OPERATING INSTRUCTIONS

RC 10

Remote control for leak detectors

PFEIFFER VACUUM

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1 About this manual

1.1 Validity

This operating manual is for customers of Pfeiffer Vacuum. It describes the functioning of the designated product and provides the most important information for safe use of the unit. The description follows applicable EU guidelines. All information provided in this operating manual refers to the current state of the product's development. The documentation remains valid as long as the customer does not make any changes to the product.

Up-to-date operating instructions can also be downloaded from www.pfeiffer-vacuum.com.

This manual covers products with the following part numbers:

Part Number	Description
124193	Remote control RC 10 (with accessories)

1.2 Conventions

1.2.1 Safety instructions

Operating manual safety instructions Pfeiffer Vacuum are based on the UL, CSA, ANSI Z-535, SEMI S2, ISO 3864 and DIN 4844 certification standards. This document describes the following information and danger levels:

DANGER
Imminent danger
Indicates an imminent hazardous situation that will result in death or serious injury.

WARNING
Possibly imminent danger
Indicates an imminent hazardous situation that can result in death or serious injury.

CAUTION
Possibly imminent danger
Indicates an imminent hazardous situation that can result in minor or moderate injury.

NOTICE
Command or note
Command to perform an action or information about properties, the disregarding of which may result in damage to the product.

1.2.2 Pictographs

Prohibition of an action to avoid any risk of accidents, the disregarding of which may result in serious accidents

Warning of a displayed source of danger in connection with operation of the unit or equipment

Command to perform an action or task associated with a source of danger, the disregarding of which may result in serious accidents

1.2.3 Instructions/Abbreviations used

⇨ or ➜   Work instruction: you must perform an operation here.

[XXXX]   You must press the **XXXX** key on the control panel.

1.2.4 Labels

This chapter lists all the labels that could appear on the product as well as their meaning.
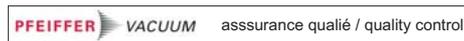
Safety label: guarantee that the packing has not been opened since leaving the factory.
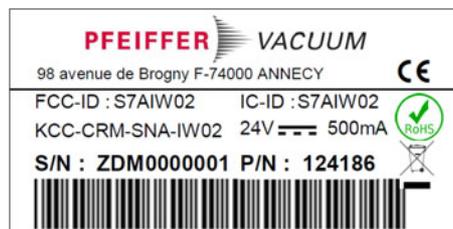
Product identification label *(see 4.1)*.

Label visible in the battery compartment.
Indicates that no batteries other than the battery provided should be used.
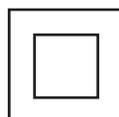
Class 2: this device is double-insulated and has no accessible metal parts.
Class 2 device plugs do not have an earth pin.

2 Safety

2.1 Safety precautions

Obligation to inform

Any person responsible for installing, using or maintaining the product must first read the security instructions in this operating manual and comply with them.

➔ It is the operating customer's responsibility to protect all operators against the dangers associated with the product, with the media pumped and with the entire installation.

Availability obligation

Any person tasked with the installation, use or maintenance of the product must be able to consult the product's operating instructions and maintenance manual.

➔ It is the responsibility of the operator to provide these manuals at the point of use of the product.

DANGER

Hazard linked to magnetic fields

Powerful magnetic fields may disturb or interfere with the operation of electronic products, e.g. cardiac pacemakers.

➔ Keep a safety distance of at least 10 cm between the pacemaker and the magnet or avoid any disturbance from powerful magnetic fields by installing suitable shielding.

➔ Observe the safety distances specified by the manufacturer of the pacemaker.

WARNING

Electric shock hazard in case of contact

Voltage and current can cause electric shock.

➔ Make sure that the mains connection is always visible and accessible when charging so that it can be unplugged at any time.

➔ Disconnect the charger power cable at both ends from all power sources before starting any work on the product.

2.2 Proper use

NOTICE

EC conformity

The manufacturer's declaration of conformity becomes invalid if the operator modifies the original product or installs additional components.

➔ Following installation into a plant and before commissioning, the operator must check the entire system for compliance with the valid EU directives and reassess it accordingly.

● The remote control RC 10 remotely replicates the functions available on the leak detector's control panel. It is compatible with numerous detectors *(see 5.1)*.

● The product may be used in an industrial environment.

● The remote control cannot be used to change the leak detector settings.

Any other use is inappropriate to the product's aim.

3 Storage

Upon delivery, check that the product has not been damaged during transport. If the product is damaged, take the necessary measures with the carrier and notify the manufacturer. In all situations we recommend:

➔ Keeping the product in its original packaging so it stays as clean as it was when dispatched by us. Only unpack the product once it has arrived at the location where it will be used.

➔ Keeping the packaging (recyclable materials) in case the product needs to be transported or stored.

New battery storage (spare part)

New batteries must be stored as follows:

– never store the battery in contact with metal objects, water, sea water, acids or oxidants.

– do not expose the battery to direct sunlight, high temperatures or elevated humidity and always comply with the storage conditions *(see 12.1)*.

– do not remove the heat-shrink sleeve from the battery.

4 Product description

4.1 Product identification

To correctly identify the product when communicating with Pfeiffer Vacuum, always have the information from the rating plate available.
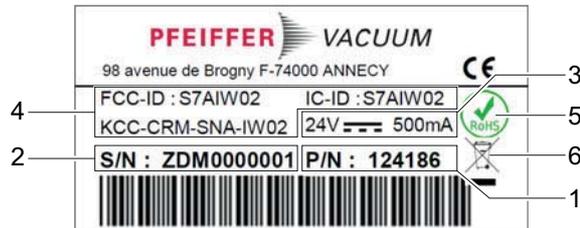
Fig. 1:   Nameplate example

1	Part Number
2	Serial number
3	Maximum power consumption
4	Bluetooth standards
5	R.o.H.S product
6	Product subject to waste electronic and electrical equipment treatment

4.1.1 Scope of delivery

- 1 remote control RC 10
- 1 detector connecting cable (5 m)
- 1 charger + 3 adaptors - EU/UK/USA
- 1 radio transmitter (RS-232/Bluetooth)
- 1 transmitter connecting cable (+ 1 scratch)
- 1 operating instruction manual

4.2 Interface connection

Fig. 2:   Human/machine interface

1	Charger connector (6.3 mm Jack socket) (*)	**6**	Threaded sockets for bracket fixings
2	Audio headset connector (3.5 mm Jack socket) (*)	**7**	Speaker
3	USB stick connector (*)	**8**	Fixing magnet
4	Detector connecting cable connector (RJ9 socket)	**9**	Remote control operation indicator LED (device powered on / device state / charging)
5	Light (LED)		

(*) The connector is protected against dust and humidity by a plastic strip. The remote control's IP 42 protection rating only applies if the strip is kept in place. Do not remove the protective strip.

5 Installation

5.1 Compatibility with leak detectors

The remote control RC 10 is compatible with the following leak detectors:

– ASM 3xx/ASI 3x
– ASM 182/192 series
– ASM 142/142 D/Graph/Graph D (see 'Special case' below)
– ASM 142 S/102 S (see 'Special case' below)

However, depending on the leak detector model and firmware version, it is possible that certain remote control functions will not be available. These special cases are covered in this manual.

Special case   Leak detectors concerned: ASM 142/142 D/Graph/Graph D/142 S/102 S

To use the wireless remote control, it is necessary that:

– the detector must be equipped with a 9-pin D-Sub connector (RS-232 available as standard / an option / an accessory, depending on model)
– 5 Volts must be available on pin 9 of the 9-pin D-Sub connector. If this is not the case, please contact your service centre.

Setting   *(see 7.7)*

5.2 Set-up

The remote control has magnets so that it can be secured to metal surfaces.

It can also be fixed to a bracket using 3 x M3 screws (the customer must purchase the bracket and screws separately; maximum screw length: 7 mm) *(see 4.2)*.

5.3 Audio headset connection

A Jack socket *(see 4.2)* is provided for connecting a stereo/mono headset. The customer must purchase the headset separately.

The speaker is automatically muted when in use.

To comply with safety standards, the sound volume is limited to 80 dB.

Connector and headset characteristics *(see 12.1)*.

5.4 USB stick connection

A USB connector *(see 4.2)* is provided for connecting a USB stick for the purposes of transferring data, updating the firmware and playing media files. The customer must purchase the USB stick separately.

Connector and key characteristics *(see 12.1)*.

5.5 Charging the battery

New remote control battery charge levels are 30%. It is possible that the new remote control's charge level indicator shows a lower state of charge.

The remote control's charge level indicator will not be reliable until several battery charging/discharging cycles have been completed.

These charging/discharging cycles will also optimise battery reliability and longevity *(see 5.5)*.

When the battery charge level drops below 10%, the LED (9) *(see 4.2)* flashes.

	NOTICE
	Data loss
	When the battery charge level approaches 0, the 'Low battery shutdown XX s !' message appears onscreen and a 30 s countdown is started.
	➜ Charge the battery immediately.
	– If a recording is in progress when the countdown starts, the recording will be lost.

Connection A Jack socket *(see 4.2)* is provided for connecting the battery charger.

Charger and battery characteristics *(see 12.1).*

Charging procedure

	WARNING
	Electric shock hazard if non-standard charger is used
	Using a non-standard charger can cause electric shocks and injury.
	➜ Only use the original charger supplied with the remote control (or furnished as a spare part).

	WARNING
	Electric shock hazard in case of contact
	When the remote control is powered down, some internal components still have an electrical charge.
	➜ Make sure that the mains connection is always visible and accessible when charging so that it can be unplugged at any time.
	➜ Disconnect the charger power cable at both ends from all power sources before starting any work on the product.

➜ Use the mains adaptor on the charger if needed.

➜ Connect the charger to the remote control and power source.

   – While the battery is charging, the LED (9) *(see 4.2)* flashes. It stops flashing when charging is complete.

   – The remote control can still be used while the battery is being charged.

   – Charging time is up to 12 hours.

➜ Fully charge the battery, then discharge it to 5% of its capacity (see charging procedure below).

Never leave the charger connected to the power supply or remote control when charging is finished.

To charge the battery, you can also connect the remote control to the leak detector with its connecting cable, in which case it will start charging automatically as soon the connection is made (as long as the leak detector is powered on).

> **NOTICE**
>
> **Battery protection**
>
> To extend the life of the battery, we recommend following the rules below.
>
> ➔ Never use any charging method other than the one described in this manual.
> ➔ Keep the battery away from sources of heat.
> ➔ Store the battery at a temperature below 60°C.
> ➔ Do not charge the battery when the temperature is above 40°C or below 0°C.
> ➔ Do not leave the charger connected to the remote control when it is not being charged.
> ➔ Charge the battery when its charge level drops to 10% at the lowest.
> ➔ If the remote control is not going to be used for at least 3 months, store it with the battery charge level at 50%.
> ➔ Do not spill any liquids on the battery (water, sea water, acid, beverages, etc.).
> ➔ Do not expose the battery to oxidants.
> ➔ Do not dismantle/reassemble the battery or solder it directly.
> ➔ Do not subject the battery to mechanical shocks and do not deform it.

5.6   Connection to leak detector

5.6.1   Wireless connection (Bluetooth radio transmitter)

When connected wirelessly, the remote control uses battery power.

➔ Power on the leak detector.
➔ Configure the 'Advanced' mode to the leak detector's serial link 1. Refer to the detector's Operating instructions.
➔ Connect the radio transmitter to the detector's 9-pin D-sub (RS-232) connector.
  – Make a note of the address MAC (PV_xxxxxx) shown on the radio transmitter: this number is unique and is used to identify the device.
➔ Power on the radio transmitter.
➔ Power on the remote control.
  – The wireless connection is switched on automatically when the device is powered on. If it is not switched on automatically, press **[CONNECT]**.
  – A list of available devices within range of the remote control is displayed onscreen. A message is displayed if no devices are detected.
➔ From the list, press the MAC address of the radio transmitter installed on the leak detector to connect to the remote control.
➔ The home page is displayed when the connection is established.

You do not need to disconnect from the remote control before powering down the remote control. As a result, the remote control will automatically connect to the last detector used when powered on again.

It is only necessary to disconnect when connecting the remote control to a different leak detector. To disconnect, press **[DISCONNECT]**.

5.6.2   Wired connection

With a wired connection, the remote control is powered by the leak detector, which also recharges the remote control's battery.

Connecting cable characteristics *(see 12.1)*.

➔ Connect the connecting cable to the RJ9 connector on the remote control *(see 4.2)* and to the control panel connector on the detector (see 6.1.1). Refer to the detector's Operating instructions.
  – The connecting cable can be attached with the leak detector powered on or down.
➔ Power on the leak detector (if powered down).

➔ Power on the remote control.

The remote control is immediately recognised by the leak detector and the home page is displayed.

NOTICE
Connecting cable ➔ Only use the original connecting cable supplied with the remote control (or furnished as a spare part *(see 9.1)*).

6 Operation

The remote control RC 10 can be used with any compatible leak detector *(see 5.1).*

6.1 User interface
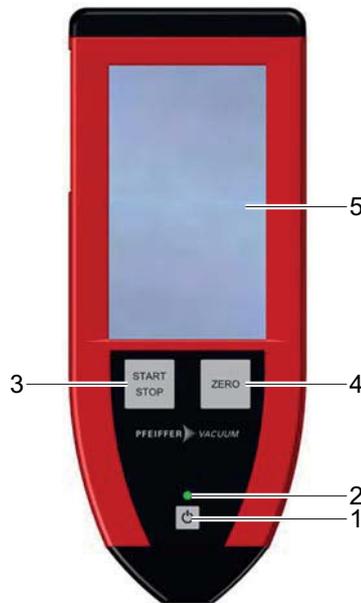
Fig. 3:	User interface
1	ON/OFF key - Forced restart
2	Remote control operation indicator LED (device powered on / device state / charging)
3	Test start/stop key
4	Enable/Disable Zero function key
5	Capacitive touchscreen

➔ Remove the film that protects the screen upon delivery.

➔ Only use your fingers to touch the screen and never use hard objects such as pens, screwdrivers, etc.

[ON/OFF] key

● **Access to the home page**

Prerequisites: remote control powered on, not charging.

Press the **[ON/OFF]** key briefly to return to the home page / graph screen *(see 6.3).*

● **Powering on the remote control**

➔ Press the **[ON/OFF]** key.
  – the green LED (2) comes on.
  – the home screen appears after 45 s.
  – the LED light might flash once.

● **Powering down the remote control**

➔ Press the **[ON/OFF]** key until the onscreen symbol completes a ↻ rotation.
  – the green LED (2) and screen go off.
  – the LED light goes off.

● **Forcing the remote control to restart** *(see 8.2)*

[START/STOP] key

This key is used to start/stop leak tests.

The measurements taken during the test can be recorded *(see 7.6).*

➔ Press the **[START/STOP]** key.

– If the Memo function is enabled on the leak detector when the test stops, the results of the test carried out are pinned to the screen: the leak rate is displayed in red and flashes. Refer to the detector's operating instructions.

[ZERO] key This key is used to start/stop the Zero function.

Refer to the detector's operating instructions.

When this function is enabled, the remote control emits a bleep and the activation indicator (10) comes on *(see 6.4.1)*.

6.2 First use

The new remote control's battery and the battery available as a spare part are charged to 30% during manufacture. When the remote control is used for the first time, it is possible that the new remote control's charge level indicator shows a lower state of charge.

We recommend charging the remote control's battery before it is used for the first time *(see 5.5)*.

First use configuration *(see 7.7)*.

6.3 Home screen

You can browse the remote control's menus using the touchscreen:

– swipe the screen to the left or right to go from the home page to the "Graph" screen
– lightly slide your finger over the screen to scroll through the menus and drop-down lists
– briefly press the screen to access the menus, enable functions and configure data
– briefly press the **[ON/OFF]** key to return to the home page / graph screen.
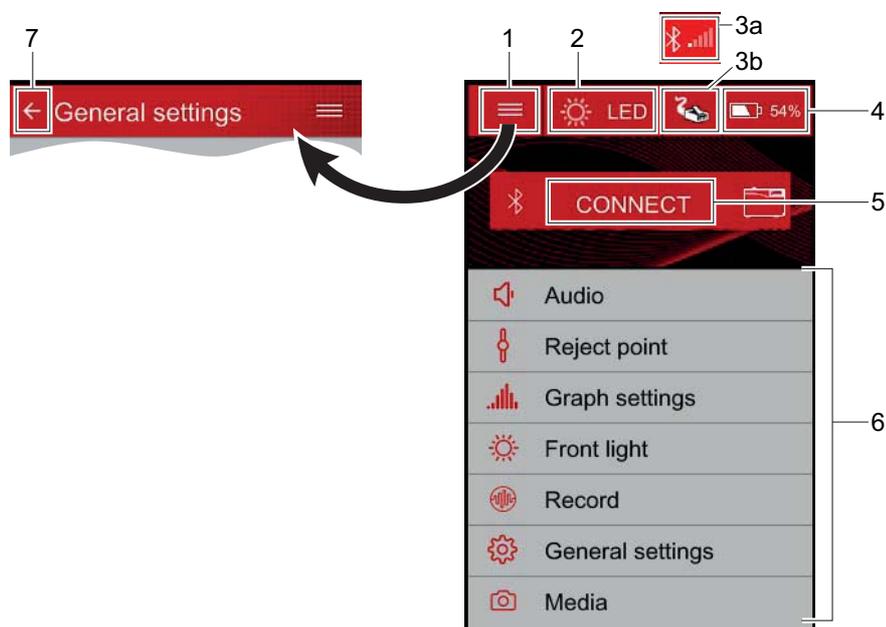
Fig. 4:	Home screen
1	Access "Settings" screen
2	Start/Stop LED lighting
3a	Wireless connection (Bluetooth) activation indicator
	Connection quality bar graph
3b	Wired connection indicator enabled
4	Battery level
5	Radio transmitter connection/disconnection
6	Menu access
7	Return to home page / graph screen
	Briefly pressing the **[ON/OFF]** key also returns you to the home page / graph screen.

6.4 "Graph" screen

Refer to the "Graph" menu *(see 7.4).*

6.4.1 Description

Monitor and record leak rates and inlet pressure, depending on settings.

Fig. 5: **Graph interface**

1	Leak rate scale and corresponding unit	**10**	Zero activation indicator
2	Bar graph display of the leak rate	**11**	Leak rate digital display and corresponding unit
3	Remote reject point 3 **(3)**[2]	**12a**	Information message warning
4	Remote reject point 2 **(2)**[2]	**12b**	Alarm message information
5	Display reject point **(M)**[2]	**13**	Inlet pressure plot [2]
6	Remote reject point 1 **(1)**[2]	**14**	Inlet pressure digital display and corresponding unit [2]
7	Inlet pressure bar graph display [2]	**15**	Configured display time scale
8	Show/Hide the "Measurement" window [1]	**16**	Leak rate plot
9	Leak rate correction function activation indicator	**17**	Recording interface *(see 7.6)*

[1] The "Measurement" window is only accessible in portrait view *(see 7.5).*
[2] Show/Hide settings can be configured.

Fig. 6: **"Measurement" window**

8	Show/Hide the "Measurement" window [1]	**12a**	Information message warning
9	Leak rate correction function activation indicator	**12b**	Alarm message information
10	Zero activation indicator	**18**	Enable/Disable autocalibration
11	Leak rate digital display and corresponding unit	**19**	Detector status

[1] The "Measurement" window is only accessible in portrait view *(see 7.5).*
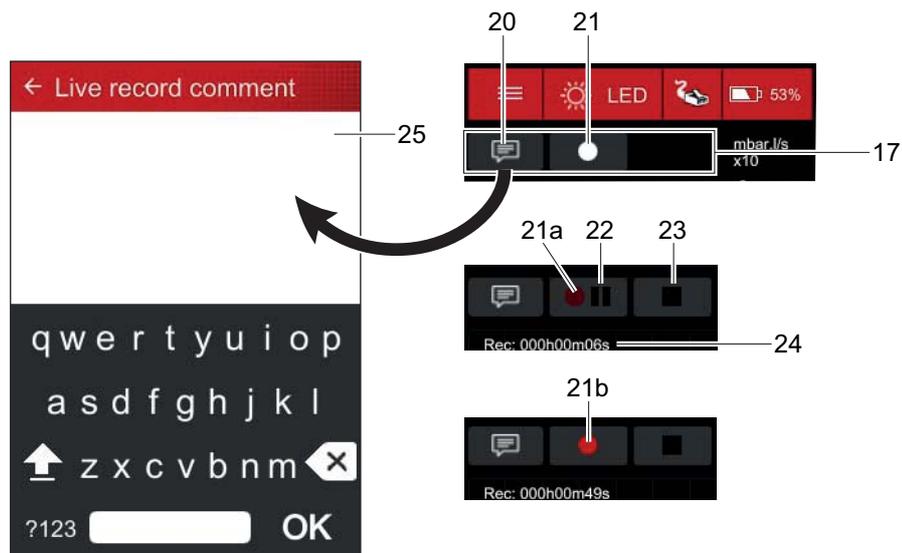
Fig. 7:   Recording interface (available if the 'Enable data recording' function is enabled)

17	Recording interface [1]	23	Save recording
20	Comments box access	24	Total recording time – Actual data recording, pauses not included
21	Start/Stop the recording – white pictogram: no recordings in progress – flashing red pictogram (21a): recording in progress – fixed red pictogram (21a): recording paused	25	Comment entry box
22	Pause recording – fixed red pictogram (21a): recording paused		

[1] The Recording interface is only accessible in portrait view *(see 7.5)*.

> **To display the graph screen in landscape view (largest graph display time), enable automatic screen orientation *(see 7.4).***

> **To make the exact values of all measurements available as a spreadsheet, save the recording to a .txt file.**

6.5   "Settings" screen

This screen is used to access the remote control's settings menus *(see 7)*.

6.6   Correction Information

When this function is enabled on the leak detector, the activation indicator (9) comes on *(see 6.4.1)*. This function cannot be enabled from the remote control.

Refer to the detector's operating instructions.

6.7   Autocalibration function

Calibration is used to check whether or not the leak detector is correctly set up. Refer to the detector's maintenance instructions.

To run autocalibration, first open the Measurement window *(see 6.4.1)*.

➔ Press **[AUTOCAL]** (18) to start autocalibration *(see 6.4.1)*.

6.8   Automatic shutdown

The remote control automatically shuts down when the 3 conditions set out below are fulfilled simultaneously for 1 hour:

– the remote control is not connected to the leak detector
– the remote control is immobile
– the LED light is off.

A 30 s countdown begins before automatic shutdown (the countdown timer is displayed on the remote control's screen). To stop automatic shutdown, either touch the screen or move the remote control within the 30 seconds.

Automatic shutdown is disabled when the battery is charging.

6.9   Panel off

Standby mode is automatically activated when:

– the battery is being charged
– the remote control is immobile for at least an hour.

The screen goes into sleep mode (black screen) when the back light is turned off. The device appears to be powered down, but this is not the case!

➔ Touch the screen to turn the back light back on.

6.10 Cleaning

WARNING
Skin irritation hazard if the screen is damaged Liquid crystals can be released if the screen is damaged. ➔ Never touch liquid crystals. ➔ If in contact with the body, wash the affected area with soap and water. ➔ In case of contact with clothing, put on the appropriate protective gloves and use soap and water to wash the affected items.

NOTICE
Liquid on the screen It is recommended that liquids not be poured onto the screen. If they are, the touch-screen may not work properly or could exhibit random behaviour. ➔ Power down the remote control. ➔ Disconnect it from the leak detector (wired connection). ➔ Air-dry it or use a hair dryer.

➔ Clean the remote control's shell and screen with a soft, damp cloth.

7 Setting

"Settings" screen *(see 6.5).*

7.1 Settings menu tree structure

The following table shows the remote control's initial settings RC 10.

It provides an exhaustive list of the functions available on the remote control.

The remote control is only capable of relaying the existing functions on the leak detector. This is the reason why some of the functions offered by the remote control are not always available. Refer to the leak detector operating instructions to confirm what functions will be available.

All changes are saved automatically when you exit the menu.

AUDIO			Choice - Setting limit	Initial settings
Selection			**Choice - Setting limit**	**Initial settings**
Mute alarm	Status		ON / OFF	OFF
Volume	Setting		Set Point	30 %

REJECT POINT				
Selection			**Choice - Setting limit**	**Initial settings**
Display reject point (Main)	Display		ON / OFF	ON
Remote reject point 1	Reject point	Enable	ON / OFF	OFF
		Set Point	$1 \cdot 10^{+19}$ - $1 \cdot 10^{-19}$	$1 \cdot 10^{-4}$
		Color	Green / Grey / Blue / Yellow / White / Brown / Orange	Green
Remote reject point 2	Reject point	Enable	ON / OFF	OFF
		Set Point	$1 \cdot 10^{+19}$ - $1 \cdot 10^{-19}$	$1 \cdot 10^{-6}$
		Color	Green / Grey / Blue / Yellow / White / Brown / Orange	Grey
Remote reject point 3	Reject point	Enable	ON / OFF	OFF
		Set Point	$1 \cdot 10^{+19}$ - $1 \cdot 10^{-19}$	$1 \cdot 10^{-8}$
		Color	Green / Grey / Blue / Yellow / White / Brown / Orange	Blue

GRAPH		
Selection	**Choice - Setting limit**	**Initial settings**
Display Time	6 seconds / 12 seconds / 18 seconds / 30 seconds / 1 minute / 3 minutes / 6 minutes / 12 minutes / 20 minutes / 30 minutes / 1 hour / 2 hours / 4 hours	18 seconds
High Decade	$1 \cdot 10^{+6}$ - $1 \cdot 10^{-12}$	$1 \cdot 10^{-2}$
Low Decade	$1 \cdot 10^{-3}$ - $1 \cdot 10^{-12}$	$1 \cdot 10^{-12}$

GRAPH		
Selection	**Choice - Setting limit**	**Initial settings**
Inlet pressure graph	ON / OFF	OFF
Inlet pressure	ON / OFF	ON
Auto scale	ON / OFF	OFF
Automatic orientation	ON / OFF	ON

LIGHT			
Selection		**Choice - Setting limit**	**Initial settings**
Brightness		Low / Medium / High	Medium
Flash on part rejected	Status	ON / OFF	OFF
Automatic shutdown		1 minute / 2 minutes / 5 minutes / 10 minutes / 20 minutes / 30 minutes	2 minutes

RECORD			
Selection		**Choice - Setting limit**	**Initial settings**
Enable data record-ing	Status	ON / OFF	OFF
Sampling time		100 ms / 200 ms / 500 ms / 1 second / 2 seconds / 3 seconds / 4 seconds / 5 seconds / 10 seconds / 20 seconds / 30 seconds	100 ms
File location		Internal memory / USB stick	Internal memory
Record file manager (internal memory)	Delete file	Enable function	
	Copy file to USB stick	Enable function	

GENERAL SETTINGS		
Selection	**Choice - Setting limit**	**Initial settings**
Language	English / French / German / Italian / Chinese / Japanese / Korean / Spanish / Russian	Must be configured

GENERAL SETTINGS				
Selection			**Choice - Setting limit**	**Initial settings**
Detector selection			ASM3xx/ASI3x / ASM142/142D / ASM182 Series / ASM192 Series / ASM142S/102S	Must be configured
	Select unit (exhaustive list of all detectors *(see 7.7)*)		mbar·l/s / Pa·m^3/s / Torr·l/s / atm·cc/s / ppm / gr/yr / oz/yr / lb/yr / Custom	Must be configured
	Select test method (available after unit selection) ASM142/142D / ASM182 Series / ASM192 Series only		Sniffing / Hard vacuum	Must be configured
	Select remote type (available after unit selection) ASM142S/102S only		Standard remote / Sniffer remote	Standard remote
Advanced	Factory data reset	Enable function		
	Update firmware	Enable function		
Service	Information	Use reserved for the manufacturer		
	Quality test	Use reserved for the manufacturer		

MEDIA			
Selection		**Choice - Setting limit**	**Initial settings**
Internal memory	Selection		
USB stick	Selection		

7.2 "Audio" menu

➔ From the "Settings" screen, press **[Audio]** to access the menu.

The audio alarm informs the operator that the configured display reject point *(see 7.3)* has been crossed.

● Alarm enabled: grey pictogram
● Alarm disabled: green pictogram

Connecting an audio headset to the remote control deactivates the speaker.

Volume ➔ Adjust the sound level by pressing the cursor.
– When the volume is changed, a short bleep at the corresponding new sound level is emitted.

Maximum sound level *(see 12.1)*.

7.3 "Reject point" menu

➔ From the "Settings" screen, press **[Reject point]** to access the menu.

Display reject point (Main) The display reject point defines the acceptance threshold for parts where:
– measured leak rate ≤ display reject point: part accepted
– measured leak rate > display reject point: part rejected

The display reject point cannot be configured from the remote control: it is automatically picked up by the leak detector. Refer to the detector's operating instructions.

- Set point display enabled: green pictogram
- Set point display disabled: grey pictogram

Display reject point plots are always shown in red and correspond to plot (M) on the screen.

If enabled, the LED light flashes when the display reject point is crossed *(see 7.5)*.

Remote reject point # 3 additional remote reject points can be configured.

This function is only available on the remote control (it is not available on the leak detector: only 1 reject point visible on the leak detector screen).

➔ Select the set point to configure.

Enable	Enable set point and display on the graph
	• Set point enabled + plot shown on the graph: green pictogram
	• Set point disabled + plot hidden on the graph: grey pictogram
Set Point	⇨ Set the value.
Color	⇨ Configure the set point plot display colour.

7.4 "Graph" menu

"Graph" screen *(see 6.4)*.

➔ From the "Settings" screen, press **[Graph]** to access the menu.

Display Time	The graph shows the selected plots over the configured 'Display time'. The graph starts up as soon as the connection with the detector is established.
Auto scale	Auto scale is used to display the measured leak rate centred on 2 decades. The scale varies according to the leak rate measured. When auto scale is enabled, the scale configured for the leak rate is no longer taken into account (max/min decade).
	• Auto scale ON: green pictogram
	• Auto scale OFF: grey pictogram
High Decade	Max decade of the bar graph.
Low Decade	Min decade of the bar graph.
Inlet pressure graph	Show/Hide inlet pressure plot
	• Plot displayed: green pictogram
	• Plot hidden: grey pictogram
Inlet pressure	Show/Hide inlet pressure if 'Inlet pressure graph' is displayed
	• Value displayed: green pictogram
	• Value hidden: grey pictogram
Automatic orientation	Automatic orientation for "Graph" screen only.
	• Automatic orientation ON (portrait/landscape view according to remote control b ox orientation): green pictogram
	• Automatic orientation OFF (permanent portrait view): grey pictogram
	The "Measurement" window is only accessible in portrait view.

7.5 "Light" menu

WARNING
Temporary blindness hazard
Momentary exposure to an LED light can cause temporary blindness similar to that caused by a camera flash.
➔ Never look directly at the LED light when it is on.

The remote control is fitted with an LED light (5) *(see 4.2)*. It is used to:

– illuminate the user's work area when needed,
– alert the user of a bad part (depending on configuration)
– find the remote control (paging function only available on certain detector models). Refer to the detector's operating instructions.

- When the Paging function is enabled on the detector, the remote control emits a series of bleeps and its LED light flashes so that it can be found. To stop the remote control's bleeping and LED light flashing, disable the Paging function.

➜ Press the key (2) to turn on the light *(see 6.3)*.

➜ From the "Settings" screen, press **[Light]** to access the menu.

Brightness	3 brightness power levels
	High power = illuminates up to 3 m
Flash on part rejected	If this function is enabled, the LED light flashes if the display reject point is crossed *(see 7.3)*.
	⇨ Enable the function.
	• function enabled: green pictogram
	• function disabled: grey pictogram
Automatic shutdown	When the LED light is turned on manually, it will go off automatically after the set time.

7.6 "Record" Menu

Recording is used to save measurements taken during the test to the remote control's internal memory or to a USB stick (USB stick not included). The data is saved as a .txt file.

All the remote control's functions remain available during recording.

The following data are recorded for each point:

– the sampling time
– the total recording time (End)
– the measured leak rate and corresponding unit (Tracer gas)
– the inlet pressure (P)
– any comments that have been entered (Comments).

The recording start time and date are not recorded.

➜ From the "Settings" screen, press **[Record]** to access the menu.

Enable data recording	When this function is enabled, the interface for managing the recording is available on the "Graph" screen. The interface is only accessible in portrait view *(see 7.4)*.
	⇨ Enable the function.
	• function enabled: green pictogram
	• function disabled: grey pictogram
Sampling time	Time between the recording of 2 measurement points.
File location	The recordings are either stored:
	– in the remote control's internal memory. The internal memory size is 100 MB (a maximum of 1 million points)
	– or on a USB stick.
	The location must be selected before the recording is started.
Record file manager	This menu is used to manage the internal memory. It is used to:
	– either delete the selected files from the internal memory
	– or copy the selected files from the internal memory to a USB stick: see procedure below.
	Copying procedure:
	⇨ Connect a USB stick to the remote control.
	⇨ Press **[Copy file to USB stick]**.
	⇨ Select the files to copy.
	⇨ Press **[OK]**.
	– A message is displayed indicating that copying was successful.
	If the USB stick is missing, a message is displayed onscreen asking the user to insert a USB stick. The copying procedure starts when the USB stick is inserted.

Interface   The keys for managing the data recording become available on the "Graph" screen when recording is enabled (see below) *(see 6.4.1)*.

Procedure   During recording, the following features are available:

– pause recording *(see 6.4.1)*: press (22) (the indicator stays red but stops flashing). Pressing the key (22b) resumes the recording.

– enter a comment at a measurement point **(the recording is paused while the comment is entered)** *(see 6.4.1)*: pause the recording (22), press (20), enter the comment and press **[OK]** to save the comment and resume recording.

	NOTICE

Data loss

When the battery charge level approaches 0, the 'Low battery shutdown XX s !' message appears onscreen and a 30 s countdown is started.

➔ Charge the battery immediately.

– If a recording is in progress when the countdown starts, the recording will be lost.

➔ Select the file location for recording the files (see above).

➔ Enable data recording (see above).

➔ Start the recording (21) (the indicator (21a) turns red and flashes during recording) *(see 6.4.1)*.

➔ Perform the leak tests.

➔ Stop the recording (23).

➔ Confirm the recording stopped confirmation message.

– To resume recording, click on **[CANCEL]**.

The next part of the procedure varies according to the file location selected:

'File location' selected	Next part of procedure
'Internal memory'	A message is displayed indicating the save location and the name of the file (.txt) created.
'USB stick' and USB stick connected to the remote control	
'USB stick' and no USB stick connected to the remote control	A message is displayed asking for a USB stick to be inserted. ● USB stick inserted: – The saving procedure resumes automatically. – A message is displayed indicating the save location and the name of the file (.txt) created. ● USB stick not inserted: – This signifies that the save operation is cancelled and the recording data will be lost. – Click on **[OK]**. A new message is displayed asking for confirmation of the cancellation. – A USB stick can still be inserted into the remote control at this point: if it is, the saving procedure resumes automatically and a message is displayed indicating the save location and the name of the file (.txt) created. – To confirm cancellation, click on **[OK]**, the last recording made will be irretrievably lost.

7.7 "General Settings" menu

When the remote control is powered on for the first time, the following settings must be configured:

– the language

– the detector model with which the remote control is to be connected to

– the test method (according to selected detector)

– the remote control type (according to selected detector).

The same applies after a factory data reset.

The user can change the settings at any subsequent time.

Language	The leak detector language is not automatically picked up by the remote control. ⇨ Set the language.
Detector selection	See details below.

Advanced	**Factory data reset**
	If necessary, the user can change the factory data settings *(see 7.7)*.
	⇨ Press **[OK]** to start loading.
	Loading takes a few minutes. The remote control will restart automatically.
	⇨ Follow the onscreen instructions.
	Firmware update
	If necessary, the user can update the firmware. To do this, the firmware must be loaded onto a USB stick. Contact the service centre.
	⇨ Power on the remote control. To do this, connect the remote control:
	– either to the detector which must be powered on,
	– or to the charger which must be powered on.
	⇨ Insert the USB stick with the firmware to load.
	⇨ Press **[OK]** to start the update.
	⇨ Follow the onscreen instructions.
Service	**Information**: information reserved for the manufacturer (access is password protected)
	Quality test: information reserved for the manufacturer (access is password protected)

'Detector selection' details

Detector selection	The remote control must be paired with the leak detector model used.
	⇨ Configure the detector model.
	The rest of the configuration depends on the configured detector model:
	● ASM3xx/ASI3x
	– automatic recognition of unit and test method configured on the leak detector
	● ASM142/142D (+ Graph/GraphD) - ASM182 Series - ASM192 Series
	– Unit configuration followed by test method (see below)
	● ASM142S/102S
	– Unit configuration followed by remote control type (see below)
Unit	The list of proposed units is exhaustive and covers all the compatible leak detectors *(see 5.1)*.
	However, depending on the leak detector model and firmware version, it is possible that certain units proposed on the remote control will not be available.
	Units that are not available on the leak detector will also be unavailable on the remote control: refer to the leak detector's operating instructions to confirm what units will be available.
	The configured set points are not automatically converted in the new unit if changed: the operator must to update them.
	ASM3xx/ASI3x: the leak detector unit is automatically picked up by the remote control, irrespective of the connection type (wireless/wired).
	All detectors (except the ASM3xx/ASI3x): the leak detector unit is automatically picked up by the remote control when connected wirelessly, but not if it is connected by cable.
	⇨ When connected by cable, the unit must be configured.
Select test method	The test method configured on the leak detector must also be configured on the remote control.
	⇨ Configure the test method used.
	All detectors (except the ASM3xx/ASI3x): when connected by cable, the remote control will only work with the hard vacuum test, irrespective of which test method is configured. For sniffing to work, wireless connection must be used.
Select remote type	The remote control RC 10 can replace 2 old ASM142S/102S-compatible remote controls. The old remote control model used must be configured on the remote control RC 10.
	⇨ choose the old remote control type.

7.8 "Media" menu

The Media menu is used to view the contents of the internal memory or USB stick: image and video files only. It is not capable of displaying data record files (in .txt format) *(see 7.6)*.

The data is saved as a .txt file.

➔ Select the storage location.
  – 'USB stick' is only displayed if a USB stick is connected.
➔ Follow the instructions to view the desired file.

8 Malfunctions

8.1 Warning fault display

The leak detector can display warnings or alarms at any time: a pictogram ((12a) or (12b) *(see 6.4.1)*) is displayed on the remote control to warn the user.

➔ The message can be read from the detector's control panel. Refer to the detector's operating instructions.
  – The pictogram goes away when the source of the problem goes away.

Irrespective of leak detector firmware version, most of the warnings and alarms displayed on the detector control panel will generate an alert on the remote control. However, if there is a problem using the remote control or if no alert is displayed on it, check the detector control panel to make sure that no faults have appeared.

8.2 Forced restart

Only force the remote control to restart as a last resort and only if it has stopped responding.

Any recordings in progress during the forced restart will be lost.

➔ Press and hold the **[ON/OFF]** key on the remote control for 8 s.

8.3 Troubleshooting guide

Contact your service centre if the fault persists after implementing the proposed solution(s).

Fault	Symptoms		Solution
The remote control will not start.	Battery discharged	The **[ON/OFF]** key LED comes on for 1 second, then goes off after an attempted start.	Either: – Connect the charger and leave the battery on charge for 8-10 hours. – Or connect the remote control to the (powered on) detector and leave the battery on charge for 8-10 hours.
	Defective battery	Connect the charger. Leave the battery on charge for 8-10 hours, then disconnect the charger. If the remote control powers down immediately (≈ 1 s), the battery is defective.	Change the battery.
Short remote control battery life.	Battery old or defective	The battery life of the remote control is less than 3 hours: it should normally be between 3 and 10 hours, depending on use and ambient temperature.	Change the battery.
The battery will not charge.	The mains charger adaptor is not properly engaged	The mains charger adaptor must be fully engaged.	Fully engage the mains charger adaptor.
	Charger defective	The battery will not charge when the charger is connected but does charge when the remote control is connected to the leak detector.	Change the charger.
The USB stick is not detected.	The USB stick has not been formatted in FAT32		Format the USB stick in FAT32.
	USB port defective	The USB stick formatted in FAT32 is not detected.	Contact your service centre.
Black screen	The remote control is in sleep mode		Touch the remote control to exit sleep mode.
	The remote control is powered down	The remote control powers down automatically if it is not used or charging for 1 hour.	Press the **[ON/OFF]** key to start the remote control.
	Screen not working	Nothing is displayed after touching the screen and/or restarting the remote control.	Contact your service centre.

Fault	Symptoms		Solution
No Bluetooth connection to the detector	The radio transmitter is not connected or incorrectly connected to the leak detector (bad contact)		Reconnect the radio transmitter and try again.
	The serial link is not configured correctly		Configure the detector's serial link in 'Advanced' mode.
	The radio transmitter switch is set to OFF		Set the radio transmitter switch to ON.
	Bluetooth signal too weak	The radio transmitter disconnects automatically if the signal becomes too weak (the remote control is too far away from the detector).	Restart the Bluetooth connection by pressing the **[CONNECT]** key and getting closer to the detector.
	The radio transmitter is busy/already connected	Another device or remote control may be connected to the radio transmitter.	Restart the radio transmitter by turning the switch OFF and ON again and retrying the connection.
The display hangs and the remote control does not respond to touch inputs on the screen or the keys.		Force the remote control to restart by pressing and holding the **[ON/OFF]** key (black screen, followed by automatic remote control restart).	If the remote control works again, the problem was caused by a firmware bug. If the problem occurs regularly, contact your service centre.
No sound from the speaker	Audio set to 'Mute'		Enable sound in the "Audio" menu.
	Volume too low		Raise the sound volume.
	Audio headset connected		Unplug the audio headset.
Detector unit different from the remote control	Unit incorrectly configured in the "Detector selection" sub-menu		Configure your detector and unit in the remote control's "Detector selection" sub-menu.
The remote control runs hard vacuum cycles when sniffing tests are requested.	Test mode incorrectly configured in the "Detector selection" sub-menu		Configure your detector and the 'Sniffing' test mode in the remote control's "Detector selection" sub-menu.
The remote control runs sniffing cycles when hard vacuum tests are requested.	Test mode incorrectly configured in the "Detector selection" sub-menu		Configure your detector and the 'Hard vacuum' test mode in the remote control's "Detector selection" sub-menu.

9 Maintenance

	NOTICE
	Disclaimer of liability
	Pfeiffer Vacuum accepts no liability for personal injury or material damage, losses or operating malfunctions due to improperly performed maintenance. The liability and warranty entitlement expires.

9.1 Spare parts

Spare parts

Replacing defective components with parts that are not genuine jeopardizes the product's initial safety conditions.

➜ Use only spare parts available for order from Pfeiffer Vacuum Service.
➜ Parts numbers are available in the *Spare Parts* chapter.
➜ To identify the product and communicate with Pfeiffer Vacuum look at the product's nameplate.

Description	Part Number
Battery	A467844S
Standard 5 m twisted pair cable (remote control / detector connection)	123909
Charger + UK/EU/US mains socket adaptors	125559
Radio transmitter + cable	126672
Radio transmitter cable	A600571

9.2 Battery replacement

The remote control's battery must be changed when:

– it is damaged,
– it no longer holds a charge (reduced battery life).

WARNING
Electric shock hazard if non-standard battery is used
Non-standard batteries can explode due to overloads or short circuits and cause injury.
➜ Only use batteries supplied by the manufacturer as spare parts.

WARNING
Battery explosion hazard
➜ Never put the battery near a heat source.

Storing new batteries *(see 3)*

Tools ● 4mm Allen key

Procedure

DANGER
Health hazard if the battery is damaged
The battery can release flammable gases if it leaks or explodes (Lithium hexafluorophosphate, metal salts and hydrogen fluoride).
➜ Wear appropriate protective equipment when replacing damaged batteries: respiratory protection, protective gloves, protective glasses (designed to protect against acidic liquid spray) and skin protection (long sleeves and trousers).

The battery must be replaced in accordance with the following conditions:

– a clean, dry place with a non-explosive atmosphere
– connecting cable between the remote control and the detector disconnected
– charger not connected to the remote control.
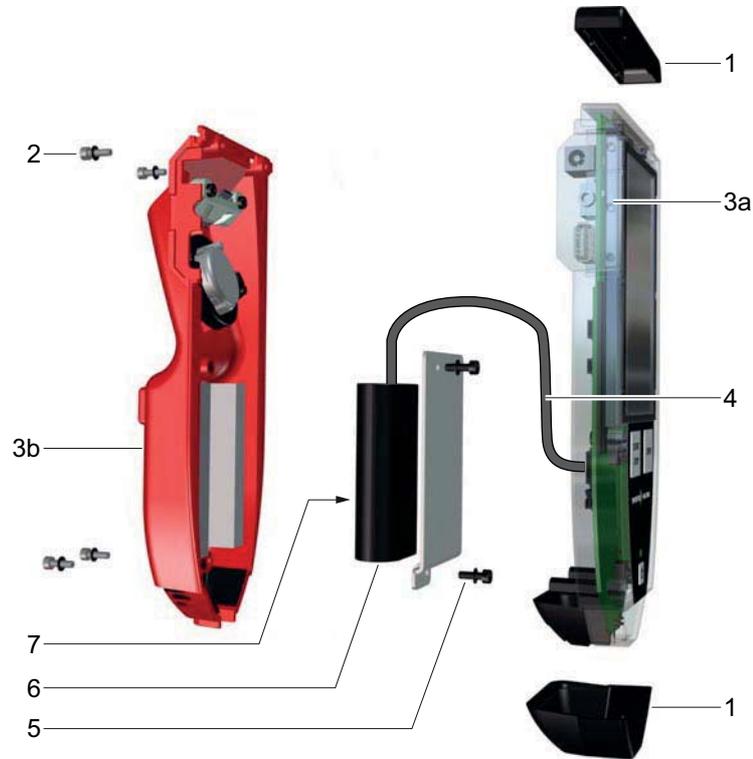
Mark	Description
1	Impact protectors
2	4 M3x10 CHC screws + 4 washers
3a/3b	Case shells
4	Battery connecting cable
5	2 3x6 CHC screws + 2 washers
6	Battery
7	Label

➔ Remove the 2 impact protectors (1).

➔ Remove the 4 screws (2).

➔ Separate the 2 case shells (3).

➔ Disconnect the connecting cable from the printed circuit board (4).

➔ Remove the 2 screws (5).

➔ Remove the battery (6).

➔ Proceed in reverse order to fit the new battery.
  – The battery label (7) has to face the back case shell (3b).

➔ Power on the remote control (wireless operation) to check the connection to the new battery.

➔ Charge the battery *(see 5.5)*.

Disposal   *(see 10.2)*

10 Decommissioning

10.1 Shutting down for longer periods

If the remote control has to be powered down for more than 3 months, after use, it is recommended that you:

– store it with a battery charge of at least 50%.
  – it is not necessary to remove the battery from the remote control.
– keep it in its original packaging and protected from dust.
– comply with the recommended storage conditions *(see 12.1)*.

Storing new batteries   *(see 3)*

10.2 Disposal

WARNING
Environmental protection
The product or its components must be disposed of in accordance with the applicable regulations relating to environmental protection and human health, with a view to reducing natural resource waste and preventing pollution.

Our products contain various recyclable materials: iron, steel, stainless steel, cast iron, brass, aluminium, nickel, copper, PTFE, FEP, magnets, batteries, etc.

When returning a product, please read the Customer service procedure and complete the declaration of contamination available on our website.

If you have any questions, please contact Customer Support at: support.service@pfeiffer-vacuum.fr.

10.2.1 Restriction of Hazardous Substances (R.O.H.S.)

Directive 2011/65/EC establishes the regulations on the restriction of the use of hazardous substances in electrical and electronic equipment (EEE) to contribute to the protection of human health and the environment, including the environmentally sound recovery and disposal of EEE waste.
The manufacturer shall ensure that the EEE placed on the market (including cables and spare parts intended for repair, reuse, updating or capacity enhancement) that contain hazardous substances are subject to restriction within the authorised limits.

10.2.2 Electric and electronic equipments (EEE)

Decontamination and recycling of Electrical and Electronic Equipment (EEE) containing polluting materials (electronic cards, battery cells, batteries, screens, capacitors, mercury, etc.) enables the preservation of natural resources, particularly strategic raw materials.

This product carries the identification logo, as it is subject to regulations regarding the management of waste from EEE.

The manufacturer's obligation to recover EEE applies only to "Adixen" or "Pfeiffer Vacuum" branded products sold by Pfeiffer Vacuum:

– EEE is subject to the regulations in force as regards the recycling of end-of-life products
– complete EEE that has been neither modified nor retrofitted, and has used only spare parts from Pfeiffer Vacuum, including their assemblies and sub-assemblies, but excluding the batteries.

Product on sale on French soil

> **In the absence of any specific contract and pursuant to current applicable legislation (and articles R543-172 and subsequent of the Environment Code in particular), all EEEs sold by Pfeiffer Vacuum on French soil are covered by the organisation and financing of removal and treatment of waste from EEEs provided by Pfeiffer Vacuum**
>
> To fulfil its obligations, Pfeiffer Vacuum finances the collection and recycling of the waste from EEEs by subscribing to **Récylum**. This voluntary arrangement enables owners of EEEs on French soil to benefit from easy, free solutions to ensure that EEEs subject to the regulations are recycled.

To find out more about the collection solutions, contact Récylum who will inform you of the best collection solution for your needs: www.recylum.com.

For further details, consult the General Conditions of Sale available in French on the website Pfeiffer Vacuum.

Product sold outside French territory

> **In the absence of any specific contract, and according to the Directive 2012/19/UE concerning the waste treatment stemming from EEE, in the case of a sale by Pfeiffer Vacuum outside France (European Union and third country) of EEE subject to applicable regulations, the owner of EEE will undertake full responsibility of organizing and financing the pickup and treatment of waste of EEE sold by Pfeiffer Vacuum.**
>
> The owner will undertake full responsibility namely the collection (gathering, sorting and storage of wastes for the purpose of transportation to a processing installation), recycling, recovery and/or disposal, except in the case of contrary overriding legislative provisions in the country where the owner is located, which must be brought to the attention of Pfeiffer Vacuum by the owner.

11 Service

Pfeiffer Vacuum offers first-class customer service!

- On-Site maintenance for many products
- Overhaul/repair at the nearby Service Location
- Fast replacement with refurbished exchange products in mint condition
- Advice on the most cost-efficient and quickest solution

Detailed information, addresses and forms at: **www.pfeiffer-vacuum.com (Service**).

Overhaul and repair at the Pfeiffer Vacuum Service Center
The following general recommendations will ensure a fast, smooth servicing process:

➔ Fill out the "Service Request/Product Return" form and send it to your local Pfeiffer Vacuum Service contact.
➔ Include the confirmation on the service request from Pfeiffer Vacuum with your shipment.
➔ Fill out the declaration of contamination and include it in the shipment (mandatory!). The Declaration of contamination is valid for any product/device including a part exposed to vacuum.
➔ Dismantle all accessories and keep them.
➔ Close all the flange opening ports by using the original protective covers or metallic airtight blank flanges for contaminated devices.
➔ If possible, send the pump or unit in its original packaging.

Sending contaminated pumps or devices
No devices will be accepted if they are contaminated with micro-biological, explosive, or radioactive substances. "Hazardous substances" are substances and compounds in accordance with the hazardous goods regulations (current version).

➔ Neutralize the pump by flushing it with nitrogen or dry air.
➔ Close all openings airtight.
➔ Seal the pump or device in suitable protective film.
➔ Return the pump/device only in a suitable and sturdy transport container and send it in while following applicable transport conditions.

Pump or device returned without declaration of contamination form fully completed and/or not secured in suitable packaging will be decontaminated and/or returned at the shipper's expense.

Exchange or repair
The factory operating parameters are always pre-set with exchange or repaired devices. If you use specific parameters for your application, you have to set these again.

Service orders
All service orders are carried out exclusively according to our general terms and conditions for the repair and maintenance, available on our website.

12 Technical data and dimensions

12.1 Technical data

Remote control RC 10	
Dimensions (L x W x H)	207 x 82 x 46 mm
Weight	450 g
Protection rating	IP 42
Audio alarm at 1 m from the remote control	80 dB (A) max.
Wall supply voltage	24 V DC, max. 0.5 A
Voltage from the detector	24 V DC, max. 0.5 A
Internal memory capacity	100 MB (for data recording)
Screen	4.3'' TFT- Capacitive Touchscreen - 480 x 272 Pixels

Environmental conditions	
Ambient operating temperature, not charging	0 to 45°C
Ambient operating temperature, charging	0 to 40°C
Storage temperature (remote control, battery only)	-25 to 60°C
Maximum relative humidity	80% at 31°C linear decrease 50% at 40°C
Maximum operating altitude	2000 m

Charger	
Jack socket	6.3 mm
Input voltage range	20-28 V DC
Maximum current draw	500 mA
Consumption	<30 VA
Voltages and frequencies	80-264 V, 50/60 Hz (according to VEP24US24)
Interchangeable adaptors	EU, UK & US

Battery	
Battery life	8 h (depending on state of charge and use)

Radio transmitter (Bluetooth module)	
Transmission distance	≈ 100 m unobstructed range
Max HF antenna power	16 dBm
Radio	FCC (A), CE, MIC, TELEC, Bluetooth SIG, IC
Bluetooth	Class 1 - v2.0+EDR specification
Emission power	+18 dBm typical
Reception sensitivity	-90 dBm (0.1% BER)
Integrated Flash memory	4 Mbit

Headset (headset not included)	
Connector	3.5 mm mono/stereo Jack socket
Impedance	2 x 16/32 Ohms
Max audio output power	138 mW

USB stick connector (USB stick not included)	
USB Stick	Type A - FAT 32 Format
Output voltage range	5 V DC
Max output current	500 mA

Detector / remote control connecting cable	
Connectors	RJ9 (remote control) - 9-pin D-Sub (detector)
Input voltage range	20-28 V DC
Maximum current draw	500 mA

CE Declaration of conformity

We hereby declare that the product cited below satisfies all relevant provisions according to the following **EC directives**:

- **Restriction of Hazardous Substances 2011/65/EU**
- **Radio equipment directive 2014/53/EU**

The technical file is drawn up by Mr Arnaud Favre, Pfeiffer Vacuum SAS, [simplified joint stock company], 98, avenue de Brogny · B.P. 2069, 74009 Annecy cedex.

Remote control RC 10

Harmonised standards and national standards and specifications which have been applied:

NF EN-61000-6-2: 2005 standards
NF EN-61326-1: 2013 standards
NF EN-61000-6-4: 2016 / A1/2011 standards
NF EN-62479: 2010 standards
NF EN-301489-17: V3.2.0 standards

ETSI EN 300 328 V2.1.1 (2016-11) standards
IEC61010-1:2010 standards

Signature:

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France

(Guillaume Kreziak)   01-16-2018
Director of Products, Technology & Projects

PFEIFFER VACUUM

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