red-y for gasflow

Instruction manual red-y PCU100

red-y process control unit PCU100

swiss technology made by vögtlin

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process control unit PCU 100

CE

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01 Welcome

The electronic analysis system *red-y PCU100* is a high-end control and analysis system for flow measurement. A modular concept with various connection options offers you the highest possible degree of integration and safeguard for the future.

This manual will familiarize you with the installation and operation of your electronic analysis system. Please read this manual carefully and contact your sales partner for questions or clarifications.

We took great care in compiling this manual to offer you correct and accurate information and instructions. However, we cannot be held responsible for possible errors.

User Benefits

Ultimately, technology is always a means to an end. Therefore, our priority in development is always the same: the user operating the measuring equipment. All our efforts are guided by the needs and requests of the users and their measuring and control tasks:

- *Compact electronic analysis systems that are easy to install*
- *Intuitive operation*
- *Large, easily readable, four-line back-lit display*
- *Integrated help function*
- *CE certified*
- *Optional field bus connection*
- *Digital inputs and outputs freely configurable*
- *Implements the full functionality of the measuring and control devices*
- *Easy to maintain and service*
- *Easy functionality expansion*
- *3 years guarantee*
- *Adapted options and accessories*

Service & Quality

We are continuously improving the quality and the service of our products and performances. Only when using a product, you will see if you chose the right product. For this reason, we strive to not only propagate good service and high quality, but to live it every day.

Warranty Services

The warranty for the *'red-y for gasflow'* product line covers material and manufacturing faults. The maximum amount covered by the warranty services is limited to free replacement of the device. Improper use, general external damages and damages due to heat or falls void all warranty claims.

We welcome reports of possible errors, suggestions for improvement and criticisms.

Suggestions & warnings

This user manual should be read in full before start-up of the device. Improper use, misunderstandings and their consequences may destroy the device and even cause bodily harm.

Commissioning and maintenance must be performed by appropriately qualified staff. Proper use of the products is essential for their trouble-free operation.

Electrostatic discharges may destroy the electronic components of the electronic analysis system.

Content of the manual

This manual will instruct you in the safe use of the analysis system *red-y PCU100*.

02 General Information

Design of the Electronic Analysis System

The electronic analysis system was specifically designed for use with thermal mass meter and controllers. The electronic system offers the user the full functionality of the measuring and control devices and supplements it with selected additional options.

The *PCU100* supplies the connected device with power and communicates with it through the integrated RS-485C interface.

Its basis is an optimized I/O control panel, which is already being used successfully in the field. A high-end, four-line, back-lit LCD display and the keyboard with adapted functions create the interface with the user operating the devices in the field.

An integrated help function assists the user. Together with this manual, it is easy to make full use of the functions of the measuring and control device and the electronic analysis system.

Apart from the I/O module (2 digital inputs and 2 digital outputs), the electronic system is equipped with a CAN interface. This enables your *red-y* measuring and control device to communicate with the world of fieldbus communication.

The highly compact casing can be easily integrated into a control panel. All connections are accessible from the back and are pluggable. There is therefore no need to wire the device before installation.

A clever table case with a power pack is available as an option. This reduces the effort for the start-up to a minimum.

The digital communication between the measuring and control device and the electronic system also significantly reduces the programming efforts. The only setting that the user may need to define are the limit settings or the functioning of the I/O channels. All other required parameters are automatically queried from the measuring or control device by the electronic system.

First Steps

This chapter briefly explains the most important functions. However, please still read the chapter ‘Mounting & Installation’ carefully before turning on the device.

The information and possible settings are presented in the various menus. The menus are designed hierarchically in a tree structure. The main menu shows all important measuring and control settings. When the electronic display is turned on, the main menu is always shown.

Keyboard Functions

There are 5 keys for controls and entries. The two following keys have two functions:

When pressing these keys for more than two seconds, the second function is activated.

Key	*Code*	*Description*
C ◀	◀	When pressing the key briefly, the left arrow is activated. It is used to select the desired position when entering values into an entry field. If a menu has several entry fields, this key is used to switch between fields.
	C	If the key is pressed for more than two seconds, the display jumps back one menu (leaving the current menu).
? ▶	▶	When pressing the key briefly, the right arrow is activated. It is used to select the desired position when entering values into an entry field. If a menu has several entry fields, this key is used to switch between fields.
	?	Pressing the key for more than two seconds activates the help menu.
+ ▲	**+** ▲	In a value entry field the value of the selected position is increased by one with each activation of the key. In option fields, this key can be used to switch between the individual options.
- ▼	**-** ▼	In a value entry field the value of the selected position is decreased by one with each activation of the key. In option fields, this key can be used to switch between the individual options.
OK	***OK***	This key confirms entries or changes.

Turning on the Device

```
Flow: 364.20 mln/min
Setp: 365.00 mln/min
Total: 22345 mln Sub
Air    27.1 °C
```

After the supply voltage is turned on, the electronic system performs a self-test. The display shows the event list, indicating the stand-by status.

After displaying the event list, the display switches to the display menu (main menu). This menu is the basis for all functions and displays.

Set Point Presetting

```
Setpoint___________

Setp: 365.00 mln/min
Direct: off
```

Pressing the ***OK*** key accesses the set point submenu. The following options are available to determine a set point:

Use the keys ◀ and ▶ to select the appropriate position and change the numerical value with the keys ▲ and ▼

Use the keys ▲ and ▼ to change the set point in 10% steps (relative to the final value).

The bottom option sets the valve to open maximum (flush), closed, or deactivates the function. When flushing the valve or when it is closed, the control is disabled and the valve is triggered directly.

03 Technical Specifications

General Device Specifications

Display	LC text display (monochrome) with integrated back-lighting. 4 x 20 characters (4 mm character height)
Keyboard	5 keys, some with dual function
Casing	Suitable for control panel installation with locking bolt Control panel cut-out: 123.3 x 73 mm
Dimensions	131 x 81 x 70 mm (w x h x d), see appendix
Supply	24 Vdc with inverse-polarity protection
Power consumption	4 – 7 W
Temperatures	
Storage	-10 °C to 60 °C
Operation	0 °C to 50 °C
Protection class	According to EN61131-2/VDE0631, part 1, protective low voltage
EMC regulations	EN50081-2 and EN50082-2

Inputs & Outputs

RS-485C Modbus	
Measuring or control device	Sub-D 9-pin, female
CAN interface	
Field bus connection (ISO 11898)	Sub-D 9-pin, male
Supply	Multi-electrode plug clamp with terminal clamp with inverse-polarity protection
Digital inputs	
Input signal low	-3 ... 5 Vdc
Input signal high	12 ... 30 Vdc
Frequency	Max. 90 Hz
Power consumption	Typically 8 mA at 24 Vdc
Function	Adjustable through software configuration
Digital outputs	
Output signal low	0 Vdc
Output signal high	Supply voltage less approx. 100 mV
Maximum load	200 mA short-circuit protected
Function	Adjustable through software configuration

Power Supply

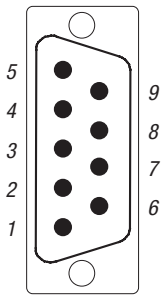
If the electronic analysis system is supplied with +24 Vdc, the measuring or control device is automatically supplied with power without additional wiring (galvanically separated).

Saving the Settings

The memory components are supplied by an auxiliary battery in case of a power loss. The lifetime is typically 5 years. The battery can be purchased in specialized stores and can be replaced by the user.

Connector Pin Assignment Modbus/RS-485C Interface

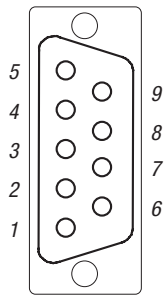
This connector feeds the measuring or control device and provides data communication with the electronic system.



Pin	*Assignment*
1	not used
2	GND
3	Supply + 24 Vdc
4	not used
5	not used
6	Rx+ RS485 (A)
7	Rx- RS485 (B)
8	Tx- RS485 (Z)
9	Tx+ RS485 (Y)

Connector Pin Assignment CAN-ISO 11898 Interface

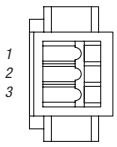
This connector can be used to connect the electronic system to a superordinated CAN fieldbus. The connection is designed with galvanic separation and an integrated terminating resistor pursuant to ISO 11898. If the device is to be used as the last segment in a CAN network, contact your sales partner (activation of terminating resistor).



Pin	*Assignment*
1	not used
2	CAN data low dominant
3	GND (Signal Ground)
4	not used
5	Shielded wire
6	GND (Signal Ground)
7	CAN data high dominant
8	not used
9	not used

Connector Pin Assignment Supply Voltage

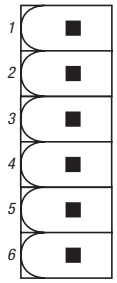
The connector is secured with the clips on the side. To remove the connector, both clips must be pressed at the same time and the connector must be removed towards the top. The strands are clamped in by a spring mechanism. This mechanism can be operated with a screw driver in the respective opening beside it.



Pin	*Assignment*
1	+ 24 Vdc
2	not used
3	GND

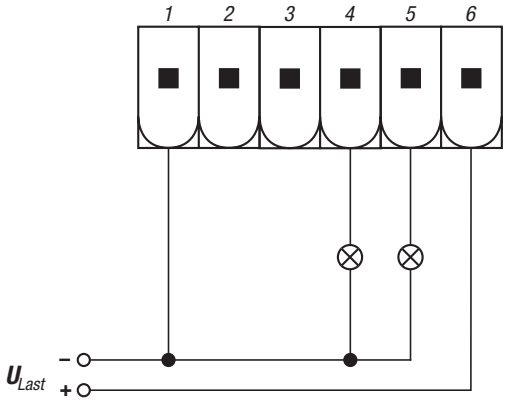
Connector Pin Assignment for Digital Inputs & Outputs

Each port is assigned an LED. For the inputs, the LEDs illuminate if the signal level is high. For the outputs, they illuminate if the output is active.

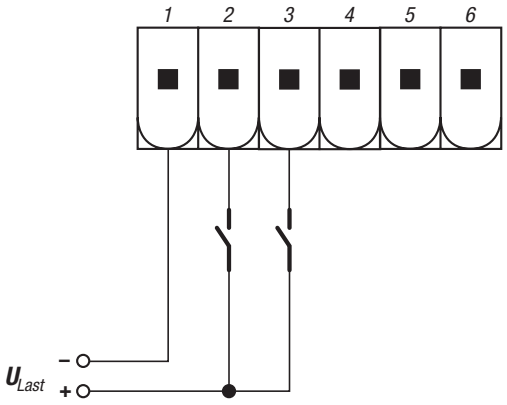


Pin	*Assignment*
1	Load GND 0 V
2	Input 2
3	Input 1
4	Output 2
5	Output 1
6	Load voltage supply, typically 24 Vdc (18...30 Vdc) residual ripple max. 5%

Connection Diagram for Digital Outputs



Connection Diagram for Digital Inputs



04 Mounting & Installation

General Remarks

Check the package for external damages and contact us in case of visible damages. Compare the contents of the package with the delivery note and check for completeness and technical agreement.
This product is a high-end electronic display unit. We recommend that you choose the installation location carefully and observe the following suggestions and remarks.

Environment

The electronic analysis device has been designed for manifold uses. Under the following environmental conditions, the devices may not be operated:

Environments with a high degree of conductive dust, mist, rain, direct sun, excessive heat, strong blast waves, and vibrations. Make sure that no water or foreign objects can enter the electronic system.

Install the electronic system as far away as possible from high-voltage wires and inductive loads.

Installation Tips

Connection and installation of the electronic system must be performed by an electrical specialist. National rules and applicable safety regulation must be observed.

All connection wires must be insulated to prevent contact with live parts.

The input and output wires must not be located close to high-voltage lines.

Observe potential drops and interferences if the input and output lines are laid across large distances. Ensure that correctly gauged wires are used for the connections.

If the electronic system is used in an environment according to EMC directive EN55011-Class B, ferrite cores must be installed in the power supply line as well as in the CAN network connection. Please contact your sales partner.

Specification of the Connection Wires

For the input and output connections, use wires with a diameter of 0.5 mm^2 - 2.5 mm^2. Strip 7 mm off the wire endings. Open the pinch clamp before inserting the conductors. Insert the conductors into the pinch clamp so that a secure connection is ensured.

Re-tighten the pinch clamp so that the conductor cannot be pulled out. Do not exceed a torque of 5 Nm to avoid damaging the conductors. Use wire end sleeve for flexible leads.

Power Supply

The devices must be operated with suitable 24 Vdc power supply units (see technical specifications). They must not be connected directly to the mains line!

Control Panel Installation

To attach the electronic system, it is pressed together with the control panel, using 4 locking bolts. It is therefore not necessary to drill receptor or mounting holes.

05 Functions

Introduction

The information and possible settings are presented in the various menus. The menus are designed hierarchically in a tree structure.
The main menu shows all important measuring and control settings. When the electronic display is turned on, the main menu is always shown.

Keyboard Functions

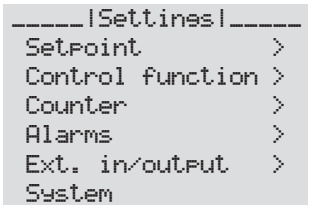
There are 5 keys for controls and entries. The two following keys have two functions:

When pressing these keys for more than two seconds, the second function is activated.

Key	*Code*	*Description*
C ◀	◀	When pressing the key briefly, the left arrow is activated. It is used to select the desired position when entering values into an entry field. If a menu has several entry fields, this key is used to switch between fields.
	C	If the key is pressed for more than two seconds, the display jumps back one menu (leaving the current menu).
? ▶	▶	When pressing the key briefly, the right arrow is activated. It is used to select the desired position when entering values into an entry field. If a menu has several entry fields, this key is used to switch between fields.
	?	Pressing the key for more than two seconds activates the help menu.
+ ▲	**+** ▲	In a value entry field the value of the selected position is increased by one with each activation of the key. In option fields, this key can be used to switch between the individual options.
- ▼	**-** ▼	In a value entry field the value of the selected position is decreased by one with each activation of the key. In option fields, this key can be used to switch between the individual options.
OK	***OK***	This key confirms entries or changes.

The following explanations use the code abbreviations rather than the keyboard symbols.

There are basically two types of fields: option fields and entry values. In an option field, use the keys ▲ and ▼, to select from defined options. For entry values, first use the keys ◀ or ▶ to select the desired position of a value (number) and then use the keys ▲ or ▼ to change the position by one unit at a time.
Any change must be confirmed with the ***OK*** key.



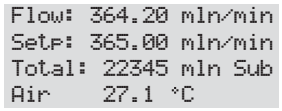
If a menu (e.g. settings) contains submenus, they are marked with the > character. These branches lead to another submenu. The other entries refer to direct entry fields and/or option fields, which are also displayed in a new display window. To facilitate navigation, each menu has a title. This is not the case for the event list and the main menu.

The square brackets indicate the selected entry. Use the keys ▲ and ▼ to move the cursor around in the menu and confirm the selection with the ***OK*** key. Use the ***C*** key to exit the current menu and to go to the superordinate level.

Menu Structure Overview

List of Functions

Main menu

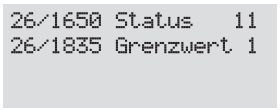


The main menu is the basis for the menu structure. It is used as the start menu to perform any actions / settings. When the device is turned on, this menu is shown automatically.

Enabled Settings

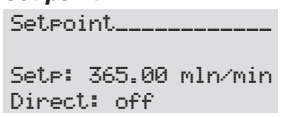
C	Use this key to access the settings menu
OK	Set point menu

Event list



Shows all limits, alarms and internal errors generated by the measuring and control device.
Use the ***OK*** key to acknowledge messages.

Set point

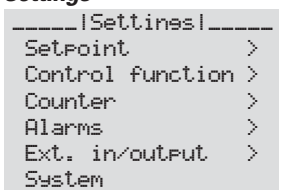


Settings menu for the set point. After opening this window, the set point can be modified directly. Select the desired position of the default value with the ◀ or ▶ key and change it with the ▲ or ▼ key. By pressing the ▶ key, you can access the entry field for percentage steps. Select the corresponding percentage value with the ▲ or ▼ key in this field. Use the ▶ key to go back to the last entry field.

Enabled Settings

Set: 365.0 mln/min	Entering the set point in the corresponding resolution
Direct	Setting the set point in 10% steps. Upon confirmation with the ***OK*** key, the selected % value is converted to the technical unit and saved as the set point. The entry field *Direct* shows 'off' again.

Settings



Use the ***C*** key to go to the first submenu, which in turn branches out to additional submenus or display windows.
Use the ▲ and ▼ key to move the cursor around in the menu.
The ***OK*** confirms the selection.

Enabled Settings

Set points	Settings menu for the set point
Control function	Submenu with options to set the control mode, the control parameter and the start set point
Totalizer	Read and reset the totalizer
Alarms	Display the event list and set the limits / creep quantity
Ext. in/outputs	Configure the external inputs and outputs
System	Set system values for the electronic analysis system and the connected measuring / control device

Control mode

```
Control mode________

     digital
```

Define the set point presetting. Use the ▲ and ▼ key to switch between the individual set points. The ***OK*** confirms the selection.

Enabled Settings

automatic	Default settings
digital	The set point is defined by the electronic analysis system. The control device disregards any analog set point presettings that are fed externally directly into the control device.
analog	In this mode, the device only uses set point presettings that are directly fed to the device as analog values.
Flush valve	The control is disabled and the valve is opened to the maximum. This can create a large flow that exceeds the measuring capacity. It is used for flushing or flooding processes for example.
Valve closed	The valve is defined as closed.

Control parameters

```
Control parameter___
Set:  medium
Kp:  80.0   Tn:0.150
S: 30  N1: 31  F:  0
```

Six entry fields in total are available for selection. Five control parameters are stored per control parameter set. For the sets User 1 and User 2, they can be individually adapted to the application. After opening the menu, use the ▲ or ▼ key to select the corresponding set and confirm it with the ***OK*** key. User the ◀ or ▶ key to go to the next entry fields. For numerical values, use these keys to select the position first and change the value with the ▲ or ▼ key. Confirm the entry with the ***OK*** key.

Enabled Settings

Set: Fast	Fast response time with corresponding overshooting (fast response)
Set: Medium	Medium response time with slight tendency to overshoot
Set: Slow	Slow response time without overshooting
Set: User 1	Can be adjusted individually by customer
Set: User 2	Can be adjusted individually by customer
Kp:	Amplification factor of the controller
Tn:	Time constant of the controller
S:	Search speed PWM
N1:	Offset compensation
F:	Feed forward rate of the controller

Note
The exact setting options are explained in the *red-y smart manual*

Power-up set point

```
Power-up setpoint___

Activate:    on
Setp:0000.0  ln/min
```

Defines the set point to be used if the controller is disconnected from the power.
Important:
The set point Start is only used in the digital control mode.

Enabled Settings

activate: on	Turns the function on or off
Set: 0100.00 mln/min	Determines the set point to be used after disconnection from the power

Sub Counter

```
Sub counter_________
         25554 mln
   [>] = adapt
  [OK] = clear
```

The sub counter is a subset of the total. With every reset, the current totalizer value is stored and subsequently deducted from the current totalizer value. This could be compared to the trip odometer in a vehicle.
The *PCU* will recognize a newly connected *red-y* device and clears the stored totalizer value to calculate the sub total.
As the sub total is displayed in the main menu, the sub total can be synchronized with the totalizer.

Enabled Settings

***>** =adapt*	The sub counter is synchronized with the total
***OK** = clear*	Reset the sub counter

Totalizer

```
Counter_____________

         255535 mln
   [OK] = clear
```

Total quantity of gas since the last reset

Enabled Settings

***OK** = clear*	Pressing the ***OK*** clears the total and the counter is reset to zero.

Alarms

```
______<Alarms>______
 Alarm list
 Alarm settines
 Zero suppression
```

Display the event list and set the limits / creep quantity

Enabled Settings

Alarm list	Shows all limits, alarms and internal errors generated by the measuring and control device.
Alarm settings	Submenu for setting the two limits.
Zero supression	Set a threshold value. Below this value, zero is displayed for the flow.

Alarm list

```
Alarm list__________

  [OK] = show list
 Liste: manu
```

Shows all limits, alarms and internal errors generated by the measuring and control device.
After pressing the ***OK*** key (show list), two options are available: ***OK*** clears the entries in the even list; ***C*** goes back to the next higher menu.

Mögliche Einstellungen

***OK** = show list*	By pressing the ***OK*** key, the list is displayed.
List auto	If an event occurs, the window with the event list is displayed automatically.
List manu	The events are stored in the background.

Zero supression

```
Alarm list__________

  [OK] = show list
 Liste: manu
```

Set a threshold value. Below this value, zero is displayed for the flow.

Enabled Settings

***OK** = show list*	Use the keys ◂ ▸ ▴ ▾ to set the threshold value and confirm with the ***OK*** key.

Alarm settings

```
__<Alarm settings>__
 Alarm 1 >
 Alarm 2 >
```

Submenu for selecting the alarms 1 or 2

The following submenu and settings options are the same for both alarms:

Alarm 1

```
_____|Alarm 1>______
 Value/function
 Hyst./delay/rese
```

Enabled Settings	
Value/Function	Setting the function of the alarm and the threshold value.
Hyst./Delay/Reset	Set the hysteresis, delay time and the type of reset

Alarm 1 (Value/Function)

```
Alarm 1_____________

Val.:0004.00 mln/min
Mode:     down
```

Setting the function of the alarm and the threshold value.

Enabled Settings	
Value: 0030.00 mln/min	Setting the threshold value. Depending on the function, current flow values above or below this value are interpreted as an alarm.
Mode: down	Flow values below this threshold value are interpreted as an alarm.
Mode: high	Flow values above this threshold value are interpreted as an alarm.

Alarm 1 (hysteresis/delay time/reset)

```
Alarm 1_____________
Hysteresis:   00.0 %
Delay:           0 s
Reset:        auto
```

Set the hysteresis, delay time and the type of reset.

Enabled Settings	
Hysteresis: 00.0%	If the current flow and the set threshold value are close together, the hysteresis setting can prevent the alarm from turning on and off continuously. The value may be between 0 - 10% of the maximum end value.
Delay: 0s	The time can be set between 0 and 180 seconds and represents the time the alarm state must persist for the alarm contact to be triggered. This prevents the alarm from being triggered if the measured value drops below, or exceeds, the threshold values briefly.
Reset auto	The alarm state is automatically reset after the current flow returns to the corresponding desired range.
Reset manu	The alarm state remains active until it is either acknowledged in the event list or reset by a correspondingly defined external input.

Ext. In/Output

```
__<Ext. in/output>__
 Inputs
 Outputs
```

Submenu for selecting the inputs and outputs.

Enabled Settings

Inputs	Assigning the external control inputs
Outputs	Assigning the external control outputs

Inputs

```
Inputs_____________

 In 1: Clear counter
 In 2: Valve closed
```

Assignment of the individual functions for the 2 external inputs. Both inputs have the same options. For this reason, the following explanations refer exclusively to input 1.

Enabled Settings

In 1: off	External control input is deactivated.
In 1: Clear counter	If tension is applied to the control input, the total is reset.
In 1: Valve open	The control valve is opened 100%.
In 1: Valve closed	The control valve is closed completely.
In 1: Alarm rese	Resets the limit alarms. This function corresponds to the acknowledgement in the event list.

Outputs

```
Outputs____________

Out 1: Alarm 2
Out 2: off
```

Assignment of the individual functions for the 2 external outputs. Both outputs have the same options. For this reason, the following explanations refer exclusively to output 1.

Enabled Settings

Out 1: off	External output is deactivated.
Out 1: Alarm 1	If there is an alarm state for alarm 1, output 1 is triggered.
Out 1: Alarm 2	If there is an alarm state for alarm 2, output 1 is triggered.

System

```
______<System>______
 Display mode
 Display settings
 Controller
 New device
 Passwords
```

Submenu with information about the electronic analysis system and the connected measuring/control device.

Enabled Settings

Display mode	When selecting measuring or control devices, individual menu points are adapted depending on the function.
Display settings	Setting in the electronic analysis system area
Controller	Depending on the selection in the representation menu, this menu point is labeled measuring device or control device.
New device	Integration of a new measuring and control device.
Passwords	Protects individual functions.

Display mode

```
Display mode________

Controller date/time
```

Settings in the display mode

Enabled Settings

Measuring device	Display of measured value, total, time, and gas All control-specific menus are deactivated. (Set point & control functions)
Controller (date / time)	Display of measured value, set point, time and gas
Controller (with counter)	Display of measured value, set point, counter and gas
Controller (without actual value)	Display of set point, counter, time and gas (avoids deviations if a measured value is read as an analog value)

Display settings

```
Display settings____
Language: English
Date:     24.08.2004
Time:     15:26
```

Setting in the electronic analysis system area

Enabled Settings

Language: German	User interface and all help texts in German.
Language: English	User interface and all help texts in English.
Language: French	User interface and all help texts in French.
Date: 02.26.2003	Date entry
Time: 19:26	Time entry

Meter/Controller

```
Meter/controller____
Serial no.:   101698
Type:         GSCB5SA
Range:   500 mln/min
```

Information about the connected measuring or control device

New device

```
New device__________

   [OK] = search
```

If a new measuring and control device is connected, the electronic analysis system verifies the device and defines various parameters.

Enabled Settings

***OK** = search*	Starts the search process

Passwords

```
Passwords__________

Level: No protection
```

Passwords can be used to protect certain functions. Five different levels are available in total. After the corresponding protection is activated, the menu can only be accessed if the correct password is entered. Every level includes the level below.

Enabled Settings	
No protection	All settings and menus are freely accessible.
Passwords	Only the activation or modification of the password protection is protected by a password. Password: 4321
Totalizer	Resetting of the totalizer is protected. Password: 1232
Settings	The entire settings menu is password-protected. Password: 1221
Set points	This settings permits maximum protection. All settings and the set point menu are password-protected. Password: 1111

If the password protection is activated, an entry field is displayed at the corresponding position.

Entering the password

```
======Password======

Password: ????
```

The four-digit number is symbolized by four question marks. The question marks correspond to the number zero. If the value is changed with the ▲ oder ▼ key, an X is displayed instead of the question mark. Use the ***OK*** key to confirm the entry. If the password is entered correctly, the desired menu opens. If not, the display goes back. The password for the authorization remains stored for 15 minutes after the last time a key is pressed. After this, the password must be re-entered to access the protected menu point.

Status messages

```
26/1650 Status   11
26/1835 Grenzwert 1
```

The status messages in the event list correspond to the error messages of the connected measuring and control device. The status number is the sum of the subsequently listed error numbers:

Enabled Settings	
1	Power-up alarm (not used)
2	Analog input alarm
4	Gas flow even with set point 0%
8	No gas flow even with set point 100%
16	No flow change even with set point change
32	Communication error with sensor
64	RAM access fault
128	EEPROM access fault
256	Totalizer error
512	No parameter values
1024	Current input error

A status of 1040 therefore corresponds to the errors 1024 and 16.

06 Operation & Service

Turning the System on

We recommend the following procedure for turning on the system:

- *Connect the measuring or control device with the included cable or according to the connection diagram*
- *Connect the CAN interface (optional)*
- *Connect and turn on the supply voltage*
- *Connect the load voltage*

Warm-up Time

The system is ready for measuring and controlling immediately after it is turned on. For most precise measurements, the *red-y* system is ready after approx. 30 minutes. Before turning on the system, make sure that the wiring is connected correctly and according to the connection diagram.

Operation

The electronic analysis system *PCU 100* is nearly maintenance-free. Only the battery, which makes sure that the programmed data is saved to memory if the power supply is cut, must be exchanged approx. every 5 years *(cf. Replacing the battery)*.

If the front of the device is soiled, it is recommended to clean it with a damp cloth. Do not use any solvents or other cleaning agents, which may damage the front panel and may allow liquids to penetrate into the device.

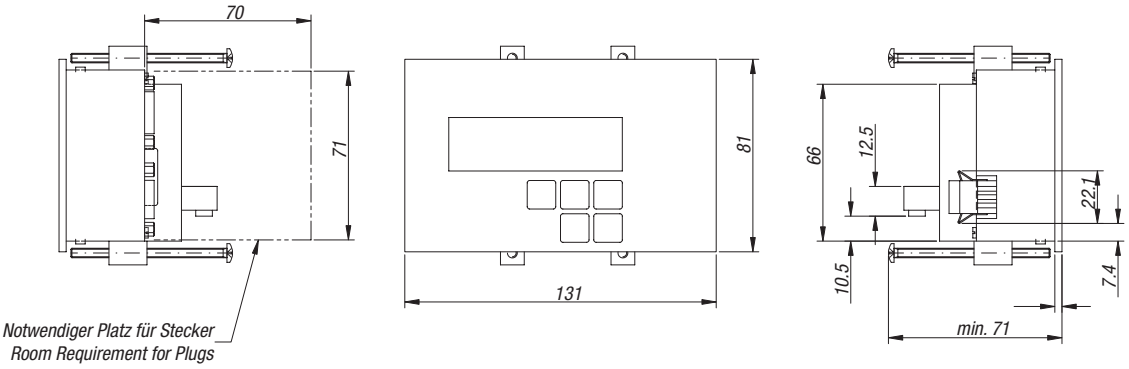
Replacing the Battery

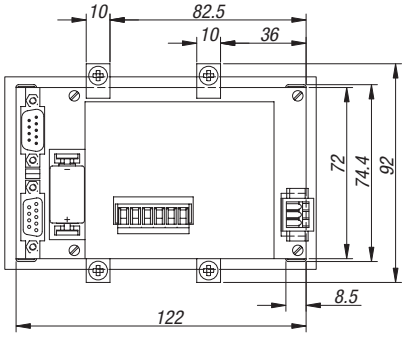
The battery used is a commercially available lithium battery, type CR 1/2 AA. Please observe the correct polarity when installing the battery.

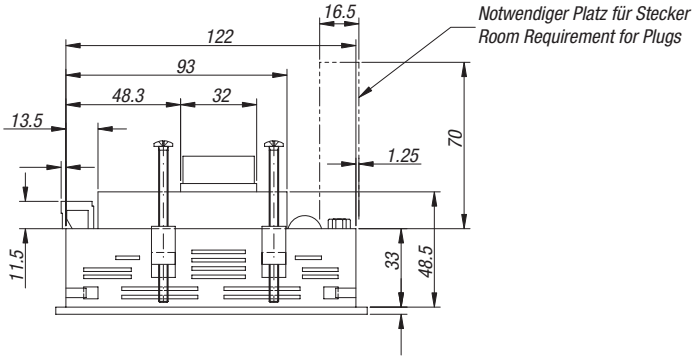
ATTENTION

To avoid data loss during the battery change, the device must be supplied with 24 Vdc while changing the battery.

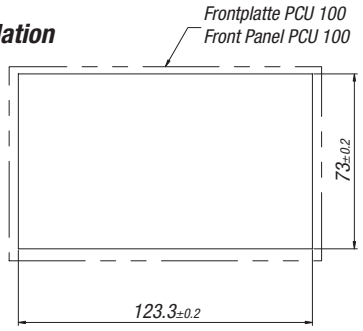
07 Dimensions







Fronttafeleinbau / Front Panel Installation



Tischgehäuse / Table Casing