INTEGRΛ

VIAFLO ASSIST Operating instructions

CE   Declaration of conformity

INTEGRA Biosciences AG – 7205 Zizers, Switzerland

declares on its own responsibility that the device

Description	Model
VIAFLO ASSIST	**4500**

complies with:

EU Directives (DoW: Date of Withdrawal)	Before DoW	DoW	After DoW
Low Voltage Equipment	**2006/95/EC**	20.04.2016	**2014/35/EU**
Electromagnetic Compatibility	**2004/108/EC**	20.04.2016	**2014/30/EU**
Restriction of Hazardous Substances	**2011/65/EU**		
Waste Electrical and Electronic Equipment	**2012/19/EU**		
Radio Equipment Directive	**1999/5/EC**	13.06.2016	**2014/53/EU**

EU Regulations

Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)	**1907/2006**
Ecodesign - Power supplies	**278/2009**

Standards for EU

Safety requirements for electrical equipment for measurement, control and laboratory use - General requirements.	**EN 61010-1: 2010**
Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes.	**EN 61010-2-81: 2015**
Electrical equipment for measurement, control and laboratory use - EMC requirements.	**EN 61326-1: 2013**

Standards for Canada and USA

Safety requirements for electrical equipment for measurement, control and laboratory use - General requirements.	**CAN/CSA-C22.2 No. 61010-1**
Safety requirements for electrical equipment for measurement, control and laboratory use - General requirements.	**UL 61010-1**
Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.	**Part 15 of the FCC Rules Contains FCC ID: PI4410B**

Zizers, November 4, 2016

S. Morscher   *T. Neher*

Elmar Morscher   Thomas Neher
CEO   Quality Manager

Table of Contents

1   Introduction

These operating instructions contain all the information required for installation, operation and maintenance of the VIAFLO ASSIST. This chapter informs about the symbols used in these operating instructions, the intended use of the VIAFLO ASSIST and the general safety instructions.

1.1   Symbols used

The operating instructions specifically advise of residual risks with the following symbols:

WARNING
This safety symbol warns against hazards that could result in injury. It also indicates hazards for machinery, materials and the environment. It is essential that you follow the corresponding precautions.

CAUTION
This symbol cautions against potential material damage or the loss of data in a microprocessor controller. Follow the instructions.

NOTE
This symbol identifies important notes regarding the correct operation of the device and labor-saving features.

The device is marked with the following symbol:

BIOHAZARD
The instrument can be potentially biohazardous due to the use of biozazardous substances by the operator.

1.2   Intended use

This is a general-purpose laboratory instrument for use in research only. Any use of this instrument in a medical or IVD setting is the sole responsibility of the user.
With a VIAFLO II electronic multichannel pipette attached, VIAFLO ASSIST performs pipetting operations in microplates automatically.

NOTE
Only VIAFLO II multichannel pipettes (as of serial number 600 000 and firmware version 3.00 or higher) can be used with VIAFLO ASSIST. The VIAFLO II pipette needs its own Bluetooth module, which has to be ordered separately (part no. 4221).

VIAFLO II Electronic Pipettes are microprocessor controlled and stepper motor driven pipettes. They are used for aspirating and dispensing liquids in the volume range of 0.5–1250 µl using GripTip pipette tips. Please refer to the VIAFLO II Electronic Pipettes operating instructions for more detailed informations on www.integra-biosciences.com.

1.3   Safety notes

VIAFLO ASSIST complies to the recognized safety regulations and is safe to operate. VIAFLO ASSIST can only be operated when in intact condition and while observing these operating instructions.

The device may be associated with residual risks if it is used or operated improperly by untrained personnel. Any person operating the VIAFLO ASSIST must have read and understood these operating instructions, and particularly, the safety notes, or must have been instructed by supervisors so that safe operation of the device is guaranteed.

CAUTION
Do not open or modify the VIAFLO ASSIST in any way. Repairs may only be performed by INTEGRA Biosciences AG or by an authorized after-sales service member. Parts may be replaced with original INTEGRA Biosciences parts only.

WARNING
Do not use the VIAFLO ASSIST near flammable material or in explosive areas. Also, do not pipette highly flammable liquids such as acetone or ether.

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.

NOTE
Prolonged exposure of the VIAFLO ASSIST to UV-light can cause discoloration and/or yellowing. However, this will not affect the performance of the device in any way.

Regardless of the listed safety notes, additional 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

• VIAFLO ASSIST (VIAFLO II Electronic Pipette to be ordered separately)
• Mains adapter
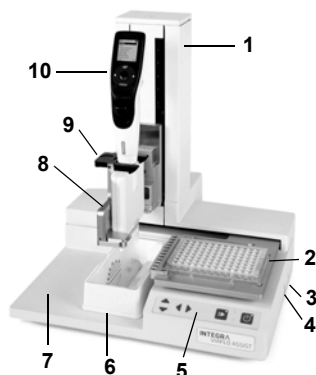• Sample pack 10 ml, 25 ml and 100 ml reagent reservoir

STOP   *CAUTION*
Verify the scope of delivery when unpacking the device and check for potential transportation damage. Do not operate a device that is damaged, instead contact your local dealer.

2.2   Overview of the VIAFLO ASSIST

2.2.1   VIAFLO ASSIST device

1 **Tower** with pipette arm. Arm moves in Z-direction

2 **Plate carrier,** moves in X-direction

3 **Power connection**

4 **USB port**, for firmware updates

5 **Keypad**

6 **Reservoir position**

7 **Instrument base**

8 **Pipette holder** on pipette arm with lever to shift the pipette in Y-direction

9 **Gripper**, lever to release the pipette

10 **VIAFLO II Electronic Pipette**

2.2.2   Keypad

11 ▲ **Up** and ▼ **Down** arrow keys move the pipette along the Z-axis to teach pipetting heights.

12 ◀ **Left** and ▶ **Right** arrow keys move the plate carrier along the X-axis to adjust the plate carrier position.

13 **Start/Pause key**, to start/stop operations.
Green LED blinks: press to start operation/homing
Green LED lights: operation performed

14 **Bluetooth control LED** (lights blue if connection is active) and **Error LED** (flashes red in case of error)

15 **On/Off key** (lights green if On)

2.3 Overview of VIAFLO II Electronic Pipette

2.3.1 VIAFLO II pipette parts

16 **Display**

17 **Back button**, to navigate backward

18 **Touch wheel,** spin to scroll and move the cursor

19 **OK button**, to make a selection

20 **Left and right arrow buttons**, for selections

21 **Purge button**, to empty tips

22 **Run key**, to start operations

23 **Tip ejector**

24 **Finger hook**, facilitates easy operation

25 **Volume indicator label**, color matches GripTip box insert.

2.3.2 Display

The Display shows all pipetting options.

Battery life indicator
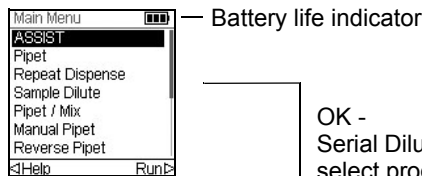
OK -
Serial Dilution,
select program

Current mode

Active step

Instruction

Volume

Options
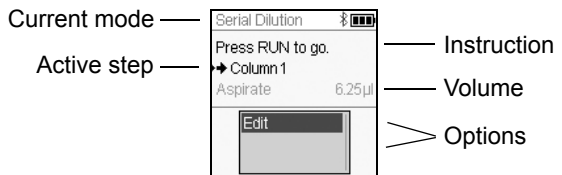
3   Installation

3.1   Operating environment

VIAFLO ASSIST has been designed for use in a laboratory. It shall be operated in a dry and dust-free location with a temperature of 5–40°C and a maximal (non-condensing) relative humidity of 80 %, see "7.1 Environmental conditions" on page 30.

3.2   Relocating VIAFLO ASSIST

Before VIAFLO ASSIST can be relocated, clear the **Instrument base** (7). Switch off the device and disconnect it from the electricity mains. Lift the VIAFLO ASSIST on both sides of the **Instrument base**. Never lift the instrument on the **Tower**.

3.3   Charging the battery of the VIAFLO II Electronic Pipette

The battery indicator in the upper right corner of the pipette screen informs about the battery status. When it turns red, the pipette needs to be charged.

CAUTION
Use only the approved INTEGRA battery, power supply or charging stand. Use of an incompatible power transformer can damage the pipette.

The battery can be charged using either the mains adapter or a charging stand, see ("8.2 Accessories for VIAFLO II Electronic Pipettes" on page 31).

Insert the mains adapter connector into the receptacle on the top back of the pipette. Plug the mains adapter into a wall outlet.

3.4   Adapting the pipette holder

The pipette holder can be adapted to the type of the VIAFLO II Electronic Pipette.
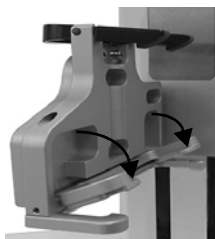
To adapt the holder for an 8- or 16-channel pipette, pull the silver lever down as shown beside.

Lift the lever up to insert a 12-channel pipette.

3.5   Attaching and removing a VIAFLO II Electronic Pipette

Rotate the lower hosing of the VIAFLO II Electronic Pipette by 90 degrees as displayed in the picture.

To install a pipette, hold it at an angle and insert it into the pipette holder.

Then lift up until the black gripper snaps in place.

To release the VIAFLO II Electronic Pipette lift the black gripper by pushing down on one end.

3.6   Toolbox settings

3.6.1   Enabling ASSIST mode

The ASSIST mode is hidden from the Main Menu of the VIAFLO II pipettes by default.

Use the **Touch wheel** to select Toolbox from the Main Menu and press **OK**.

Select Preferences and then Main Menu. Enable the ASSIST mode by pressing **OK** (green ✓) and press ▷ to save your settings.

3.6.2   Connection between VIAFLO ASSIST and pipette

The first time a specific VIAFLO II pipette is going to be connected to the VIAFLO ASSIST, both instruments need to be paired. Scroll to the Toolbox and press **OK**.
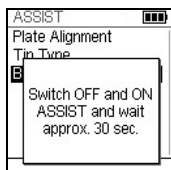
From the ASSIST option select Bluetooth Pairing.

Switch OFF and ON the VIAFLO ASSIST device, see <u>"4.1 Turn on/off the VIAFLO ASSIST device" on page 14</u>, and wait approx. 30 sec. until the message "Pairing successful" is displayed. Press **OK**.

3.6.3   Setting tip type

VIAFLO II Electronic Pipettes of 12.5 µl size can be used with standard or long GripTips. In order to teach the correct heights for VIAFLO ASSIST movements, the used tip type must be specified. Go to the Toolbox of the VIAFLO II pipette, select ASSIST and press **OK**.

Select Tip Type and press **OK**.

Use the **Touch wheel** to highlight Standard or Long. Press **OK** to select the correct tip type (green ✓) and Save ▷ your settings.
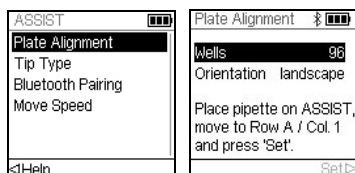
3.6.4   Adjusting the plate alignment

The Plate Alignment option is used to align the pipette's tips along the X-axis with the center of the wells in the first row/column of a microplate (depending on plate orientation). Select ASSIST on the Toolbox and press **OK**.

Select Plate Alignment and press **OK**.

Define the number of wells of your plate (e.g. 96 for a 96-well plate) and choose the plate orientation from either landscape or portrait. Use the **Touch wheel** to select an option and press **OK**.

With GripTips attached, install the VIAFLO II pipette on the VIAFLO ASSIST and put a plate on the plate carrier. Use the ◀ **Left** arrow key to positon row A / column 1 below the tips. Press the arrow keys until the tips target the center of the wells. Press Set ▷ to save this position.

NOTE

Plate alignments with 384 well plates require a 16-channel VIAFLO II Electronic Pipette. When working with 8- or 12-channel pipettes in a 384 well plate, the plate alignment is made on a 96-well plate nevertheless.

a   For fine adjustment of the pipette tips along the Y-axis turn the screw on the pipette holder (a) with a flathead screw driver size 2. Turning clockwise moves the pipette to the rear, counterclockwise to the front. The maximum Y-shift is +/- 5 mm.

3.6.5   Move Speed

Allows to change the move speed of the pipette arm (<u>1</u>, Z-axis) and the plate carrier (<u>2</u>, X-axis) on ASSIST.

Move Speed
Set move speed:
X-axis   Default
Z-axis   Default
Save▷
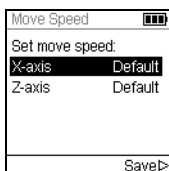
Select Move Speed and press **OK**.

Use the **Touch wheel** to select Slow, Medium or Default (=fast) and press **OK**. Save ▷ your settings.

4   Operation

4.1   Turn on/off the VIAFLO ASSIST device

Connect VIAFLO ASSIST to the power supply with the supplied mains adapter. Turn on VIAFLO ASSIST by pressing the **On/Off key** (15), which is confirmed by the green LED lighting up.

Press the **Start/Pause key** when it is blinking to home the VIAFLO ASSIST device.

⚠️   *WARNING*

Remove hands from VIAFLO ASSIST during homing.

After homing the LED of the **Start/Pause key** will turn off.

To turn off VIAFLO ASSIST press the **On/Off key** two seconds. It's LED switches off.

4.2   Turn on/off the VIAFLO II Electronic Pipette

Press and release the **Run key** (22) to turn on the pipette.

To turn off the pipette, press and hold the **Back button** (17) for 3 seconds.

4.3   Bluetooth connection

Select the ASSIST mode in the Main Menu of the VIAFLO II pipette and press **OK**. The pipette establishes the Bluetooth connection.

When the blue Bluetooth symbol (✳) next to the battery indicator is displayed and the **Bluetooth control LED** (14) alights, both instruments are connected.

If the connection fails, press ◁ to retry the connection or refer to "4.6 Troubleshooting" on page 16. Alternatively, continue Offline ▷. During offline mode VIAFLO ASSIST cannot be operated. It is possible to create programs, however without teaching of active heights.

4.4   Running a program
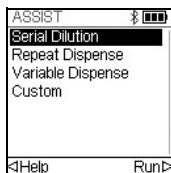
From the ASSIST menu select the Pipetting mode and the stored program you want to run and press **OK**.

Press the **Run key** (22).

You are prompted to place the pipette on the VIAFLO ASSIST device, see "3.5 Attaching and removing a VIAFLO II Electronic Pipette" on page 11. When attached press the green blinking **Start/Pause key** (13) on the VIAFLO ASSIST device. It switches to solid green and the program will be performed automatically.

WARNING

Keep hands out of area of moving VIAFLO ASSIST parts during the run.

A program can be interrupted by pressing the **Start/Pause key** (13). Either press the **Start/Pause key** again to continue the program or press ◁ Abort on the pipette to abort the program.

4.5   Pipetting in 96 and 384 well plates

The standard option to fill a 384 well plate is to use a 16-channel pipette. To access a 384 well plate with an 8- or 12-channel pipette, the pipette needs to be shifted in Y-direction. To do so, switch the lever (a) on the pipette holder to the front or rear position. The center position is used for 96 well plates.
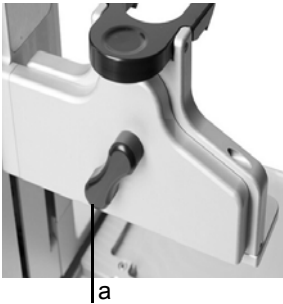
The rear position of the lever (a) moves the pipette to the rear to accommodate the rear positions of 384 well plates.
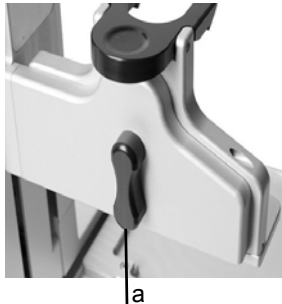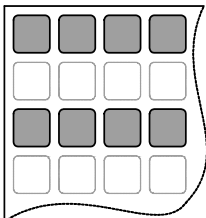
Set the lever (a) to the center to pipette in 96 well plates.
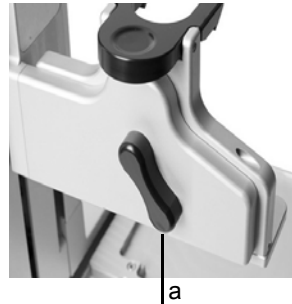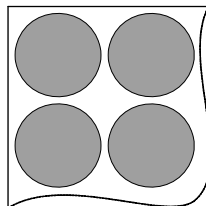
The front position of the lever (a) moves the pipette to the front to accommodate the front positions of 384 well plates.
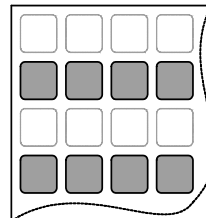
4.6 Troubleshooting

Problem	Probable cause	Remedy
The connection between pipette and ASSIST cannot be established.	• The two instruments have not been paired or the pairing was lost.	• From the main menu of the pipette go to Toolbox -> ASSIST and select Bluetooth Pairing, see "3.6.2 Connection between VIAFLO ASSIST and pipette" on page 11. Follow the instructions on the pipette screen.
Error LED (14) blinks red	• VIAFLO ASSIST motor lost steps during movement. • Pipetting heights were set wrong and the pipette crashed into the plate.	• Follow the instructions on the pipette display.
After firmware update, the **Error LED** (14) blinks red and VIAFLO ASSIST cannot be started.	• No firmware installed.	• Contact service for VIALINK special firmware update.
GripTips are not aligned in X-position.	• Plate alignment not set.	• Perform plate alignment, see "3.6.4 Adjusting the plate alignment" on page 12.
The tip height is not correct using 12.5 µl GripTips.	• Wrong tip type set.	• Enter the tip type used, see "3.6.3 Setting tip type" on page 12.

5   Programming

5.1   Overview pipetting modes

The table below shows pipetting modes which can be performed automatically in combination with VIAFLO ASSIST. All modes are accessed from the ASSIST Menu of a VIAFLO II Electronic Pipette. You can create and store up to 20 different programs in each of Serial Dilution, Repeat Dispense, Variable Dispense or Multi Aspirate mode and up to 40 different Custom programs.

Pipetting mode	Description
Serial Dilution	Allows aspirating a transfer volume followed by a mix. Columns and Mix Cycles are tracked on the display.
Repeat Dispense	Allows dispensing multiple aliquots of the same volume without refilling the tips after each dispense for fast microplate filling and processing.
Variable Dispense	Allows dispensing multiple aliquots of different volumes.
Multi Aspirate	Allows aspirating multiple aliquots of the same or different volumes from a microplate.
Custom	Allows to create and store multi-stepped user-defined pipetting protocols.

5.2   Setting up a program
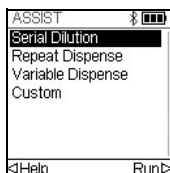
Use the **Touch wheel** to scroll to your desired pipetting mode and press **OK**.

NOTE

If no Bluetooth connection is available, you can also use the offline mode to create a new program. Live teaching of pipetting heights is not possible in offline mode.

Press New ▷ to create a new program of the selected mode. Your are prompted to enter a name.

Use the **Touch wheel** to select characters and press **OK**. Once finished, press ▷ to save the name. The programs can later be renamed, see 5.3 "Modify existing programs" on page 18.

Define all parameters of your program and press Save ▷.

To run the program, select the stored program and press **OK** on the VIAFLO II Electronic Pipette, see 4.4 "Running a program" on page 14.

5.3   Modify existing programs
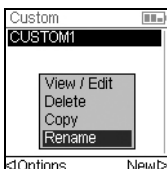
At any program display, use the **Touch wheel** to highlight an existing program.

Press ◁ Options, use the **Touch wheel** to select an option (View/Edit, Delete, Copy, Rename) to modify the program and press **OK**.

5.4   Detailed description of pipetting modes

5.4.1   General parameters

NOTE
Perform all position settings with GripTips attached. For 12.5 µl volume pipettes the correct tip type needs to be defined first, see 3.6.3 "Setting tip type" on page 12.
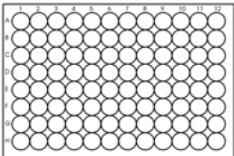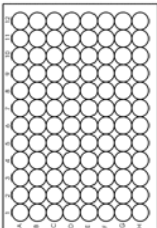
Plate
The following basic plate setup is part of every pipetting mode. Use the **Touch wheel** to select an option, define the required parameters and press **OK**. If a parameter is out of range, the VIAFLO II pipette beeps. Press Error ▷ to read the error message.

NOTE
*Keep the **Arrow keys** (◀, ▶, ▲, ▼) pressed to increase the movement speed of the plate carrier or pipette holder during position teaching.*

Options	Description
Wells	Press **OK** and use the **Touch wheel** to choose the kind of well plate used (6-384). Press **OK**.
Orientation	Choose the orientation of the plate. Press **OK** to toggle between landscape and portrait: Landscape Columns Portrait Rows Note: Switching to portrait requires to adapt default parameters like "Rows", "Columns" or "Count".
Clear Height	The travel height at which the GripTips move from well to well. The tips must be above the plate, see "Adjust the tip heights" on page 20.

Adjust the tip heights

Press **OK** to display the setting dial showing the current selected height. The required heights can be entered directly with the **Touch wheel**, if known:
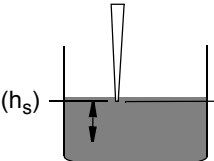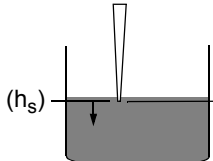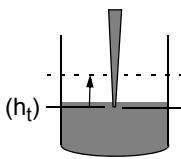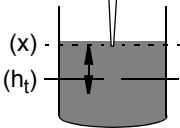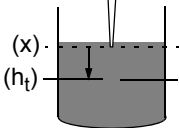
• **Reservoir** or **Tube Strip** are chosen as container: The height is the distance between the end of the GripTips and the **Instrument base** (7).

• **Column** or **Row**: If the plate or container is located on the **Plate carrier** (2), the lower point of reference is the **Plate carrier** (2).

Alternatively, adjust the tip height by moving the GripTips in the teach position:

• **Reservoir** or **Tube Strip** are chosen as container, located on **Reservoir position** (6): move the plate carrier out of the way with the ▶ **Right** arrow key of VIAFLO ASSIST.

• **Column** or **Row**: If the plate or container is located on the **Plate carrier** (2), use the ◀ **Left** and ▶ **Right** arrow keys of VIAFLO ASSIST to move the plate carrier into position, so that the pipette tips target above the center of any wells or the container.

• Press **OK** to display the setting dial. Press the ▲ **Up** and ▼ **Down** keys to position the GripTips at the desired height and press **OK** to save current settings.

Description of the tracking distances

The tracking distance is the distance the pipette automatically follows during aspirating, dispensing or mixing allowing a constant tip immersion depth, e.g. 2 mm below the surface.

Source	**Source Mix** ($\updownarrow$):	**Source Asp** ($\downarrow$):	
	Start tracking from (h_s). Height (h_s) is defined in the Source section.	Start tracking from (h_s). Height (h_s) is defined in the Source section.	
Target	**Target Disp** ($\uparrow$):	**Target Mix** ($\updownarrow$):	Target Aspirate ($\downarrow$):
	Start tracking from (h_t). Height (h_t) is defined in the Target section.	Start tracking from (x): Height (x) is calculated automatically: (h_t) + **Target Disp** distance.	Start tracking from (x): Height (x) is calculated automatically: (h_t) + **Target Disp** distance.

5.4.2 Serial Dilution mode

Plate setup

For plate setup option see "Plate" on page 19.

Source

Options	Description
Location	Use the **Touch wheel** to choose one of the source containers where the initial sample is aspirated from: • **Reservoir**: reagent reservoir • **Tube Strip**: for PCR tubes • **Tip**: samples can be aspirated before the automatic program is started. • **Column 1-24** or **Row A-P**: the sample is in the selected column/row of the plate.
Height	This is the sample aspiration height of the source container. See "Adjust the tip heights" on page 20 to set the tip height.
Aspirate	Set the sample volume that will be transferred from well to well.
Asp Speed	Set speed uniquely for aspiration (1 = low, 10 = fast)
Mixing	Mixes the sample in the source container before the first aspiration. • Press **OK** to toggle between on (green ✓) and off (red ✖, default). • If on, define Mix volume, Mix Speed and number of Mix Cycles.

Target

Options	Description
First Column or First Row	Set the destination for the first transfer of the serial dilution (column 1-24 or row A-P).
Columns or Rows	Set the number of columns or rows to dilute (1-n, including the first column/row).
Options	**Description**
Height	This is the dispense, mix and aspiration height in the target container when the tracking option is disabled, see "Adjust the tip heights" on page 20. If tracking is enabled, this height is used as base from which the tracking for dispense starts, see "Description of the tracking distances" on page 20.
Mix	Set the mixing volume after dispensing. It does not affect the transfer volume.
Mix Speed	Set the mixing speed (1 = low, 10 = fast).
Mix Cycles	Set the number of mixes per well (1-30).

Last Dispense

Options	Description
Location	Choose the destination where the last dispense should be purged: • **Reservoir**: the reagent reservoir serves as waste position • **Tube Strip**: for PCR tubes • **Tip**: last dispense remains in the GripTips and is purged manually • **Column 1-24** or **Row A-P**: the last dispense is dispensed in the selected column/ row of the plate.
Disp. Speed	Set speed uniquely for last dispense (1 = low, 10 = fast).
BlowOut at	The Blowout is following the last dispense and expels extra air to discharge residual liquid from the tips. It should be set below the liquid level for best results. Adjust the blow out height, see "Adjust the tip heights" on page 20.

Advanced

Option	Description
Tracking	Press **OK** to toggle between on (green ✓) and off (red ✘, default). If switched on, the pipette automatically follows the liquid level, see "Description of the tracking distances" on page 20. • **Source Mix**: moves the set distance down and up during mixing in the source location. • **Source Asp**: moves the set distance down during aspiration from the source location. • **Target Disp**: moves the set distance up during dispensing in the target location. The same distance is used to move down during aspiration in the target location. • **Target Mix**: moves the set distance down and up during mixing in the target location.

Press ▷ to save your settings. This will return you to the list of Serial Dilution programs.

5.4.3   Repeat dispense mode

Plate setup

For plate setup option see "Plate" on page 19.

Aspirate/Source

Options	Description
Location	Use the **Touch wheel** to choose one of the source containers where the initial sample is aspirated from: • **Reservoir**: reagent reservoir • **Tube Strip**: for PCR tubes • **Tip**: samples can be aspirated before the automatic program is started. • **Column 1-24** or **Row A-P**: the sample is in the selected column/row of the plate.

If Tracking is disabled (red ✖, default), define the following heights:

Options	Description
Start Height	The VIAFLO ASSIST will automatically refill the GripTips if the total dispense volume required for the target exceeds the maximum volume of the pipette. The first aspiration will be at the start height and for consecutive aspiration steps the pipette will go lower until it reaches the end height. See "Adjust the tip heights" on page 20 to set the height for the first aspiration.
End Height	Set the height for the last aspiration step.

Alternatively, press **OK** to enable Tracking (green ✓). The pipette automatically follows the liquid level during dispensing. Define the required parameters:

Options	Description
Plate count	Press **OK** and use the **Touch wheel** to select the total number of plates (1-9) used in the current run.
Reservoir type	Select the INTEGRA reagent reservoir for multichannel pipettes, see 8.3 "Consumables" on page 32.
Start volume	Set the filling volume that is currently in the INTEGRA reagent reservoir.
Tip immersion	Set the approx. immersion depth of the pipette tips (2-3 mm are recommended).

Continue with the following steps:

Options	Description
Asp Speed	Set the aspiration speed (1 = low, 10 = fast).
Mixing	If required, set a mixing step before aspiration. • Press **OK** to toggle between on (green ✓) and off (red ✗, default). • If on, define Mix volume, Mix Speed and number of Mix Cycles.

Dispense

Options	Description
First Dispense	The First Dispense is discarded back to the source immediately after aspiration. A First Dispense volume should be selected to improve accuracy and precision. Suggested volume: at least 5% of the pipette's maximum volume. • Press **OK** to toggle between on (green ✓, default) and off (red ✗). • If on, define the First Dispense volume.
Count	Set the total number of dispensing steps.
First Column or First Row	Define the column/ row where dispensing of the first volume should be started.
Dispense	Set the volume to be dispensed in each well. The total aspiration volume is calculated automatically. The pipette cannot be overfilled.
Disp. Speed	Set speed of all dispensing steps (1 = low, 10 = fast).
Height	Set the height for the dispensing steps.
TipTouch	It is highly recommended to activate a tip touch after a dispensing step. It removes drops that may cling to the pipette tips. • Select where the tip touch should be performed. If set to "Liquid", the tips will dip into the center of the wells. If set to "Side", the tips will touch to the side of the wells. • Define the height for the tip touch (TipTouch at).
Last Dispense	The Last Dispense is discarded back to the source container. A Last Dispense volume should be selected to improve accuracy and precision. Suggested volume: at least 5% of the pipette's maximum volume. • Press **OK** to toggle between on (green ✓, default) and off (red ✗). • If on, define the location (Source or Tip) and the volume of Last Dispense and the blowout height (BlowOut at, only activated if Tracking is disabled). Set the Blowout height below the liquid in the wells for best results.

Press ▷ to save your settings. This will return you to the list of Repeat Dispense programs.

5.4.4   Variable Dispense mode

Parameters

The settings remain the same as already described in section 5.4.3 "Repeat dispense mode" on page 23. Only one dispense option is unique to Variable Dispense and not described in the previous section.

Dispense

Option	Description
Dispense 1 to n	Set the different dispense volumes for every variable dispense step.

Press ▷ to save your settings. This will return you to the list of Variable Dispense programs.

5.4.5   Multi Aspirate mode

Plate setup

For plate setup option see "Plate" on page 19.

Aspirate

Options	Description
Count	Set the total number of aspiration steps.
First Column or First Row	Define the column/row where the first volume should be aspirated from.
Repeat Volume	If repeat volume is ticked (green ✓), identical volumes are aspirated. • Press **OK** to toggle between on (green ✓, default) and off (red ✘). • If off, define the different volumes for aspiration.
Aspirate	Set the volume(s) to be aspirated (for every aspirate step).
Asp Speed	Set the aspiration speed for all aspiration steps (1 = low, 10 = fast).
Height	Set the (start) height for all aspiration (and mixing) steps, see "Adjust the tip heights" on page 20.
Mixing	If required, set a mixing step before aspiration. • Press **OK** to toggle between on (green ✓) and off (red ✘, default). • If on, define Mix volume, Mix Speed and number of Mix Cycles.

Dispense

Options	Description
Location	Use the **Touch wheel** to choose one of the target containers where the aspirated sample is dispensed to: • **Reservoir**: reagent reservoir • **Tube Strip**: for PCR tubes • **Column 1-24** or **Row A-P**: dispense to the selected column/row of the current plate.
Disp. Speed	Set speed of dispensing (1 = low, 10 = fast).
Height	Set the height for dispensing, see "Adjust the tip heights" on page 20.

Advanced

Option	Description
Tracking	Press **OK** to toggle between on (green ✓) and off (red ✘, default). If switched on, the pipette automatically follows the liquid level, see "Description of the tracking distances" on page 20. • **Source Asp**: set the distance in mm, which the pipette should move down (or up) during aspirating (and mixing) from the source plate,

Press ▷ to save your settings. This will return you to the list of Multi Aspirate programs.

5.4.6   Custom program mode

The custom program allows for a step-based set up of up to 40 individual pipetting protocols. Each program can contain up to 98 steps.

From the ASSIST Menu select "Custom", press **OK** and New ▷. Define and save a name of your program.
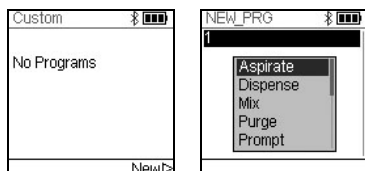
The first line is highlighted. Press **OK**.

Use the **Touch wheel** to select a first step from the menu. Press **OK**, define the required parameters and press **OK** to add the step.

After adding the first step, the selection should now be on the second line. Press **OK** again to define the second step. Continue adding steps until your entire pipetting protocol is defined.The individual steps based upon the following basic operations:

Step	Description
Aspirate	Sets an aspiration volume, tracking distance ($\downarrow$)[1] and pipetting speed.
Dispense	Sets a dispense volume, tracking distance ($\uparrow$)[1] and pipetting speed.
Mix	Performs a mixing cycle. Defines the number of cycles, mixing volume, tracking distance ($\updownarrow$)[1] and mix speed.
Purge	Purges all remaining liquid currently in the GripTips with the selected purge speed.
Prompt	Pauses the program and displays a message. Three lines with 12 characters each are available. To continue the program, press the **RUN key**.
Move X,Z	Moves the pipette in Z direction and the plate carrier in X direction to the selected coordinates. Use the **Arrow keys** on VIAFLO ASSIST to teach the position or enter the coordinates manually on the pipette's screen. To show the actual coordinates, tap any of the **Arrow keys** on the VIAFLO ASSIST device. Click ▷ on the pipette to set the coordinates.
Move X	The plate carrier travels the set distance in X-direction relative to the current position by X mm. Setting a negative value (mm) moves it to the left, setting a positive value (mm) moves it to the right. The distance from well to well for a 96 well plate is 9 mm and for a 384 well plate 4.5 mm.

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1. Tracking distance: the distance the pipette automatically follows during aspirating, dispensing or mixing allowing a constant tip immersion depth, see "Description of the tracking distances" on page 20.

Step	Description
Move Z	Moves the pipette in Z direction to the selected coordinates. Use the **Arrow keys** on VIAFLO ASSIST to teach the position or dial the height manually on the pipette's screen. Press **OK** on the pipette to accept the settings.
BlowOut	Performs a blow out. A blow out needs to be performed after the last dispense to remove liquid that may cling to the tips. Note: When using "Purge" to empty the tips, a blowout/blowin is performed automatically and does not need to be programmed.
BlowIn	After a blow out, a blow in has to follow at some point. It does not have to follow immediately and can have steps in between. E.g. after the blow out a move step can be programmed to move the tips out of the liquid, and is then followed by the blow in.
Delay	A delay is a pause between the last and the next step. Define a delay time (in seconds) or a manual input (pressing the **RUN key**) to continue.
Loop	A loop repeats the steps between the selected step and the loop command as many times as defined. E.g. if the program reaches the loop step, it goes back to step 3 and repeats the steps until there 2 times. The number of program steps can often be shortened by adding a loop.
Call	Calls another custom program to run as subprogram in the current program. This can be utilized to run frequently used sequences, e.g. a tip touch after a dispense, without programming the individual steps every time.
Beep	Sets a beep. The sound is only active, if under Preferences - Sounds the option Messages is set to On.

When finished, press ▷ to save the Custom program. To run the program, press **OK**.

6   Maintenance

> **WARNING**
> *Always turn off power and disconnect the VIAFLO ASSIST from the mains when carrying out maintenance work.*

6.1   Cleaning

The materials used on the exterior of the VIAFLO ASSIST support regular cleaning intervals. Clean the external components with a lint-free cloth lightly soaked with mild soap solution in distilled water or with a 70 % dilution of Isopropyl or Ethanol. Never use acetone or other solvents.

6.2   Decontamination

From regular use VIAFLO ASSIST should not come into direct contact with liquids. If aerosols or biohazadous fluids splash on the surfaces, they must be decontaminated in accordance to good laboratory practice. Wipe the clean surface with a lint-free cloth, lightly soaked e. g. with the following disinfectants:
• Ethanol 70 %
• Microcide SQ 1:64
• Glutaraldehyde solution 4 %
• Virkon solution 1-3 %
Follow the instructions provided with the disinfectants.

6.3   Servicing

For any service or repairs, please contact your local service technician.

> **WARNING**
> *VIAFLO ASSIST needs to be cleaned before sending it to service. The declaration on the absence of health hazards must be signed. This is necessary to protect service personnel.*

6.4   Equipment disposal

The VIAFLO ASSIST must not be disposed of with unsorted municipal waste.

Dispose the VIAFLO ASSIST in accordance with the laws and regulations in your area governing disposal of devices.

7   Technical Data

7.1   Environmental conditions

	Operation
Temperature range operation	5−40°C
Temperature range storage	-10−50°C
Humidity range	Max. rel. humidity 80% for temperatures up to 31°C, decreasing linearly to 50% rel. humidity at 40°C.

7.2   Specification of the device

Power supply	Input: 100−240 VAC, 50/60 Hz Output: 24 VDC, 3.0 A
Dimensions (H x D x W)	400 mm x 360 mm x 340 mm (with pipette attached: height 510 mm)
Weight	10 kg
Material of surfaces	Polyurethane (Housing) Stainless steel (painted or blank) Aluminium

7.2.1   Maximum labware height on plate carrier

Maximum distance between piptte tip end and plate carrier.

Tip type	Distance
12.5 µl SHORT	129.9 mm
12.5 µl Standard	121.3 mm
12.5 µl LONG	112.5 mm
50 µl / 125 µl	101.3 mm
300 µl	96.0 mm
1250 µl	54.1 mm

7.3   Intellectual Property

The VIAFLO ASSIST is covered under the following patents:

Patent Number	Country	Title	Apply to
9,321,048	USA	Sample Distribution System And Process	ASSIST

8 Accessories

8.1 Accessories for VIAFLO ASSIST

VIAFLO II Electronic Pipettes	Part No.
8-channel pipette, 0.5–12.5 µl	4621
8-channel pipette, 2–50 µl	4626
8-channel pipette, 5–125 µl	4622
8-channel pipette, 10–300 µl	4623
8-channel pipette, 50–1250 µl	4624
12-channel pipette, 0.5–12.5 µl	4631
12-channel pipette, 2–50 µl	4636
12-channel pipette, 5–125 µl	4632
12-channel pipette, 10–300 µl	4633
12-channel pipette, 50–1250 µl	4634
16-channel pipette, 0.5–12.5 µl	4641
16-channel pipette, 2–50 µl	4646
16-channel pipette, 5–125 µl	4642

8.2 Accessories for VIAFLO II Electronic Pipettes

Charging options and Bluetooth	Part No.
Mains adapter for electronic pipettes	4200
Pipette Li-ion battery	4205
Single pipette charging stand, incl. mains adapter	4210
Charging/communication stand for 1 pipette, incl. mains adapter	4211
Carousel charging stand for 4 pipettes, incl. mains adapter	4215
Linear stand, holds up to 4 charging stations	3215
Mains Adapter for linear stand and carousel charging stand	3216
Charging station for linear stand, incl. connection cable	3217
Charging/communication station for linear stand, incl. connection cable and USB cable	3218
Bluetooth module for VIAFLO II pipettes	4221
Bluetooth PC module with PC software	4225

8.3   Consumables

Reagent Reservoirs		Part No.
10 ml	Disposable reagent reservoirs, individually sealed, 30 reservoirs per case, sterile	4331
	Disposable reagent reservoirs, four sleeves of 50 reservoirs, 200 reservoirs per case, sterile	4332
	Reservoir Base, 10 pack	4306
25 ml	Disposable reagent reservoirs, individually sealed, 30 reservoirs per case, sterile	4311
	Disposable reagent reservoirs, four sleeves of 50 reservoirs, 200 reservoirs per case, sterile	4312
	Reservoir Base, 10 pack	4304
100 ml	Disposable reagent reservoirs, individually sealed, 30 reservoirs per case, sterile	4321
	Disposable reagent reservoirs, four sleeves of 50 reservoirs, 200 reservoirs per case, sterile	4322
	Reservoir Base, 10 pack	4305

GripTips for all INTEGRA Pipettes		Part No.
Purple SHORT: 12.5 µl	5 XYZ racks of 384 tips, sterile, filter, SHORT	6475
Purple LONG: 12.5 µl	Bulk pack, 1 bag of 1000 tips, non-sterile, LONG	4401
	5 inserts of 384 tips, non-sterile, LONG, GREEN CHOICE	4402
	5 racks of 384 tips, non-sterile, LONG	4403
	5 racks of 384 tips, sterile, LONG	4404
	5 racks of 384 tips, sterile, filter, LONG	4405
	5 inserts of 384 tips, pre-sterilized, LONG, GREEN CHOICE	4406
Purple LONG: 12.5 µl low retention	5 racks of 384 tips, non-sterile, LONG	6503
	5 racks of 384 tips, sterile, LONG	6504
	5 racks of 384 tips, sterile, filter, LONG	6505
Purple: 12.5 µl	Bulk pack, 1 bag of 1000 tips, non-sterile	4411
	5 inserts of 384 tips, non-sterile, GREEN CHOICE	4412
	5 racks of 384 tips, non-sterile	4413
	5 racks of 384 tips, sterile	4414
	5 racks of 384 tips, sterile, filter	4415
	5 inserts of 384 tips, pre-sterilized, GREEN CHOICE	4416
Purple: 12.5 µl low retention	5 racks of 384 tips, non-sterile	6553
	5 racks of 384 tips, sterile	6554
	5 racks of 384 tips, sterile, filter	6555
Yellow: 50 µl, 125 µl	Bulk pack, 1 bag of 1000 tips, non-sterile	4421
	5 inserts of 384 tips, non-sterile, GREEN CHOICE	4422
	5 racks of 384 tips, non-sterile	4423
	5 racks of 384 tips, sterile	4424
	5 racks of 384 tips, sterile, filter	4425
	5 inserts of 384 tips, pre-sterilized, GREEN CHOICE	4426
Yellow: 50 µl, 125 µl low retention	5 racks of 384 tips, non-sterile	6563
	5 racks of 384 tips, sterile	6564
	5 racks of 384 tips, sterile, filter	6565

GripTips for all INTEGRA Pipettes | **Part No.**

Green: 300 µl	Bulk pack, 1 bag of 1000 tips, non-sterile	4431
	5 inserts of 96 tips, non-sterile, GREEN CHOICE	4432
	5 racks of 96 tips, non-sterile	4433
	5 racks of 96 tips, sterile	4434
	5 racks of 96 tips, sterile, filter	4435
	5 inserts of 96 tips, pre-sterilized, GREEN CHOICE	4436
Green: 300 µl low retention	5 racks of 384 tips, non-sterile	6533
	5 racks of 384 tips, sterile	6534
	5 racks of 384 tips, sterile, filter	6535
Blue: 1250 µl	Bulk pack, 1 bag of 500 tips, non-sterile	4441
	5 inserts of 96 tips, non-sterile, GREEN CHOICE	4442
	5 racks of 96 Tips, non-sterile	4443
	5 racks of 96 Tips, sterile	4444
	5 racks of 96 Tips, sterile, filter	4445
	5 inserts of 96 tips, pre-sterilized, GREEN CHOICE	4446
Blue: 1250 µl low retention	5 racks of 384 tips, non-sterile	6543
	5 racks of 384 tips, sterile	6544
	5 racks of 384 tips, sterile, filter	6545

Imprint

This operating instruction manual has part number 127950, the version is V07. It applies as of (see Toolbox - Device information):

FW version VIAFLO II Pipettes	3.40 or higher
FW version VIAFLO ASSIST	1.07 or higher

of VIAFLO ASSIST until a newer revision is released.

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