INTEGRA



PIPETBOY acu 2 Operating instructions

466079_V18

Declaration of conformity

INTEGRA Biosciences AG – 7205 Zizers, Switzerland

declares on its own responsibility that the devices

Description	Models
PIPETBOY acu 2	**155000, 155015, 155016, 155017, 155018, 155019, 155022, 155023, 155024**
Accessories	**153210, 153211, 153214, 153216, 155066**

comply with:

International	**Scope**
UN 38.3	Lithium battery testing requirements

EU Directives	**Scope**	**Date effective**
2014/35/EU	Low voltage directive (LVD)	20.04.2016
2014/30/EU	Electromagnetic compatibility (EMC)	20.04.2016
2012/19/EC	Waste electrical and electronic equipment (WEEE)	14.02.2014
2011/65/EC	Restriction of hazardous substances (RoHS)	03.01.2013
2006/66/EC	Battery directive	26.09.2008
EU Regulations	**Scope**	**Date effective**
1907/2006	Registration, evaluation, authorisation and restriction of chemicals (REACH)	01.06.2007
2019/1782	External power supply efficiency	01.04.2020
1103/2010	Capacity labelling of portable batteries	30.11.2010
EU Standards	**Scope**	
EN 9001:2015	Quality Management	
EN 61010-1:2020	Safety general laboratory equipment	
EN 61326-1:2013	Electromagnetic compatibility laboratory equipment	
EN 60950-1:2013	Safety information technology equipment	
EN 62368-1:2021	Safety information technology equipment	
EN 62133-2:2017	Batteries containing non-acid electrolytes	

GBR Regulations	Scope	Date effective
S.I. 2016/1101	Electrical equipment safety	08.12.2016
S.I. 2016/1091	Electromagnetic compatibility (EMC)	08.12.2016
S.I. 2008/2164	Batteries and accumulators regulations	26.09.2008
S.I. 2013/3113	Waste electrical and electronic equipment (WEEE)	01.01.2019
S.I. 2012/3032	Restriction of hazardous substances (RoHS)	02.01.2013
GBR Standards	**Scope**	
BS 61010-1:2010	Safety general laboratory equipment	
BS 62368-1:2020	Safety information technology equipment	
BS 63000:2018	Restriction of hazardous substances (RoHS)	

USA Regulations	Scope	Date effective
47 CFR Part 15 (FCC)	Electromagnetic compatibility (EMC)	
10 CFR Part 430	External power supply efficiency (CEC VI)	
17 CFR Parts 240 & 249b	Dodd frank “Conflict minerals”	
27 CCR Parts 25102-27001	Proposition 65: The safe drinking water and toxic enforcement act	
20 CCR Parts 1601-1608	CEC BCS, Battery charging efficiency	01.01.2017
TSCA 40 CFR Part 751	Toxic substances control act	
USA Standards	**Scope**	
UL 61010-1:2012	Safety general laboratory equipment	

CAN Standards	Scope
CSA-C22.2 No. 61010-1	Safety general laboratory equipment

CHN Regulations	Scope	Date effective
AQSIQ Order 5 /2001	(CCC) safety and EMC requirements for electrical equipment	01.08.2003
Order 32/2016	Restriction of hazardous substances (RoHS)	01.07.2016
CHN Standards	**Scope**	
GB4943.1-2011	Information technology equipment safety	
GB9254-2008	Information technology equipment radio disturbance	
GB17625.1-2012	EMC limits for harmonic current emissions	
GB31241-2014	Safety for Lithium-ion batteries	
SJ/T 11364-2014	Restriction of hazardous substances (RoHS)	

JPN Regulations	Scope	Date effective
PSE (Denan) Law	Electrical appliance and material safety law	01.01.2014

EAC Технический регламент Таможенного союза	
TP TC 004/2011	О безопасности низковольтного оборудования
TP TC 020/2011	Электромагнитная совместимость технических средств

Zizers, April 11, 2022

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Imprint

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This operating instruction manual applies to serial number 1350 000 or higher of PIPETBOY acu 2 / PIPETGIRL.

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1 Introduction

1.1 Intended use

PIPETBOY acu 2 is a pipette controller designed for aspirating and dispensing aqueous solutions with plastic or glass pipettes of 1 to 100 ml volumes. It is intended for measurement, control and laboratory use. Any use of this instrument in a medical or IVD setting is under the sole responsibility of the user.

PIPETGIRL is a special model of PIPETBOY acu 2 and provides the same functions as PIPETBOY acu 2.

1.2 Safety notes

1) Do not use or charge PIPETBOY acu 2 in an atmosphere with danger of explosion. Also, do not pipette highly flammable liquids such as acetone or ether.
2) When handling dangerous substances, comply with the material safety data sheet (MSDS) and with all safety guidelines such as the use of protective clothing and safety goggles. Never point a pipette in anyone's direction.
3) Avoid pipetting of liquids whose vapours could attack the materials PA (polyamide), POM (polyoxymethylene), FPM (fluor-rubber), NBR (nitrile-rubber), CR (chloroprene), silicone. Corrosive vapours could also damage metallic parts inside the device.
4) Prolonged exposure of PIPETBOY acu 2 to UV-light can cause discolouration and/or yellowing of the plastic housing. However, this will not affect the performance of the device in any way.
5) Only use the original Li-ion battery (part no. 155066) and an original INTEGRA Biosciences mains adapter and protect it from moisture, otherwise PIPETBOY acu 2 might be damaged.
6) Old Li-ion batteries may cause a safety risk. We recommend to replace the battery after 3 years of use. Also replace the battery if the charging intervals are unusually short or if the charging takes much longer than usual (4 hours or more). These are indicators that the battery has reached the end of its life-cycle.
   If a lithium battery is never deep discharged and is always stored and operated in the recommended temperature range and stored at 40-80% charge level during long standby periods, it may live much longer than 3 years. If it shows no signs of physical damage or change, see 5.1, it is a strong indication that you may continue to use the battery.
7) Li-ion technology bears the risk of thermal runaway and cell rupture if the battery was damaged. Do not expose the battery to heat (> 60 °C) and avoid mechanical stress. Batteries which were subject to deep discharges may develop internal short circuits, leading to an increased self-discharge rate and heating during battery charging. This may also result in thermal runaway and cell rupture.

8) To extend the battery life-cycle, it is recommended to charge the battery every 2 months if the pipette controller is not used regularly. If the pipette controller is not used for more than 6 months, remove the battery from the instrument.

Regardless of the listed safety notes, additionally applicable regulations and guidelines of trade associations, health authorities, trade supervisory offices, etc. must be observed.

Please visit our website www.integra-biosciences.com on a regular basis for up to date information regarding REACH classified chemicals contained in our products.

2 Description of the device

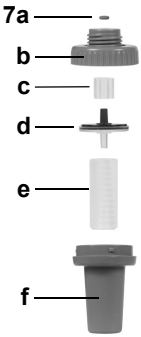
2.1 Scope of delivery

- PIPETBOY acu 2 device
- 1 rechargeable Li-ion battery
- Mains adapter
- Wall mount
- Hydrophobic sterile filter 0.45 µm (spare)
- Quick Start Guide

2.2 Overview of PIPETBOY acu 2



1 Aspiration button
2 Dispensing button
3 Thumb wheel to set maximum speed
4 Battery charge indicator
5 Socket for mains adapter cable
6 Handle
7 Sterile module complete (=nose piece)



7 Sterile module complete (=nose piece)
- 7a O-ring
- 7b Housing of sterile module, upper part
- 7c Filter rubber
- 7d Hydrophobic filter
- 7e Pipette mount
- 7f Housing of sterile module, lower part

3 Installation

3.1 Charging the battery

A full charge takes 3.5 hours. Before the first use, PIPETBOY acu 2 should be charged until the battery charge indicator (4) turns green, showing that the battery is full.

When the battery charge indicator (4) starts flashing red, PIPETBOY acu 2 can be used for around 100 pipetting cycles before shutting down. It should thus be recharged immediately.

PIPETBOY acu 2 has an integrated protection: it will not overcharge even if it is connected to power for indefinite time. To avoid unnecessary power consumption, it is recommended to unplug the power supply when the charge indicator is green. PIPETBOY acu 2 can be used while it is being charged.

The battery charge indicator provides various information:

Battery charge indicator	Battery status and information
Flashes red	Battery is low. Charging is needed.
Is red and power supply is connected	Battery is being charged.
Is green and power supply is connected	Battery is fully charged.
Flashes alternately red and green	Battery error. Check if the correct type of battery with correct polarity (+/-) and/or power supply are used.

3.2 Replacing the battery



1) Move the lid of the battery compartment upwards and remove it (a).
2) Replace the old battery with an original INTEGRA Biosciences rechargeable battery (see “7 Accessories” on page 16) and make sure that it is inserted with the correct polarity (+/-).
3) Close the battery compartment with the lid (a).

3.3 Mounting of the wall mount

The wall mount serves to park PIPETBOY acu 2.

To mount the wall mount, remove the protective foil from the adhesive tape at the back of the holder. Hold it with the sign <up> facing upwards and press it to the desired place. Make sure that the surface onto which the wall mount is mounted is smooth, clean and grease-free. Wait 24 hours before using the wall mount for the first time. Alternatively the wall mount can be fixed with the included screws.

4 Operation

4.1 Inserting the pipette

a) b)



The silicone pipette mount (7e) has a special conical channel to guarantee a firm and leak-proof grip of the pipette independently of its diameter.

Disassemble the nose piece (see "5.1 Cleaning and servicing" on page 13) and orient the pipette mount:

a) with the large opening facing down for pipettes > 2 ml (factory setting), or
b) with the small opening facing down for pipettes < 2 ml.

WARNING

Do not insert pipettes with force into PIPETBOY acu 2, because they can break and cause injury, particularly thin pipettes made of glass.

4.2 Pipetting

Press the aspiration button (1) to fill the pipette and the dispensing button (2) to empty it.

The aspiration and dispensing speed can be controlled in two manners:

- Fine speed adjustment by varying the finger pressure on the buttons (1, 2).
- Step-less presetting of the maximum pump speed by turning the thumb wheel (3) to optimally match the pipette volume (turning to the left = slower pump speed, for small pipettes; to the right = faster, for large pipettes).

To empty the pipette by gravity force, press the dispensing button only slightly in order to avoid reaching the trigger point where the pump starts running. Gravity dispensing is used for "to deliver" (TD) pipettes that are not of the "blow-out" type (blow-out pipettes have two thin rings or a frosted band around the neck).

PIPETBOY acu 2 is featured with a "TURBO" mode. Plug the mains adapter cable into the pipette controller and turn the thumb wheel completely to the right for maximal speed.

4.3 Troubleshooting

Problem	Probable cause	Remedy
Pipette drips (leak in the system).	Pipette is damaged or not fully inserted in the nose piece (7).	Reinsert a new pipette and push it all the way into the nose piece. Make sure that the pipette mount orientation is correct (see section 4.1).
	The inside of the pipette mount (7e) is damaged resulting in insufficient sealing of the pipette neck.	Replace the pipette mount (#151 020).
	The filter rubber (7c) or the filter (7d) in the nose piece are damaged or missing causing a leak.	Replace the filter rubber (#153225) and/or the filter (Part No. see “7 Accessories” on page 16).
Reduced aspiration efficiency or no liquid aspiration.	The filter (7d) is wet or dirty.	Replace filter.
	The nose piece (7) is not tight.	Tighten the nose piece, or replace defective parts.
	The battery is discharged (battery charge indicator flashes red)	Charge the battery.
	The battery is missing.	Insert the battery or connect the instrument to the mains adapter.
	The battery is defective.	Replace the battery.
	The battery is wrongly inserted.	Insert correctly, note polarity (+) and (-).
Reduced operating time with fully charged battery.	The battery is worn.	Replace the battery.
	Wrong battery type is inserted.	Use only original Li-ion battery (#155 066).
Extremely long charging time of battery.	Wrong mains adapter is used.	Use only original mains adapter (see “7 Accessories” on page 16).
Extremely short charging and operating time.	Wrong battery type is inserted.	Use only original Li-ion battery (#155 066).

Problem	Probable cause	Remedy
Battery is not charging.	The battery is wrongly inserted.	Insert correctly, note polarity (+) and (-).
	Wrong battery type is inserted.	Use only original Li-ion battery (#155066).
	Wrong mains adapter is used.	Use only original mains adapter (see section 7).
Battery operation not possible.	The battery is wrongly inserted.	Insert correctly, note polarity (+) and (-).
	Wrong battery type is inserted.	Use only original Li-ion battery (#155066).
	The battery is missing.	Insert the battery.

5 Maintenance

After maintenance work, perform a leak test to ascertain correct functioning of PIPETBOY acu 2: liquid should not leak out of a filled pipette before the dispensing button is pressed.

5.1 Cleaning and servicing

PIPETBOY acu 2 can be cleaned with a cloth moistened with soapy water or with a 70 % ethanol.

Disassembly of the nose piece:



Unscrew the nose piece (7) from the handle by turning it counter clockwise. Hold the upper part of nose piece (7b), press the lower part (7f) firmly against the upper part (7b) and turn it counter clockwise (left). The lower part of nose piece housing (7f) will disengage after about 1/8th of a turn.

Remove the pipette mount (7e), the filter (7d) and the filter rubber (7c), if required.

It is recommended to change the hydrophobic filter (7d) every three months. Should the filter get wetted or soiled, it has to be changed immediately. The filter must be oriented with the blue (0.45 µl) / red (0.2 µl) side facing upwards towards PIPETBOY acu 2.

Annual inspection: If you operate the battery beyond the recommended 3 year period, visually check the battery for signs of damage, e.g. discoloration, unexpected stains, shrinking of the tube wrapping.

5.2 Decontamination

The nose piece housing (7b, 7f), the pipette mount (7e) and the filter rubber (7c) can be autoclaved at 121 °C, 1 bar overpressure for 20 minutes. Silicone may become brittle after extensive autoclaving. Replace the pipette mount and filter rubber if they are damaged.

If the housing of the PIPETBOY acu 2 have been in contact with biohazardous material, it must be decontaminated in accordance to good laboratory practice. Do not spray directly on the instrument but use a lint-free cloth, lightly soaked with a disinfectant and wipe dry directly after decontamination. Never use acetone or other solvents! Follow the instructions provided by the disinfectant manufacturer.

The device may be decontaminated with H_2O_2 gas (maximal concentration 35 %) for 60 minutes.

5.3 Equipment disposal



PIPETBOY acu 2 device must not be disposed of with unsorted municipal waste. Do not dispose of the device in a fire.

PIPETBOY acu 2 contains a Li-ion battery. Do not modify the battery in any way. Dispose of the PIPETBOY acu 2 device and the battery separately in accordance with the laws and regulations in your area governing disposal of devices containing Li-ion batteries.

In certain regions and countries, e.g. in EU member states, the distributor is obliged to take back this product free of charge at the end of life. Please contact your local distributor for more details.

6 Technical Data

6.1 Specifications

Pipetting speed	max. 13.5 ml/s (with a 50 ml serological pipette)
Battery	Type: rechargeable, Li-ion, min. 500 mAh Typical charging time: 3.5 hours
	Charging cycles: 500–1000 (when charging as indicated) Running time: at least 5500 cycles of aspiration and dispensing of 25 ml.
Electricity supply	Mains adapter input: 100–240 VAC, 50/60 Hz
	Device Input: 16–19 VDC, 3.1 W
Materials	Housing: PA Nose piece housing: POM Pipette mount: Silicone Filter rubber: Silicone
Dimensions (H x W x D)	125 x 130 x 35 mm
Weight	195 g
Ambient conditions	Operation: 5–40 °C, max. 80 % RH Storage: -10–50 °C, max. 95 % RH

6.2 Chemical compatibility

The table below lists PIPETBOY acu 2 parts that come into contact with the aspirated liquid or its aerosols and vapors, and rates the compatibility of these parts to a few of the chemicals commonly used in laboratories. To determine the compatibility of a component to a chemical not listed in the table, please consult one of the several tables available on the internet. Note that the rating refers to soaking in the concentrated chemical; however, more relevant here is the attenuated effect resulting from vapors and the diluted chemical. It is recommended to test the compatibility of relevant components to a specific chemical prior to extensive use.

INTEGRA Biosciences does not warrant that the information in the table is accurate or complete and that any material is suitable for any purpose.

Chemical compatibility chart

Parts	**Materials**	JAVEL (e.g. NaClO)	Acetic acid	Ethanol	Isopropyl alcohol	NaCl saturated	Sodium hydroxide (50 %)	Sodium acetate (3M, pH 5.2)	Hydrochloric acid (20 %)	Chloroform	Acetone
Handle	PA	A	C	B	A	A	A	A	C	C	A
Nose piece housing	POM	C	C	A	A	A	A	A	B	A	A
Pipette mount, Filter rubber, tubings	Silicone	A	B	A	A	A	A	C	A	C	C
Internal parts (e. g. pump)	FPM	A	A	A	A	A	C	C	A	A	C
	NBR	A	B	B	A	A	A	A	A	C	C
	CR	A	A	A	A	A	A	A	A	B	A
	Metal	C	C	A	A	B	C	A	C	A	A

Compatibility ratings:
A = Good: no or minor effects.
B = Fair: moderate effects, not recommended for continuous use.
C = Critical: not recommended, suitability to be determined by test.

7 Accessories

Accessories		Part No.
Stand for PIPETBOY	for a well organized work area, to park PIPETBOY acu 2 with inserted pipette	155065
Wall mount	for holding PIPETBOY acu 2 on the wall	155521
Mains adapter (100-240 VAC, 50/60 Hz)	EU version	153210
	US/JP version	153211
	UK version	153214
	AU version	153216

Consumables		Part No.
Sterile module (nose piece) complete (7)	turquoise for PIPETBOY acu 2 classic and transparent; with filter 0.45 µm, unsterile	155025
	classic (grey) for colored PIPETBOY acu 2 and PIPETGIRL; with filter 0.45 µm, unsterile	155070
Sterile module (nose piece) housing (7b,7f)	turquoise, for PIPETBOY acu 2 classic and transparent	155230
	classic (grey), for colored PIPETBOY acu 2 and PIPETGIRL	155060
Filter 0.45 µm (7d)	sterile/unsterile, for the country specific part numbers, please refer to our website	
Filter 0.2 µm (7d)	sterile/unsterile, for the country specific part numbers, please refer to our website	
Pipette mount (7e)	silicone, for holding pipette in the sterile module (nose piece)	151020
Filter rubber (7c)	silicone, for holding the filter in the sterile module (nose piece)	153225
O-ring (7a)		153235
Battery compartment lid	classic (grey)	155203
	green	155160
	red	155161
	blue	155162
	transparent	155163
	purple	155164
	pink (PIPETGIRL) / Pink Sunrise	155166
	Agave	155167
	Ocean Dream	155168

Consumables		**Part No.**
Battery Li-ion	for PIPETBOY acu 2 / PIPETGIRL (with serial number >=1350001)	155066

WARNING

Only use the battery Li-ion for PIPETBOY acu 2 (serial number >=1350001; LED is white when inactive, red or green when active)!
The NiMH battery for PIPETBOY acu is not compatible!

serial number

