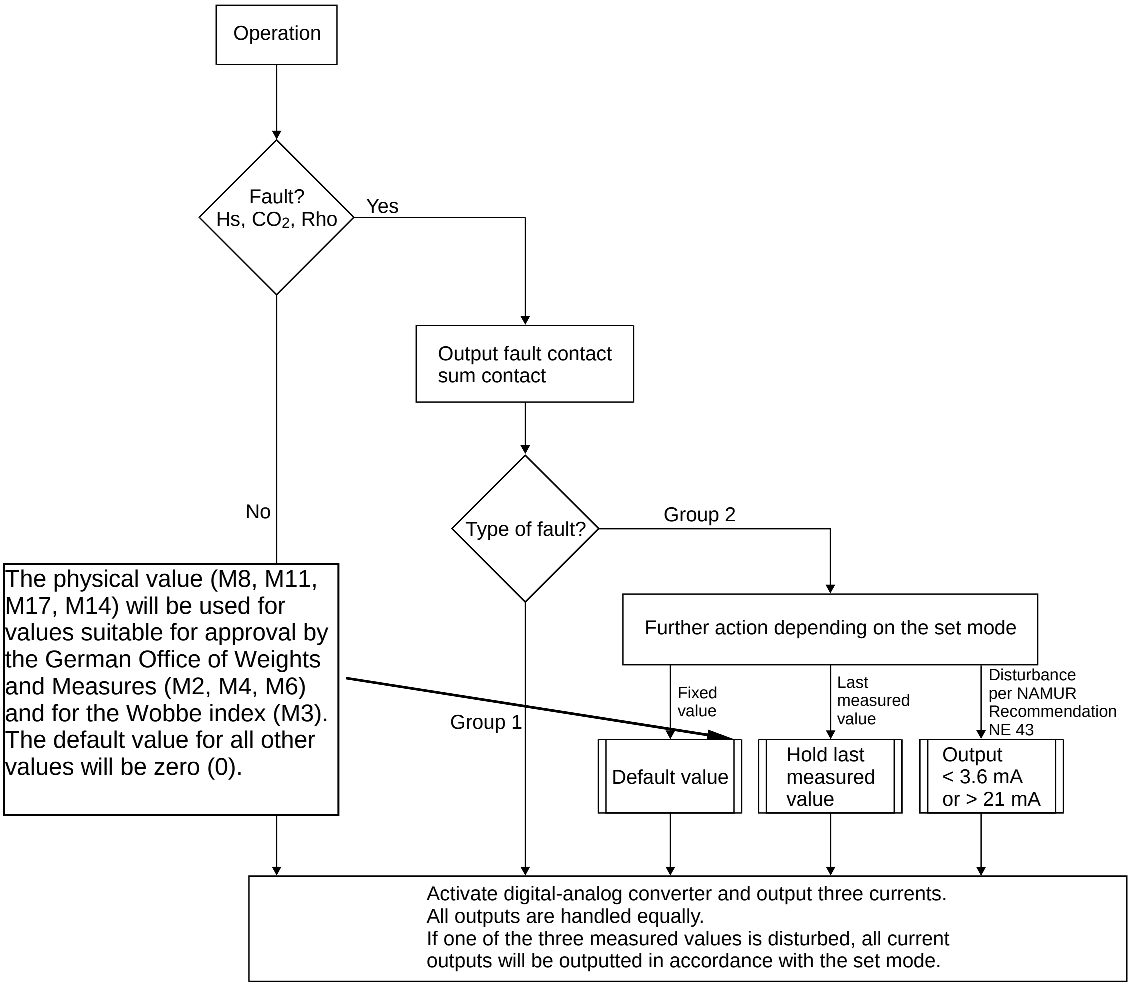
Faults are grouped as follows:

Group 1

No.	Text
35	Analysis timeout
36	Mic command
37	Mic timeout
46	no method
54	Wo min / max
56	Printer fault
84	I1-Out min / max
85	I2-Out min / max
86	I3-Out min / max
87	I4-Out min / max

Group 2 All faults not listed in Group 1.

Characteristics of current outputs:



Annex G DSfG Extensions

By using the turbo card, the GC 9000 VC can also be prepared for operation on the DSfG bus. For this purpose, the DSfG adaptor is plugged onto the back of the turbo card, and connection with the C5 interface connector is made by means of a ribbon cable.
The interface is to be set in the column S. The RS 485 Data C3 interface is assigned to DSfG.

Setting parameters:

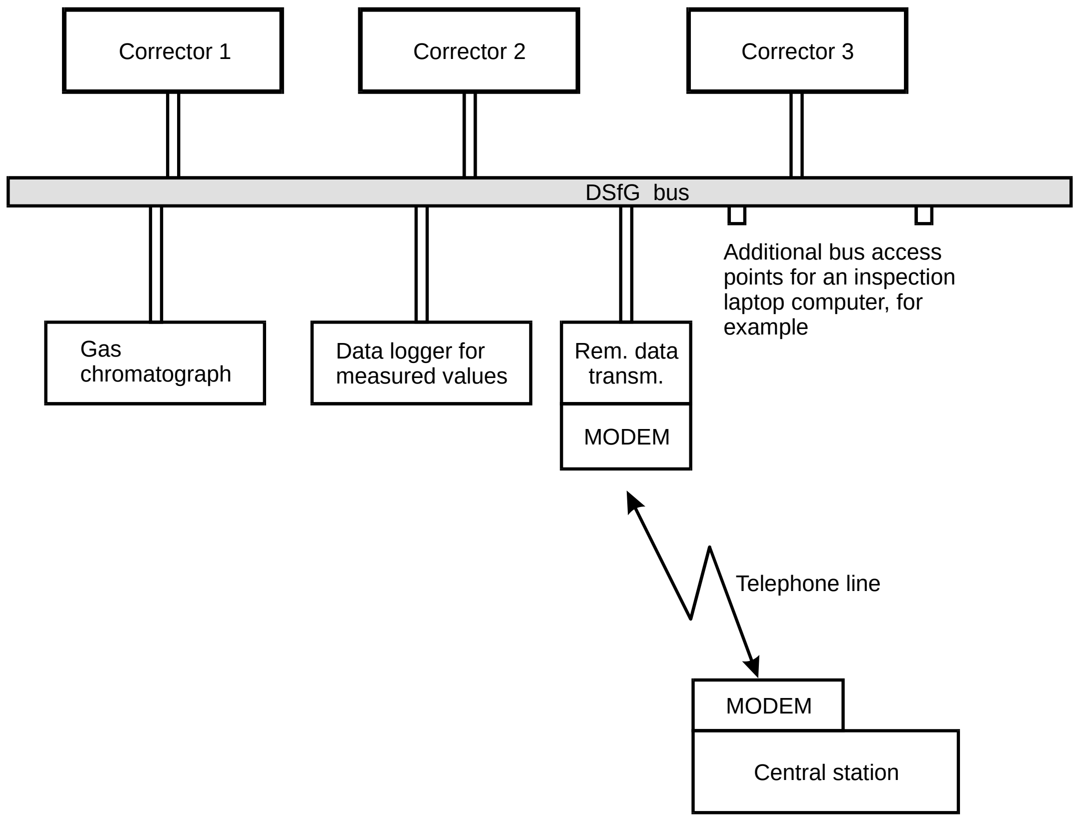
Bit rate:	normally 9600 bd
DSfG address:	Transport address 1 - 31
DSfG preset:	Preset for CRC calculation

The DSfG interface only works in the single stream version of the PGC 9000 VC!
For the multistream version of the PGC 9000 VC the DSfG interface must be implemented by a bus coupler!

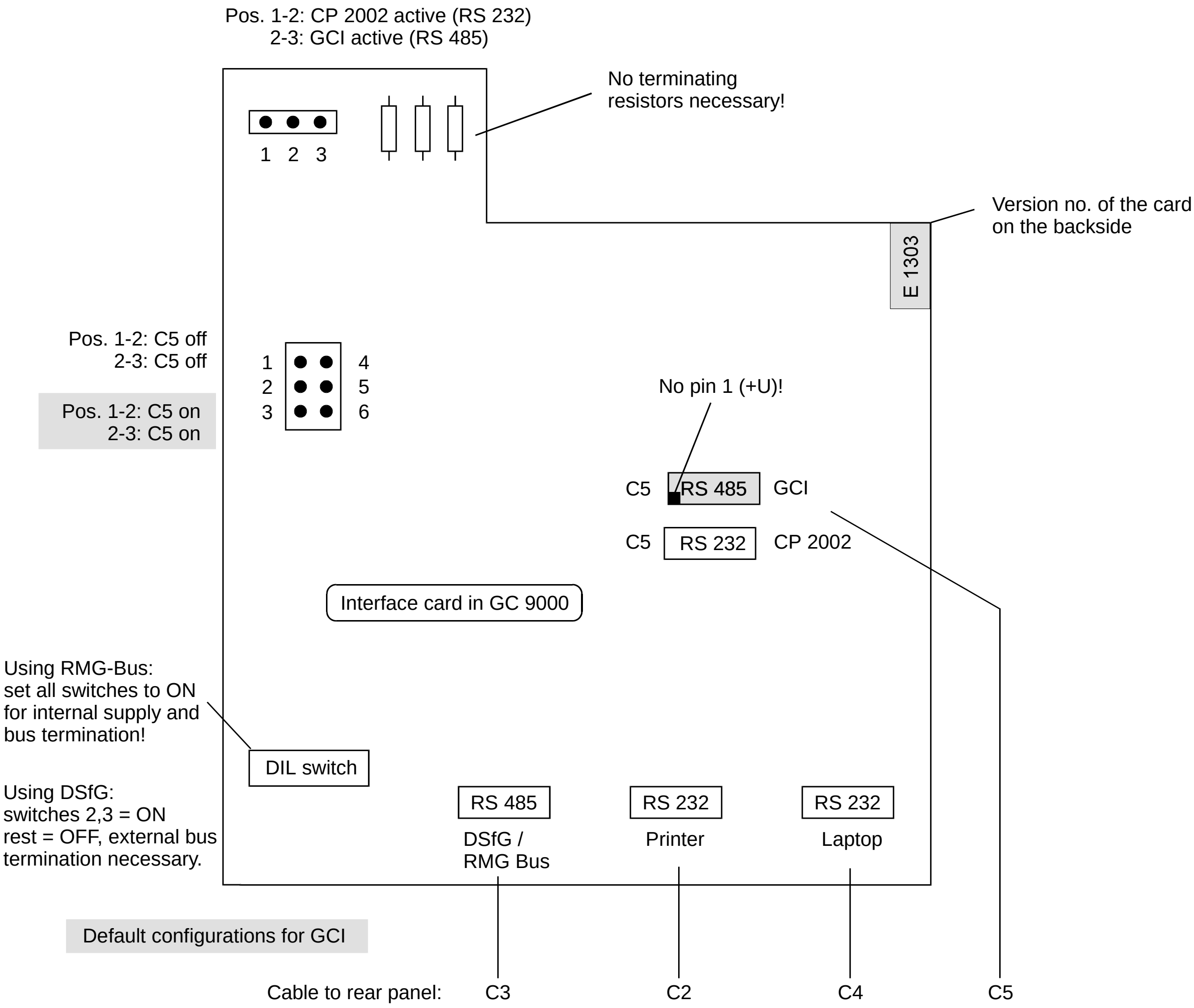
Software:
The software status corresponds to the present-day status of specifications of DVGW working committees, i.e. all layers up to layer 6 correspond to the DSfG standard; presently, only customer-specific standard inquiries can be handled in layer 7.

Hardware:
The hardware complies by 100% with DSfG specifications.

Example of a typical DSfG configuration:



Annex H Configuration of the Interfaces (from Version 3.0 on)



In case of a RMG-Bus C3 provides the supply and the terminating resistors.
C5 needs external terminating resistors and a bus supply voltage (+5 V), which is provided by the GCI box.
Select the mode for the interface C5 by the DIL switch 5 on the CPU card:

DIL 5 ON: GCI (RS 485)
DIL 5 OFF: CP 4002 (RS 232)

The modes of the interfaces are selected via a DIL switch (CPU card). The interface parameters are programmed or displayed in column J.

DIL switch	ON	OFF
1	internal	normal operating
2	---	---
3	---	---
4	---	---
5	CP4002 via GCI interface (RS485)	CP4002 without interface (RS232)
6	DSFG-BUS at C3 on	DSFG-BUS at C3 off
7	RMG-BUS at C3 on	RMG-BUS at C3 off
8	RMG-BUS-E at C3 on	RMG-BUS-E at C3 off

Only one DIL switch out of 6, 7 and 8 may be in pos. “on“.

Transmission of Measured Values or Data for Custody Transfer Metering between the GC 9000 VC Process Gas Chromatograph and the RMG ERZ 9000 T Flow Computer via the RMG-BUS

This digital interface is an RS 485-based bus connection designed in accordance with the MODBUS. The GC 9000 VC process gas chromatograph (PGC) operates as master and sends measured values and status signals cyclically via the broadcasting feature at address 0 to the correctors connected (slaves).

Data interface on the GC 9000 VC:
RS 485 bus interface with master function

Data interface on the ERZ 9000 T:
RS 485 bus interface with slave function

Data transmission:
Data transmission between the GC 9000 VC and the ERZ 9000 T operates in such a way that similar to a current output, there is a permanent connection between the devices. On the receiver side, digital data are handled in the same way as measured values of current inputs (min./max. monitoring, timeout and plausibility checks).

Data security:
In order to secure data, the element (unit encryption) specified in the PTB Regulations 50.31 is used for encryption and authenticity checks.
Checksums are formed using all measured values and status signals.
The checksum is attached as last value to the message and accompanies the data,during transmission.

Description of message:
The MODBUS function 16 "write request" is used with address 0 (broadcasting).
:kk102222nnnnbb<Data>BCC<CRLF>

Signification:

:	Start of characters
kk	User address, here particularly 0 for broadcasting
10H	MODBUS function 16 (hexadecimal number)
ssss	Start of address of the registers to be used (0 ... 65535)
nnnn	Number of registers to be used (1 ... 63)
bb	Number of bytes to be transmitted
BCC	CRC12 checksum procedure (see annex)
CRLF	End of characters (carriage return, line feed)

Data	Address	7001 methane	7033 superior calorific value
		7002 ethane	7034 inferior calorific value
		7003 propane	7035 relative density
		7004 iso-butane	7036 standard density
		7005 n-butane	7037 Wobbe index
		7006 neo-pentane	7038 Zn compressibility factor
		7007 iso-pentane	7039 not assigned
		7008 n-pentane	7040 status
		7009	hexane
		7010 - 7014 not assigned	
		7015	nitrogen
		7016	CO_2
		7017 - 7032 not assigned	

PGC Status

Calibration status / internal connection of test gas

While test gas is being connected internally, the last measured values are sent.

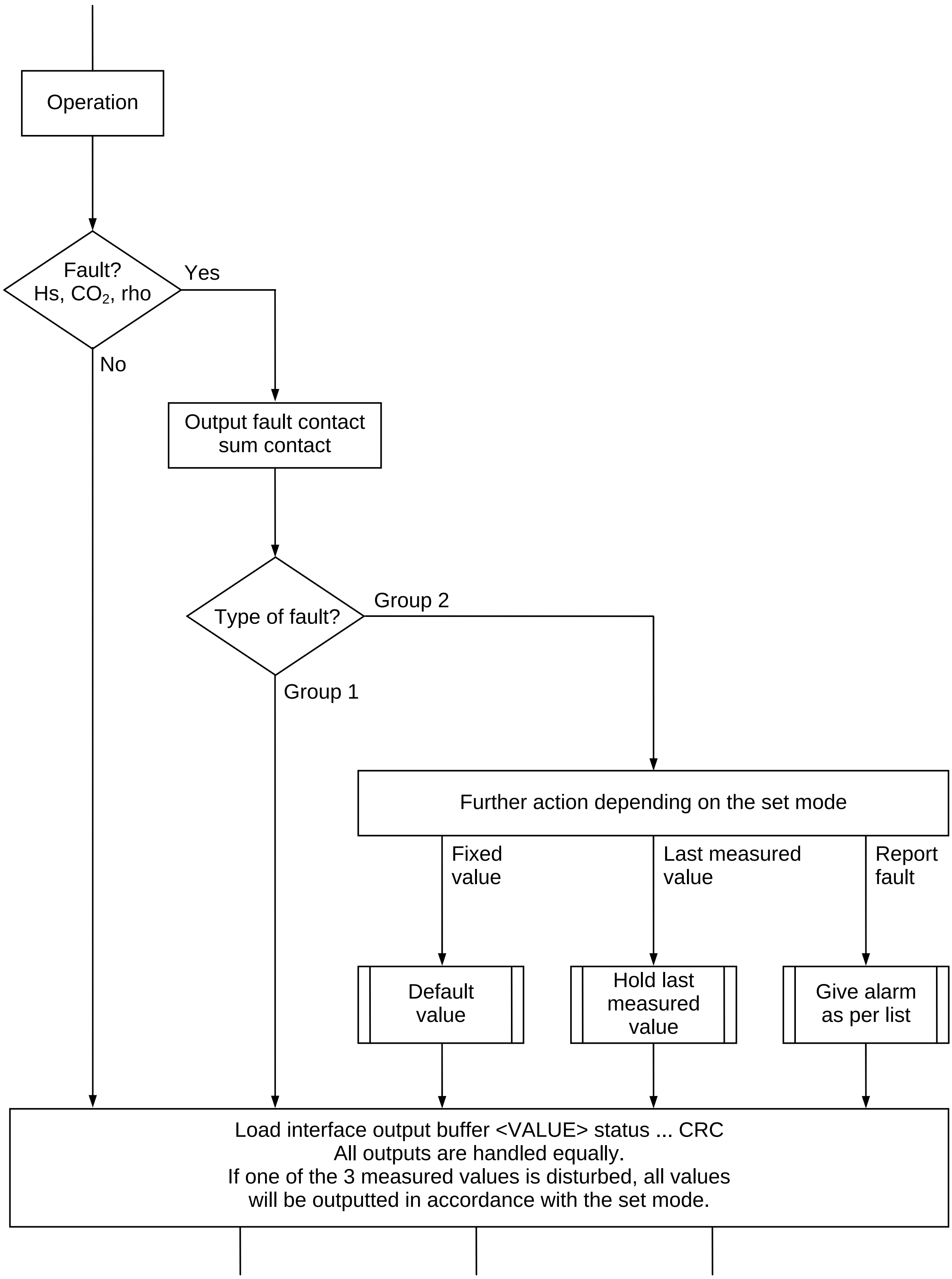
Revision status / external connection of test gas

While test gas is being connected externally, the last measured values are sent. External connection of test gas must be communicated to the PGC (contact, etc.).

Fault status / startup after POWER ON / internal faults

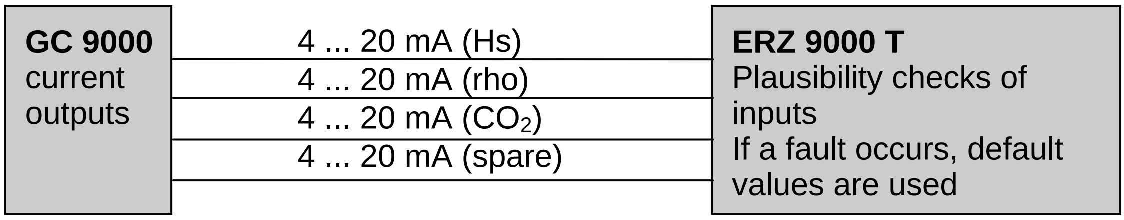
During the startup phase (warming-up, calibration, etc.), the PGC provides no measured values, but default values (fixed values).

Handling of faults occurring on the RMG-BUS digital interface for:
superior calorific value, standard density / relative density, carbon dioxide, nitrogen

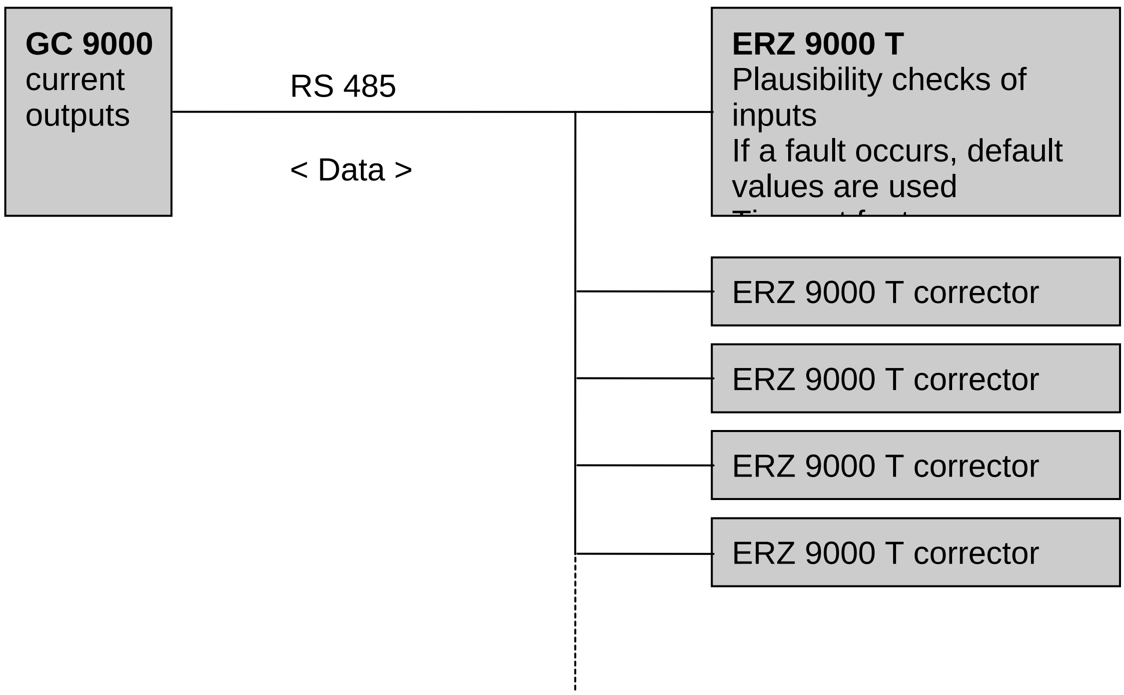


Connecting a PGC Type GC 9000 VC together with an ERZ 9000 T corrector

1. Analog interface



2. RMG-BUS digital interface
   Transmission of measured data is secured by
   a. BCC (CRC procedure) to secure the transmission route
   b. plausibilitychecks to monitor limits and verify contents
   c. timeout feature to monitor the transmission cycle



A maximum of 30 ERZ 9000 T Flow Computers can be connected to a PGC Type GC 9000 VC. Wiring is to be made in the form of a bus network, while cable specifications must be observed.

Additional features of the GC 9000 VC process gas chromatograph

To activate the RMG-BUS mode
Set the mode to RMG-BUS in coordinate J 19.

Status indications
The status is indicated in coordinate J 20:

"Revision running"	Information indicated during revision
"Calibration running"	Information indicated during calibration
"Analysis running"	Information indicated during analysis
"Fault"	Information indicated while fault is pending

The status indicated flashes at 2-second intervals, but at the time the message is sent, the flashing stops for a few seconds. In this way, the time of transmission can be detected easily without any auxiliary equipment.

Additional features of the ERZ 9000 T corrector

To activate the RMG-BUS mode
Set the mode to RMG-BUS in column S under coordinate S 27. Set the baud rate, etc., in coordinates S 28 ... 30.

Status indications
The status is indicated in coordinate S 31.

"Revision running"	Information indicated during revision
"Calibration running"	Information indicated during calibration
"Analysis running"	Information indicated during analysis
"Fault"	Information indicated while fault is pending
"No connection"	Information indicated while fault is pending

The status indicated flashes at 2-second intervals, but at the time the message is received, the flashing stops for a few seconds. In this way, the time of transmission can be detected easily without any auxiliary equipment.

Data transmission / Timeout feature

Data transmission is carried out cyclically at intervals of approx. 30 seconds. Therefore, a change of status will be indicated after 30 seconds at the latest and causes a reaction with all users. The timeout feature can be adjusted by time reference (minutes), i.e. 2, 3, 4, 5, 6, ... x 30 seconds.

Electrical characteristics of the RMG-BUS

As to its electrical characteristics, the RMG measuring bus is based on the EIA RS 485 standard (differential voltage signals via a twisted pair of wires). The bus network with its regular-bus topology makes it possible to connect up to 31 users. The length of the bus may be up to 500 meters. All users are electrically isolated from each other, each interface has its own power supply unit to power the bus.

Connector pin assignment

The RMG-BUS interface has been designed as a 9-pin male Cannon connector. Refer to the following table for contact assignments.

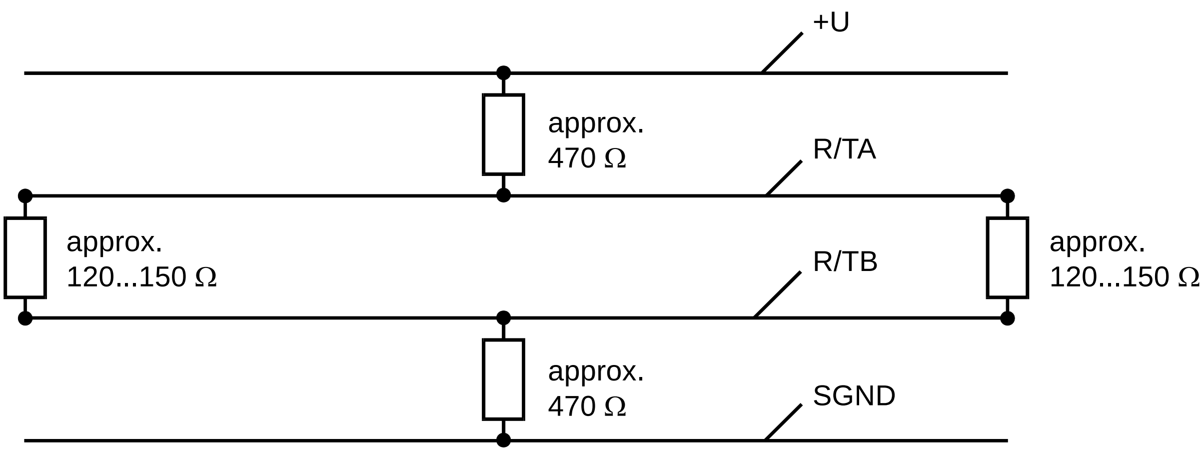
Pin No.	Signal	Description
1	+U	Power supply (+5 VDC)
2	GND	Reference potential. Electrical isolation from the device is mandatory.
3	R/TA	Wire A of the pair of wires of the data line
4	...	not assigned
5	SGND	Reference potential, identical to GND
6	-U	Reference potenfial, identical to GND
7	GND	Reference potential, identical to GND
8	R/TB	Wire B of the pair of wires of the data line
9	...	not assigned

Bus termination and Generation of open-circuit potential

In order to prevent distortion and reflection of signals, terminating resistors must be connected on both sides of the bus cable. These terminating resistors should correspond more or less to the wave impedance of the line with typical values between 120 and 150 ohms. In addition to the terminating resistors, there is one network necessary for the generation of open-circuit potential at least at one location (anywhere) to secure defined levels. lt is to be specified that the supply of the bus will be taken over by the GC 9000 VC (set DIL switch) and that the terminating resistors on both sides of the bus cable will be switched on.

Cable specification
The cable comprises two pairs of wires which are twisted together and shielded in each case. The nominal cross section per wire must be at least 0.25 mm^2, while the effective capacitance must be below 150 pF/m. The shield is to be connected at one location, preferably at the end, to an equipotential bonding strip.

Example:



ANNEX

Formation of checksum CRC 12:
The block checksum is the inverted remainder resulting from dividing (modulo 2) the following polynominals:

Block contents	= B(X)
Dividend	= B (X) * X^{12}
Divisor	= $X^{12} + X^{10} + X^5 + 1$

Sample C-program to calculate CRC

The block check sequence is not attached to the buffer, but returned as a function result. If appropriate, it is to be attached first to the buffer together with the bits 0 to 7. If a buffer with an attached CRC is to be checked for correctness, it is to be transferred to the function together with the CRC bytes. In the event of correct transmission, the function result is OKRESULT.

```
#define    POLYNOM    0x842
#define    FINAL      0x000
#define    OKRESULT   0x000



unsigned short crc12_v2 (unsigned char *buf, int len, unsigned short preset)
{
    unsigned short crc = preset;
    int bit;
    while (len--);
    {
        crc ^= *buf++;
        for (bit = 0; bit < 8; bit++)
            if (crc & 1)
            {
                crc >>= 1;
                crc ^= POLYNOM;
            }
            else
                crc >>= 1;
    }
    crc ^= FINAL;
    return crc;
}
```

Annex J PGC 9000 VC Multistream

The PGC 9000 VC Multistream can be operated in different modes:

List mode:

Any sequence of streams can be specified in the coordinate S-12:
Streams 1, 2, 3 and 4 are valid.
The number of measurements per stream is specified in the coordinate S-13.
Example: 1-2-1-3-1-4

1:1 Mode:

The list is of no importance in this mode.
The desired stream is selected through the inputs at the terminal block J7.
Streams 1, 2, 3 and 4 are valid.

Terminal J7–1,4 → Stream-1
Terminal J7–2,4 → Stream-2
Terminal J7–3,4 → Stream-3
Terminal J7–5,6 → Stream-4

All other combinations are NOT permissible!

Binary mode:

The list is of no importance in this mode.
The desired stream is selected through the inputs at the terminal block J7.
Streams 1 ... 15 are valid.

The inputs at the terminal J7 are now binary-coded.

Special mode:

Customer-specific special case!

NOTE: A specific number of analyses (sweeping times, etc.) **can** be invalid with each change in stream. This number of analyses can be entered into the coordinate S-14.

Changes of the parameters S-11 to S-14 have to be made in the following order:

1. Set the mode (A-2) to “stop”
2. Wait until the actual analysis has finished
3. Set the multistream mode (S-11) to “off”
4. Make your changes of the parameters S-12 to S-14
5. Set multistream mode to the previous value (in normal use to “list”)
6. Set mode to “autorun” again

The PGC 9000 VC Multistream is operated in SINGLE-STREAM MODE, if MS mode is set to "OFF".