Operating Manual

EN

RS 1107-UT Stock number: 205-0963
RS 1113-UT Stock number: 205-0964

Made in Germany

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1 About this documentation

1.1 Purpose of the document

- This document is intended as a quick reference option.

1.2 Legal notices

This document is entrusted to the recipient for personal use only. Any impermissible transfer, duplication, translation into other languages or excerpts from this operating manual are prohibited.

The manufacturer assumes no liability for print errors.

1.3 Further information

Software version of the product:

- V1.1 or later

For the exact product name, refer to the type plate on the rear side of the product.

2 Safety

2.1 Explanation of safety symbols

⚠ DANGER

This symbol warns of imminent danger, which can result in death, severe bodily injury, or severe property damage in case of non-observance.

⚠ CAUTION

This symbol warns of potential dangers or harmful situations, which can cause damage to the device or to the environment in case of non-observance.

NOTE

This symbol indicates processes, which can have a direct influence on operation or can trigger an unforeseen reaction in case of non-observance.

2.2 Foreseeable misuse

The fault-free function and operational safety of the product can only be guaranteed if applicable safety precautions and the device-specific safety instructions for this document are observed.

If these notices are disregarded, personal injury or death, as well as property damage can occur.

⚠ DANGER

Incorrect area of application!

In order to prevent erratic behaviour of the product, personal injury and property damage, the product must be used exclusively as described in the chapter Description in the operating manual.

- The product is not suitable for use in explosion-prone areas!
- The product must not be used for diagnostic or other medical purposes on patients!
- For measurements requiring devices that are subject to authorisation or special approvals, this product is not a substitute for such products and can only be used as an aid in preparatory or comparison measurements!

2.3 Safety instructions

NOTE

This product does not belong in children's hands!

2.4 Intended use

The device is designed as a manometer and measures even the smallest pressure differential pressures of up to ±200 hPa with a maximum resolution of up to 0.1 Pa in air or in non-corrosive/non-ionising gases between the two pressure connections.

	RS 1107	**RS 1113**
Differential pressure	±200 hPa	±2000 hPa
Max. resolution	0.1 Pa	1 Pa

Usual applications include precise measurements of filter condition, gas flow pressure, draught, leak integrity, dynamic pressure flow speed.

The pressure connection is made at the supplied interchangeable pressure connection ports with suitable hoses.

The product must only be used under the conditions and for the purposes for which it was designed.

It must be handled with care and used according to the technical data (do not throw, strike, etc.). Suitable measures must be used to protect the pressure connections and be protected from dirt and moisture.

3 The product at a glance

3.1 The RS 1100 manometer series

LCD Display

Front view

Top view

3.2 Display elements

Display

Battery indicator	Evaluation of the battery status
Unit display	Display of the units or Min/Max/Hold information text
Main display	Measurement of the current pressure or value for min/max/hold
Auxiliary display	Measurement of the current pressure in Min/Max/Hold mode
Bar graph	Trend display with the special function F, nE

3.3 Operating elements

On / Off button

Press briefly	Switch on the product
	Activate / deactivate lighting
Long press	Switch off the product
	Reject changes in a menu

Up / Down button

Press briefly	Display of the min/max value
	Change value of the selected parameter
Long press	Reset the min/max value of the current measurement
Both simultaneously	Rotate display, overhead display

Function key

Press briefly	Freeze measurement (Hold)
	Return to measurement display
	Call up next parameter
Long press, 2s	Start menu configuration, ConF appears in the display
	Close menu, changes are saved
Long press, 4s	Depending on the selected special function: Activation of the Tare function nuLL, high-resolution measurement FInE or rapid measurement with mean value AVr

3.4 Connections

Universal connection	Interchangeable pressure connection via G1/8" thread.

4 Operation

4.1 Opening the configuration menu

1. Press the *Function key* for 2 seconds to open the ***Configuration*** menu.
2. ConF appears in the display. Release the *Function key*.

Parameter	Values	Meaning
		
Display unit		
Unit		
	Pa	(only at RS 1107)
	hPa	
	mbar	
	bar	(only at RS 1113)
	PSI	
	mmHG	
Activatable special functions		
	nuLL	Tare function available
	Fine	High-resolution measurement with 0.1 Pa (RS 1107) or 1 Pa (RS 1113) activatable
	AVR 0:02 / AVR 0:05 / AVR 0: 10	Rapid measurement with mean value over 2 s / 5 s / 10 s activatable

Measuring rate

rAtE		Selection of the measurement speed
	SLo	Slow
	FASt	Fast

Resolution

rAnG		Selection display resolution
	Auto	Automatic switchover
	Hi	Adjusted to the highest value, e.g. -200.0 .. +200.0 hPa (RS 1107) -2000 .. +2000 hPa (RS 1113)
	Lo	Adjusted to the lowest value, e.g. -20.00 .. +20.00 hPa (RS 1107) -200.0 .. +200.0 hPa (RS 1113)

Shut-off time

PoFF		
	oFF	No automatic shut-off
	0:15 0:30 1:00 4:00 12:00	Automatic shut-off after a selected time in hours and minutes, during which no buttons have been pressed

Backlight

Li tE		
	oFF	Backlight deactivated
	0:15 0:30 1:00 4:00	Automatic shut-off of the backlight after a selected time in minutes and seconds, during which no buttons have been pressed
	on	No automatic shut off of the backlight

Factory settings

ini t

no	Use current configuration
YES	Reset product to factory settings. ini t donE appears in the display

4.2 Open the adjustment menu

1. The product is switched off
2. Press and hold the *Down button*.
3. Press the *On/Off button* to switch on the product.
4. Release the *On/Off button* after 1 second and then the *Down button* in order to call up the ***adjustment menu***. The display shows the first parameter.

Parameter	Values	Meaning
		

Zero point correction: offset

Pr.oF

0.00	No offset
-5.00 .. 5.00	Offset active (in hPa – at RS 1107)
-50.0 .. 50.0	Offset active (in hPa – at RS 1113)

Gradient correction: slope

Pr.SL

0.00	No slope
-5.00 .. 5.00	Slope active (in %)

Formula:

Zero point correction: Displayed value = measured value – offset

Gradient correction: Display = (measured value - offset) * (1 + slope / 100)

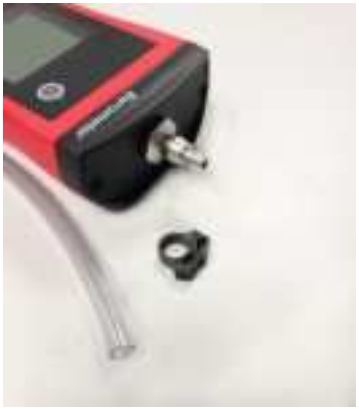
5 Measurement Basics

⚠ CAUTION

Air pressure at port variant UT!

With higher pressures greater than 1 bar, the hoses must be secured to prevent unintended loosening. Suitable hose clamps are used for this purpose.

- 6x1 mm PVC. Up to 5 bar rel., vacuum-suitable!
- 6x1 mm PE. Up to 10 bar rel., vacuum-suitable!
- 6x1 mm PUR. Up to 9 bar rel., vacuum-suitable!



5.1 Special functions

With the special functions that can be selected via the ***Configuration menu***, the device can be optimised for special measuring tasks. After it is switched on, the device starts up in standard measuring mode, the relevant special function is started by pressing and holding the *Function key* for 4 s.

5.1.1 nuLL Tare function

The special function Func nuLL has been selected in the configuration menu.

The display can be zeroed by pressing the *Function key* for 4 s. If the tare function is activated, nuLL blinks in the lower display. The tare function can be reset by pressing the *Function key* again for 4 s.

NOTE

The tare function is independent of the zero point correction accessible via the settings menu.

5.1.2 Fi nE High-resolution measurement with 0.1 Pa (RS 1107)

High-resolution measurement for the finest adjustment work, 4 Pascal Test (test of chimney draft with living-space-independent single combustion) and many other finely-adjusted pressure applications.

In the ***Configuration menu***, the special function Func Fi nE has been selected.

The high-resolution measurement can be activated by pressing and holding the *Function key* for 4 s. Then the sensor is immediately zeroed and the optimised parameters for this measurement are activated.

CAUTION

When starting the special function, make sure that there is no pressure at the connections.

NOTE

The increased current consumption in this mode decreases battery life.

The quickly determined measurement replaces other devices, such as a U-tube manometer. The four bars in the lower display provide additional support.

- The two middle bars appear: Measurement is stable
- Left bars appear: the measurement decreases
- Right bars appear: the measurement increases

By pressing and holding the *Function key* for 2 s., the special function can be activated. End Func appears in the display.

5.1.3 FinE High-resolution measurement with 1 Pa (RS 1113)

High-resolution measurement for the finest adjustment work and many other applications with the finest adjustment of pressure.

In the ***Configuration menu***, the special function FunC FinE has been selected.

The high-resolution measurement can be activated by pressing and holding the *Function key* for 4 s. Then the sensor is immediately zeroed and the optimised parameters for this measurement are activated.

⚠ CAUTION

When starting the special function, make sure that there is no pressure at the connections.

NOTE

The increased current consumption in this mode decreases battery life.

The quickly determined measurement replaces other devices, such as a U-tube manometer. The four bars in the lower display provide additional support.

- The two middle bars appear: Measurement is stable
- Left bars appear: the measurement decreases
- Right bars appear: the measurement increases

By pressing and holding the *Function key* for 2 s., the special function can be activated. EndFunC appears in the display.

5.1.4 AVr 0:02 / AVr 0:05 / AVr 0: 10

Fast measurement with mean value over 2 s / 5 s / 10 s

Mean value mode for measurement of heavily fluctuating pressures.

In the ***Configuration mode***, a special function AVr 0:02, AVr 0:05 or AVr 0: 10 has been selected.

By pressing and holding the *Function key* for 4 s. the measurement with mean value can be activated.

Heavily fluctuating values arise particularly with dynamic pressure/compression measurements in chimney draft tests of forced-air burners and, consequently, conventional electronic manometers are not adequate for task. This special function optimises the device for this application purpose.

The different mean value times of 2, 5 or 10 seconds can be selected depending on the requirement.

The first parameter is shown in the auxiliary display.

By pressing and holding the *Function key* for 2 s., the special function can be activated. End Func appears in the display.

If the Tare function is activated when called up, this special function AVr can be reset by pressing and holding the *Function key* for 4 s. In order to reactivate the Tare, the special function must be switched in the configuration menu.

6 Operation and maintenance

6.1 Operating and maintenance notices

NOTE

Pressure connections must be protected from soiling.

6.2 Battery

6.2.1 Battery indicator

If the empty frame in the battery display blinks, the batteries are depleted and must be replaced. However, the device will still operate for a certain length of time.

If the BAT display text appears in the main display, the battery voltage is no longer adequate for operation of the product. The battery is fully depleted.

6.2.2 Changing battery

DANGER

Danger of explosion!

Using damaged or unsuitable batteries can generate heat, which can cause the batteries to crack and possibly explode!

– Only use high-quality and suitable alkaline batteries!

CAUTION

Damage!

If the batteries have different charge levels, leaks and thus damage to the product can occur.

– Use new, high-quality batteries!

– Do not use different types of batteries!

– Remove depleted batteries and dispose of them at a suitable collection point.

NOTE

This symbol indicates processes, which can have a direct influence on operation or can trigger an unforeseen reaction in case of non-observance.

NOTE

Read the following handling instructions before replacing batteries and follow them step by step.
If disregarded, the product could be damaged or the protection from moisture could be diminished.

1. Unscrews the Phillips screws (A)and remove the cover.
2. Carefully replace the two Mignon AA batteries (B). Ensure that the polarity is correct! It must be possible to insert the batteries in the correct position without using force.
3. The O-ring (C) must be undamaged, clean and positioned at the intended depth. In order to facilitate assembly and avoid damage, a suitable grease can be applied.
4. Fit the cover on evenly. The O-ring must remain at the intended depth!
5. Tighten the Phillips screws (A).

7 Error and system messages

Display	Meaning	Possible causes	Remedy
----	Calculation not possible	Measurement data acquisition is running	Waiting for data collection

No display, unclear characters or no response when buttons are pressed	Battery depleted	Battery depleted	Replace battery
	System error	Error in the product	Send in for repair
	Product is defective	Product is defective	
bAt	Battery depleted	Battery depleted	Replace battery
bAt Lo	Battery depleted	Battery depleted	Replace battery
Err.1	Measuring range exceeded	Measurement too high	Stay within allowable measurement range
		Product is defective	Send in for repair
Err.2	Measuring range is undercut	Measurement too low	Stay within allowable measurement range
		Product is defective	Send in for repair
Err.3	Display range has been exceeded	Incorrect display unit	Correct setting
		Incorrect resolution	Deactivate function
		Fi nE Function active	
Err.4	Display range has been undercut	Incorrect display unit	Correct setting
		Incorrect resolution	Deactivate function
		Fi nE Function active	
SYS Err	System error	Error in the product	Switch product on/off
			Replace batteries
			Send in for repair

8 Technical data

8.1 RS 1107

Measuring range	Measuring range (Hi)	Measuring range (Lo)
		-2000 .. +2000 Pa
	-200.0 .. +200.0 hPa (mbar)	-20.00 .. +20.00 hPa (mbar)
	-2.900 .. +2.900 PSI	
	-150.0 .. +150.0 mmHg (Torr)	-20.00 .. +20.00 mmHg (Torr)
Accuracy	± 0,1 % FSS typical (at nominal temperature 25 °C) ± 1 % FSS max.	
Overload	Max. ± 1700 hPa	
Pressure connection	2 hose connections, interchangeable with G1/8 universal ports	
Measuring cycle	FASt: approx. 25 measurements per second SLo: approx. 2.5 measurements per second	
Display	3-line segment LCD, additional symbols, illuminated (white, duration adjustable)	
Standard function	Min/Max/Hold Auto-power-Off function / if activated, the product switches off automatically	
Activatable special functions	nuLL: Tare function Fine: With 0.1 Pa resolution AVr: Averaging over 2 s / 5 s / 10 s	
Adjustment	Zero point and gradient adjustment	

Housing		Break-proof ABS housing
	Protection rating	IP67 (pressure connections must be protected from soiling and moisture)
	Dimensions L*W*H [mm] and weight	108 * 54 * 28 mm without pressure connection 150 g incl. battery
Operating conditions		-20 to +50 °C; 0 to 95 % r.h. (temporarily 100 % r.h.)
Storage temperature		-20 to +70 °C
Current supply		2*AA battery (included in the scope of delivery)
	Current consumption/ Battery life	approx. 1 mA (slow measurement SLO) Operating time approx. 3000 h
	Battery indicator	4-stage battery status indicator, Note for low battery voltage: "BAT LO"
Directives and standards		The devices conform to the following Directives of the Council for the harmonisation of legal regulations of the Member States: 2014/30/EU EMC Directive 2011/65/EU RoHS Applied harmonised standards: EN 61326-1:2013 Emission limits: class B Immunity according to table 2 Additional errors: < 1 % FS EN 50581:2012 The device is intended for mobile use and/or stationary operation in the scope of the specified operating conditions without further limitations.

8.2 RS 1113

Measuring range	Measuring range (Hi)	Measuring range (Lo)
	-2000 .. +2000 hPa (mbar)	-200.0 .. +200.0 hPa (mbar)
	-2.000 .. +2.000 bar	
	-29.00 .. +29.00 PSI	
	-1500 .. +1500 mmHg (Torr)	-200.0 .. +200.0 mmHg (Torr)
Accuracy	± 0,1 % FSS typical (at nominal temperature 25 °C) ± 1 % FSS max.	
Overload	Max. ± 3100 hPa	
Pressure connection	2 hose connections, interchangeable with G1/8 universal ports	
Measuring cycle	FASt: approx. 25 measurements per second SLo: approx. 2.5 measurements per second	
Display	3-line segment LCD, additional symbols, illuminated (adjustable white, permanent illumination)	
Standard function	Min/Max/Hold Auto-power-Off function / if activated, switches the product off automatically	
Activatable special functions	nuLL: Tare function FinE: With 1 Pa resolution AVr: Averaging over 2 s / 5 s / 10 s	
Calibration	Zero point and gradient adjustment	

Housing		Break-proof ABS housing
	Protection rating	IP67 (pressure connections must be protected from soiling and moisture)
	Dimensions L*W*H [mm] and weight	108 * 54 * 28 mm without pressure connection 150 g incl. battery
Operating conditions		-20 to +50 °C; 0 to 95 % r.h. (temporarily 100 % r.h.)
Storage temperature		-20 to +70 °C
Current supply		2*AA battery (included in the scope of delivery)
	Current requirement/ Battery life	approx. 1 mA (slow measurement SLO) Operating time approx. 3000 h
	Battery indicator	4-stage battery status indicator, Note for low charge level: "BAT LO"
Directives and standards		The devices conform to the following Directives of the Council for the harmonisation of legal regulations of the Member States: 2014/30/EU EMC Directive 2011/65/EU RoHS Applied harmonised standards: EN 61326-1:2013 Emission limits: class B Immunity according to table 2 Additional errors: < 1 % FS EN 50581:2012 The device is intended for mobile use and/or stationary operation in the scope of the specified operating conditions without further limitations.

9 Service

9.1 Manufacturer

If you have any questions, please do not hesitate to contact us:

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