Mini and micro dispensing solutions for fluids and pastes

Infinit®
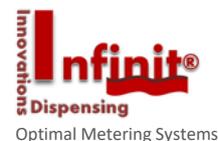Innovations
Dispensing
Optimal Metering Systems

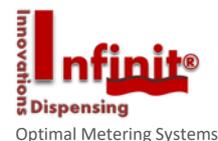# Installation and Service Manual for INFINIT®

aCCura-Box 1

v. 10

2016-2017

Mini and micro dispensing solutions for fluids and pastes

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1 INTRODUCTION

Dear ladies and gentlemen!

First of all, we would like to gratulate you for buying INFINIT® products, allowing you to work with the latest technology. To be able to avoid malfunctions, some important criteria now follows for commissioning your INFINIT® product and the servicing afterwards. Furthermore, we see it as our utmost duty to inform you about possible dangers in accordance with the operation of your new pump.

Therefore, please note, that this manual needs to be within the near of your service and other related personnel during, before and after operation of the pump.

We emphasise the need for reading this manual carefully and would like to point out, that important notices relating your security will follow within the next pages of this manual. Understanding all notices and the technology related information allow you to operate your latest INFINIT® product without endangering yourself and others.

We wish you success and all the best with your newest INFINIT® Dosing product.

The INFINIT® dosing team

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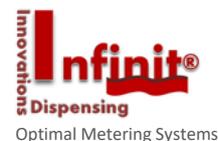
1.1   Use compliance

Before operation, please carefully read the following

1. Please intensively study this manual before commissioning. Do get familiar with the operation manual before each start of the pump or every time when the operator changes.
2. Please note, that this manual is part of this particular pump even when being moved to another department or company.
3. The control box and pump may only be used by healthy people
4. Do only use INFINIT® spare parts. Damages caused by using other parts are not supported by the INFINIT® warranty.
5. Should any of this manual not be clear or understandable, please do contact your distributor or write us under info@infiniti-dosing.com.

About the pump: it is a self-priming endless dosing pump. Following materials may be used with it for metering or transferring:

• Adhesives and sealants with or without spheres
• Material resistant fluids and pastes
• Oils and lubricants
• Paints and lacquers

Do not use with cyanoacrylates, anaerobic glues or any explosion rated nor poisonous products. Please do contact your distributor for further information. We are not chemical specialists so please do check the pump material resistance of all wetted parts with your product supplier. Any improper use will produce the loss of the support of the INFINIT® warranty.

Explicit compliance for the control box:
Depending on the application, the maximum temperature may not succeed 40°C. With the use of aggressive products, please do always contact your distributor and product supplier to get approval before operation and or commissioning.
Make sure, that the local legislation has been incorporated and all safety relevant demands are being kept.
Changes done by the user result in loss of warranty: All damage claims upon will be ignored. All safety relevant technical issues lose the INFINIT® warranty support.

This sign shows a safety relevant message. Make sure all operator personnel and safety people take note or have been made aware.

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1.2   Safety instructions

- Make sure, that you have taken care of the rules for accident prevention next to reading this manual.

- Do not disregard any caution sign; they give important notices to prevent accidents or injuries. Caution signs are an important part of the safety rules for accident prevention therefore need to be visible at l times.

- Before commissioning, please do check all connections and see if they are well attached.

- Before starting to work with the control box and pump, every worker needs to fully understand the application and its demands. Do not let the pump run without any supervision.

- Service and repairs may only be performed via trained personnel and the relevant tools.

- All needed accident prevention apparatus and fixtures must be installed before operation. Make sure they are in good condition at all times.

- Make sure that the pressure in the system has been neutralized while servicing the pump. Switch off the power. Disconnect all power supply cables.

- In case solvents are used, it may be needed to wear breathing protection masks. Please ask your safety staff.

- Never smell at openings after demounting the pump!

- Take the needed precautions when working near an explosion proof zone! Pump and controller are not explosion proof!

- Smoking is prohibited in the near of solvents and other inflammable products.

- Only work on the pump and the pump drive shaft when the power is off.

- Make sure that the suction side connection is vacuum proof and that the connection of the pressure side is able to withstand the system pressure.

- Temperature: min. +5° C, max. +40°C

- Power: 230V AC, 50 Hz or 110V AC

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2. Technical description, function

INFINIT® Dosing technology is based on the endless dosing progressing cavity pump. The rotating element "Rotor" and the static counter part "Stator" form an optimal chamber "Cavity". Both rotor and stator touch eachother over the whole length to create a continuous seal that prevents backflow even with higher back pressure. The movement of the rotating rotor in the stator allows the fluid to be gently pushed to the next chamber without shearing and squeezing the fluid.

Due to the fact that the cavity along the sealing line is always open, particles can be handled without difficulties. INFINIT® technology will pump and dose abrasive fluids but also more viscous pastes whenever the chambers are correctly and completely filled.

Your aCCura-Box offers all parameters needed for comfortable programming and easy to understand dispensing settings.

Setting choices

Time: *dispense a certain volume in a preset time*

Volume: *dispense an accurate volume*

Speed: *dispense with constant volume*

Proportional: *dispense a variable volume (not in mixing mode)*

3. Commissioning

3.1 General notice

- Make sure you are aware of the safety instructions under 1.2 and your local safety legislation
- Make sure enough material is available
- Make sure all connections are well tightened, attached and protected
- Make sure all materials are compatible and resist the product

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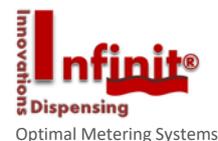
Trials

Testing with water can cause loud noises and destroy the stator. Reason for this effect is the lack of lubrication by water. You may use Vaseline oil or glycol instead. Fluor elastomers such as Viton®, Viton Extreme are to be completely avoided with water. Alternatively you may test with the product used for the application. Demineralised water is restricted for use at all times because it may attack all pump materials. Please ask your distributor.

How to avoid dry running

Since the rotor made of metal is running in an elastomeric rubber stator, heat can be produced when no material is being transported due to the lack of lubrication. There cannot be any heat dissipation because the rubber stator is working like a shield. A continuous friction builds up increasing heat that cannot be controlled therefore the stator material can be destroyed rapidly relative to the pump speed. Possible solution: Start the pump slowly at max. 10 rpm for max. 30 seconds and/or pre-fill the pump.

Pump speed table

Following values are only an orientation support and no absolute base for your programming:

Product (cP ≈ mPa.s)	Speed	Suction pressure
Water like fluids	Till 100%	ambient
Honey like pastes	Max. 80%	1-3 bar (14.5 - 43.5 psi), Max. 3 bar (43.5 psi)
Oils, greases till 25.000 mPa.s	Max. 70%	2-3 bar (29 - 43.5 psi), Max. 4 bar (58 psi)
Oils, greases till 50.000 mPa.s	Max. 50%	3-4 bar (43.5 - 58 psi), Max. 5 bar (72.5 psi)
Silicone und Epoxies not filled	Max. 80%	3-4 bar (43.5 - 58 psi), Max. 6 bar (87 psi)
Silicone und Epoxies filled	Max. 60%	3-5 bar (43.5 - 72.5 psi), Max. 6 bar (87 psi)
UV-adhesives	Max. 90%	1-2 bar (14.5 - 29 psi), Max. 3 bar (43.5 psi)
Pastes till 50.000 mPa.s	Max. 50%	3-5 bar (43.5 - 72.5 psi), Max. 6 bar (87 psi)
Pastes over 50.000 mPa.s	Max. 20%	Max. 6 bar (87 psi)

In almost all applications, the material flowability is essential for a good dispensing result. Make sure, that the pumps cavities are completely filled at max. dosing speed. The material flowability is crucial for the pumps speed therefore do not just start the pump without considering the rheology* of the product. The suction side pressure and pressure side back pressure together with the dosing velocity are key for the long life time of your INFINIT® pump.

* fluid science and flowability according molecular structure

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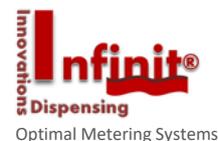
3.2 Main menu

The function is different between an aCCura-Box 1K or 2K

Notice:

Your aCCura-Box can be upgraded to an aCCura-Box AB in case needed. You will have to send it to your service partner who will install a second motor driver and upgrade the software.
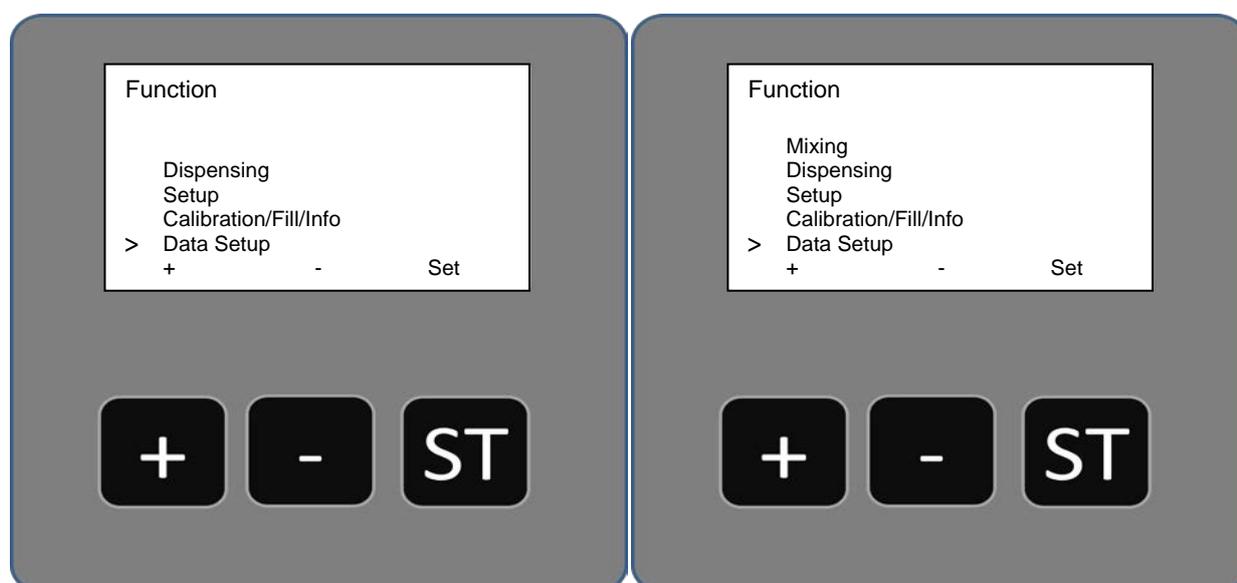
aCCura-Box: 1K   *aCCura-Box AB: 2K*

In the main menu, you can choose your next step.

Only when you have ordered or upgraded a 2K aCCura-Box, you will be able to mix. Otherwise, this function will not be active.

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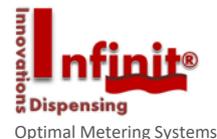
3.2.1 The buttons

The small > in the left shows which level you are about the select. With the + and - you can move up and down. Confirm your selection with the ST-button ("SET").
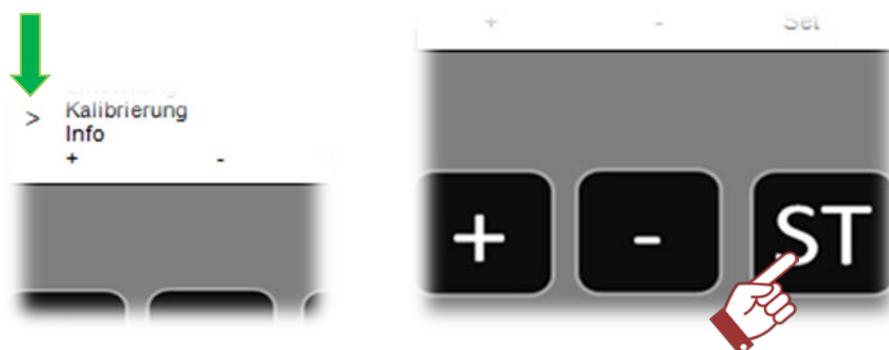
3.2.2 Dispensing

Select "Dispensing" in the "Function" level

not available in all versions

Bild 1: Funktionsebene

Dispensing

> Set time
Set volume
Continuous
Variable speed
Main Menu
+   -   Set

Select Pump

1

Pump 1=B   /   0=A
+   -   Exit
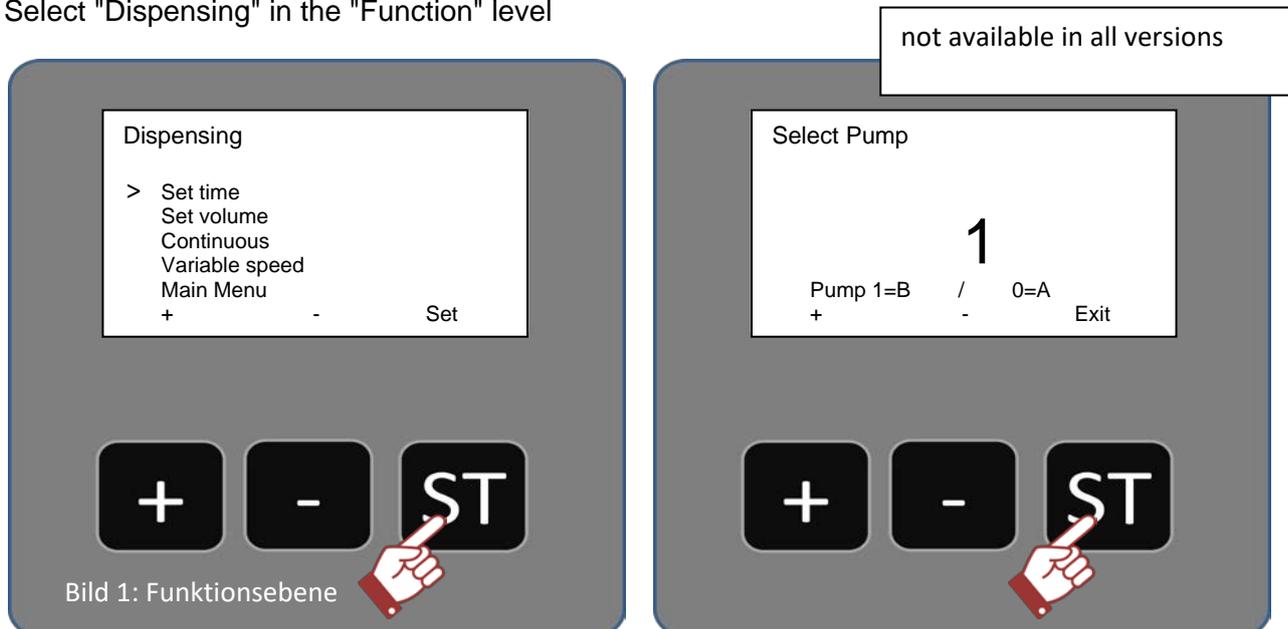
3.2.2.1 Set time

You can select the needed dispense time in steps of 0.1 seconds.

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After pressing "SET"

you can select further options:

"START" You can start the pump. Please make sure you have enough material inside. Otherwise you may risk dry running which will destroy the pump wearing parts (cfr. manual of the pump and 3.3 "Calibration"

"SET" via - button. You can choose a new time and speed.

Pictures show only example

```
Dispensing Time          PA

       0,2   Time   sec
       0,540  g/min

   Start        Set      Exit
```

```
Dispensing Setup




   Time      Speed      Exit
```

```
Set dispense speed

       706   S/sek
       0,54   mg/min

   +        -       Exit
```

```
Set  Dispense Volume

       10,2  Time  sek

   +        -       Exit
```

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IMPORTANT   NOTICE:

If you do not select a mode of operation, you will not be able to start.

3.2.2.2 Set volume: here you can program a dispense volume mg (=0,001 g).

To be able to achieve accurate dispensing, you have to calibrate the system first. Without calibration, the control box cannot know the volume per revolution. During calibration, the exact steps per revolution will be determined. You will need a scale with at least 3 digits behind the comma.

Go to chapter 3.3 "Calibration"

Pictures only show example

not available in all versions

Dispensing		
	Set time	
>	Set volume	
	Continuous	
	Variable speed	
	Main Menu	
+	-	Set

Bild 1: Funktionsebene

Select Pump		
	1	
Pump 1=B	/	0=A
+	-	Exit

nicht immer vorhanden

After pressing "SET"

you can select further options:

"START" You can start the pump. Please make sure you have enough material inside. Otherwise you may risk dry running which will destroy the pump wearing parts (cfr. manual of the pump and 3.3 "Calibration"

"SET" via - button. You can choose a new time and speed.

Mini and micro dispensing solutions for fluids and pastes
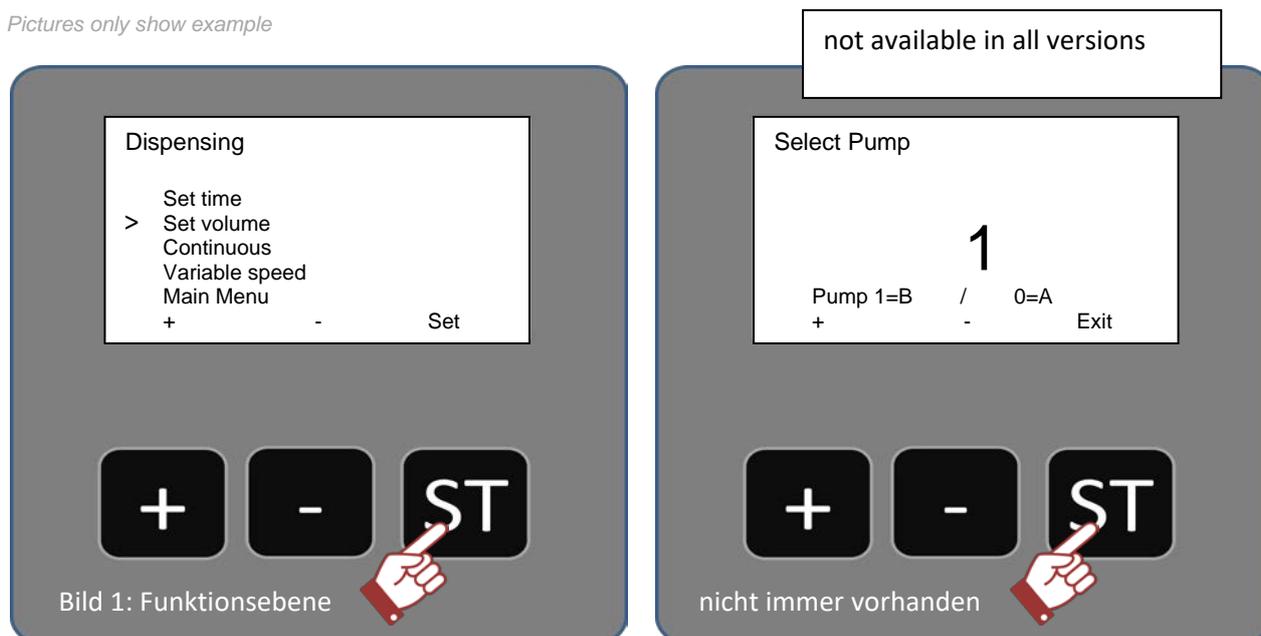
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```
Dispensing Volume           PA

        180  Vol   mg
        0,540  g/min


   Start        Set       Exit
```

```
Dispensing Setup




   Volume    Speed      Exit
```

```
Set Dispense Speed

        701    S/sek
        0,53   g/min

   +          -        Exit
```

```
Set  Dispense Volume

        180   Vol.  mg


   +          -        Exit
```

If you have programmed a suckback, it will automatically be performed after every stop. See chapter "Suckback" 2.3.5 and 2.3.9

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IMPORTANT   NOTICE:

If you do not select a mode of operation, you will not be able to start.

3.2.2.3 Continuous: here you can select to dispense with a constant speed. The pump will run as long as no stop signal (display or external) is given.

To be able to achieve accurate dispensing, you have to calibrate the system first. Without calibration, the control box cannot know the volume per revolution. During calibration, the exact steps per revolution will be determined. You will need a scale with at least 3 digits behind the comma.

Go to chapter 3.3 "Calibration"

Pictures only show example

Bild 1: Funktionsebene

After pressing "SET"

you can select further options:

"START" You can start the pump. Please make sure you have enough material inside. Otherwise you may risk dry running which will destroy the pump wearing parts (cfr. manual of the pump and 3.3 "Calibration"

"SET" via - button. You can choose a new time and speed.

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Pictures only show example

```
┌─────────────────────────────────┐
│ Dispense Continuous        PA   │
│                                 │
│        0,536  g/min             │
│        701  S/sek               │
│                                 │
│   Start       Set      Exit     │
└─────────────────────────────────┘
```

```
┌─────────────────────────────────┐
│ Dispensing Setup                │
│                                 │
│                                 │
│                                 │
│   Volume     Speed      Exit    │
└─────────────────────────────────┘
```

```
┌─────────────────────────────────┐
│ Set Dispense Speed              │
│                                 │
│        701    S/sek             │
│        0,53   mg/min            │
│                                 │
│   +            -        Exit    │
└─────────────────────────────────┘
```

Function: CONTINUOUS

Pump will only stop after receiving a stop signal

- Display

- Connector 24V impulse, min. 30 msec.

If you have programmed a suckback, it will automatically be performed after every stop. See chapter "Suckback" 2.3.5 and 2.3.9

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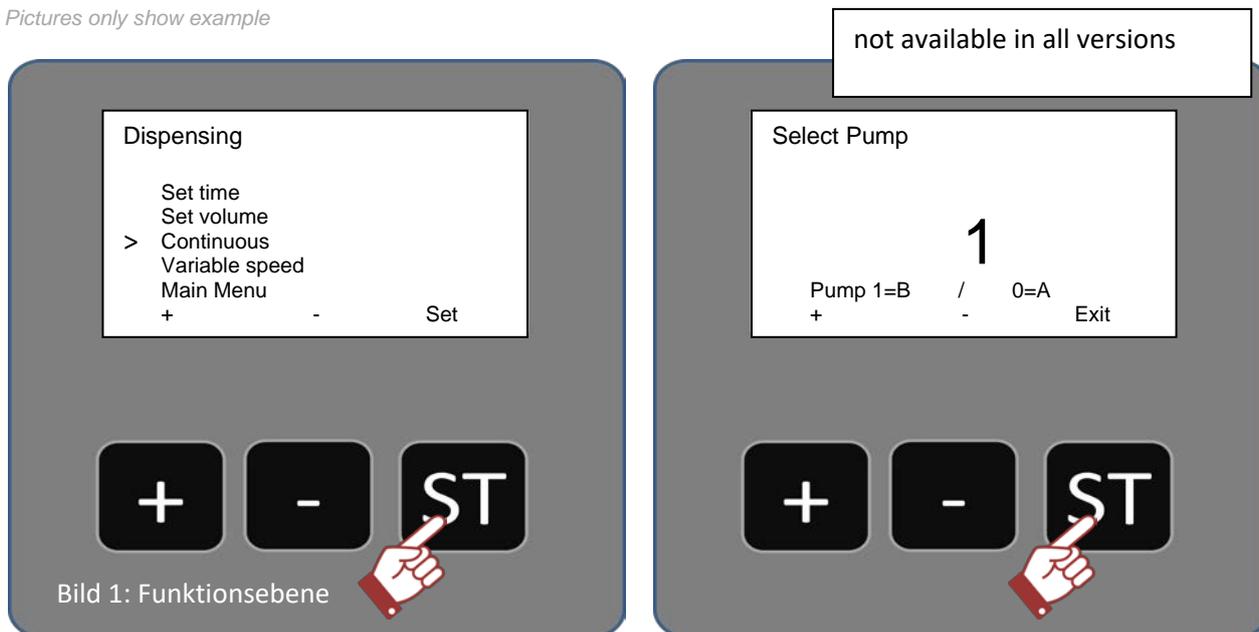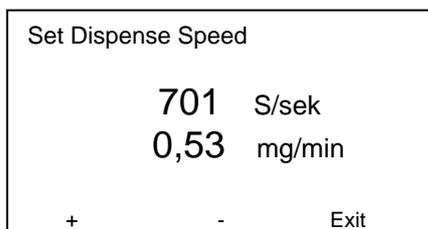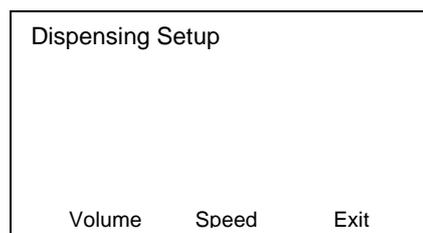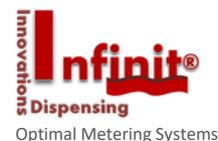
IMPORTANT   NOTICE:

If you do not select a mode of operation, you will not be able to start.

3.2.2.4 Variable speed: Here you can select to dispense variable according an external proportional speed signal. The pump will start running only after sending a second signal of 0-10V, whereby 0V = not running and 10V = max. programmed speed. Please note, that 0V does not mean stop. A stop has to be chosen to allow the pump to stop idling.

To be able to achieve accurate dispensing, you have to calibrate the system first. Without calibration, the control box cannot know the volume per revolution. During calibration, the exact steps per revolution will be determined. You will need a scale with at least 3 digits behind the comma. Go to chapter 3.3 "Calibration"

Pictures only show example

not available in all versions

Bild 1: Funktionsebene

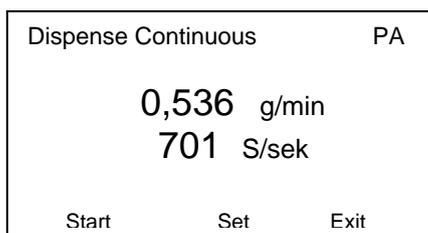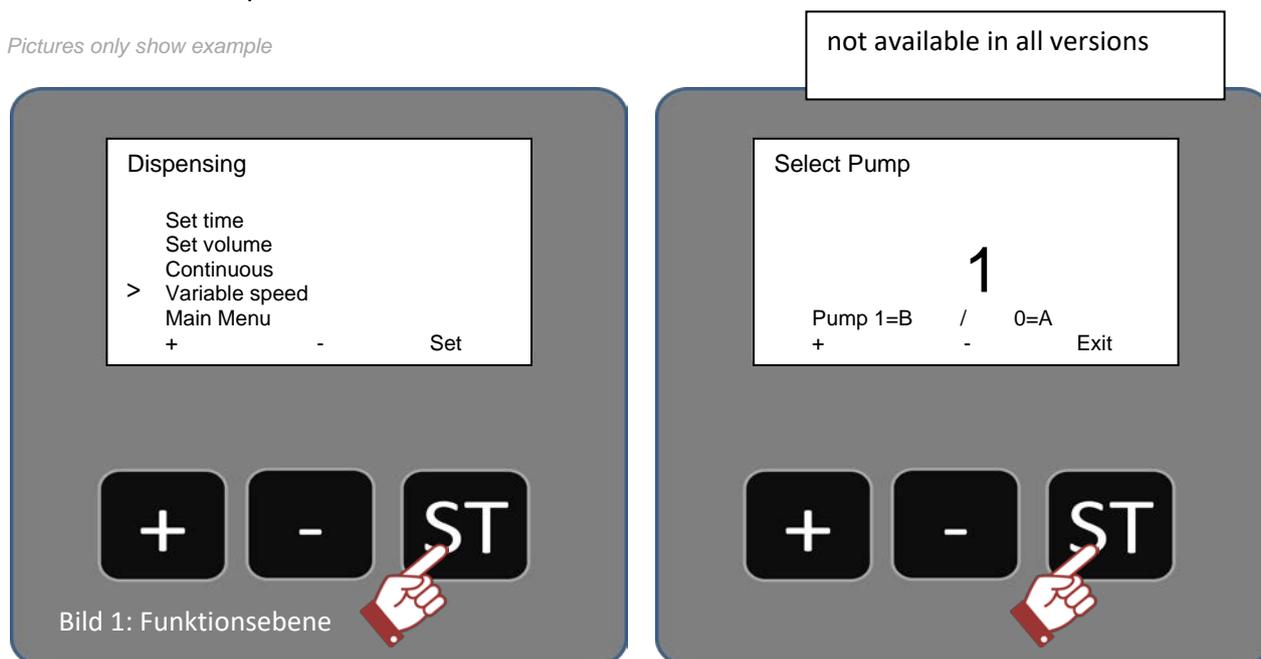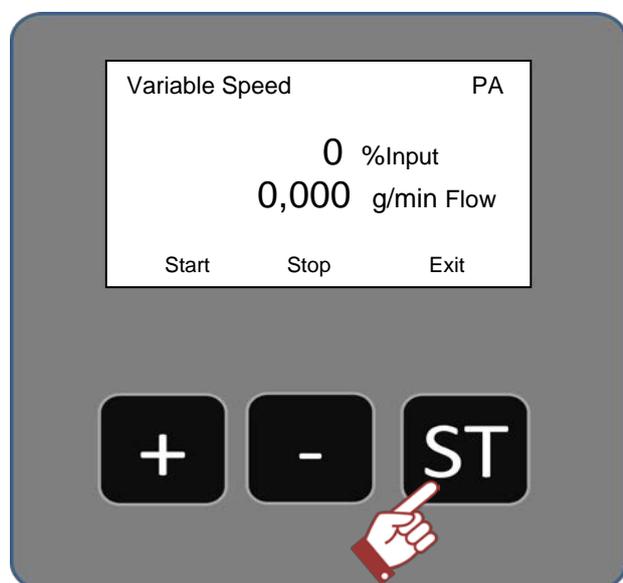After pressing "SET" you can select further options:

"START" You can start the pump. Please make sure you have enough material inside. Otherwise you may risk dry running which will destroy the pump wearing parts (cfr. manual of the pump and 3.3 "Calibration"

"SET" via - button. You can choose a new time and speed.

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```
Variable Speed          PA

              0   %Input
          0,000   g/min Flow

     Start      Stop      Exit
```

+ − ST

Function: VARIABLE

Pump only starts running after start signal and 0-10V input

Start & Stop also possible via Display

Note: if you do not 'stop', a suckback will not be performed

If you have programmed a suckback, it will automatically be performed after every stop. See chapter "Suckback" 2.3.5 and 2.3.9

3.2.3 Mixing

Before starting to mix, please "fill" both pumps and "calibrate" (chapter 3.3)

```
Function

>   Mixing
    Dispensing
    Setup
    Calibration/Fill/Info
    Data Setup
    +            -          Set
```

+ − ST
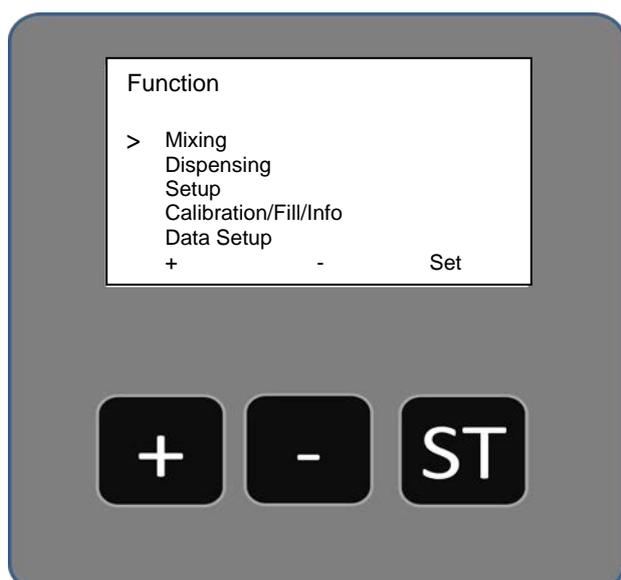
Function: MIXING

see chapter 2.3.12 "OPTION" to enable mixing mode

Please note, that two motor controllers have to be installed

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Select your operation mode in the main menu. The mixing mode can be enabled by code should it not be available (see chapter 3.4.12 "Option"). Otherwise this mode is not activated in case you only wish to control one pump.

Notice: pump A is the master pump. All changes will be done thru the setting of pump A. Pump B will be calculated according the settings of pump A. In case pump B cannot achieve the needed speed, you have to change the speed of A.
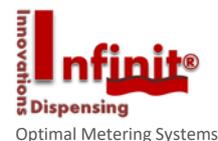
Mixing ratio:
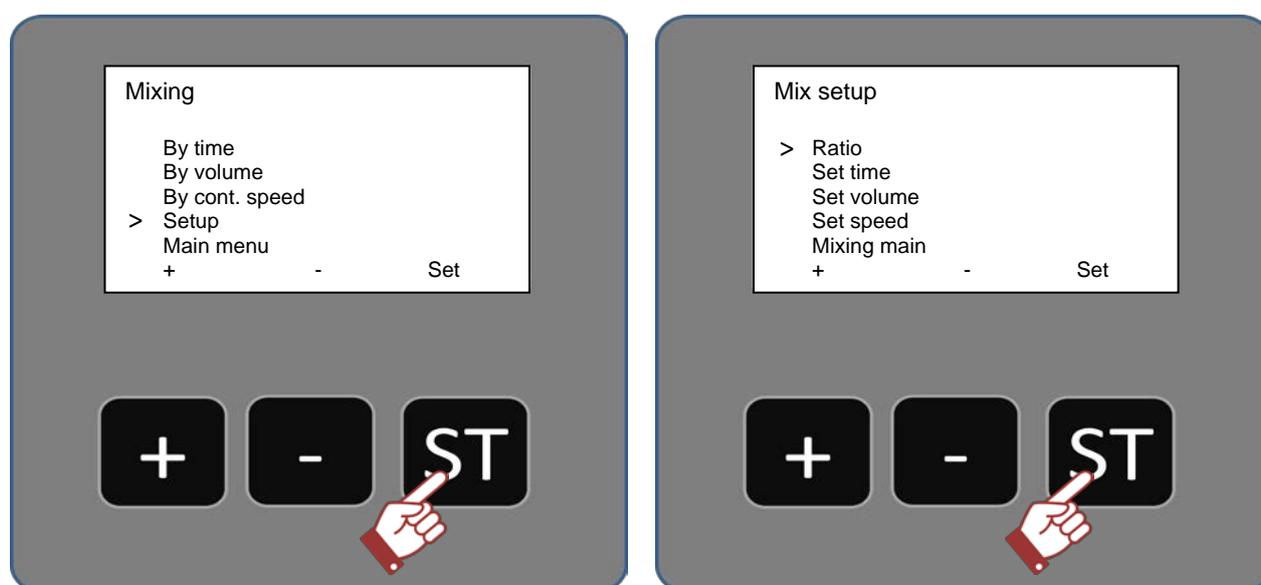
Select "Setup" to choose the correct mixing ratio followed by the mixing speed.

Make sure both pumps have been calibrated correctly. See chapter 3.3 "Calibration"

To be able to achieve accurate dispensing, you have to calibrate the system first. Without calibration, the control box cannot know the volume per pump revolution. During calibration, the exact steps per revolution will be determined. This results in a factor that is used to convert the volume into needed steps. You will need a scale with at least 3 digits behind the comma.

Go to chapter 3.3 "Calibration"

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Mixing ratio

1,000	Comp A
1,000	Comp B

+   -   Exit

+   -   ST
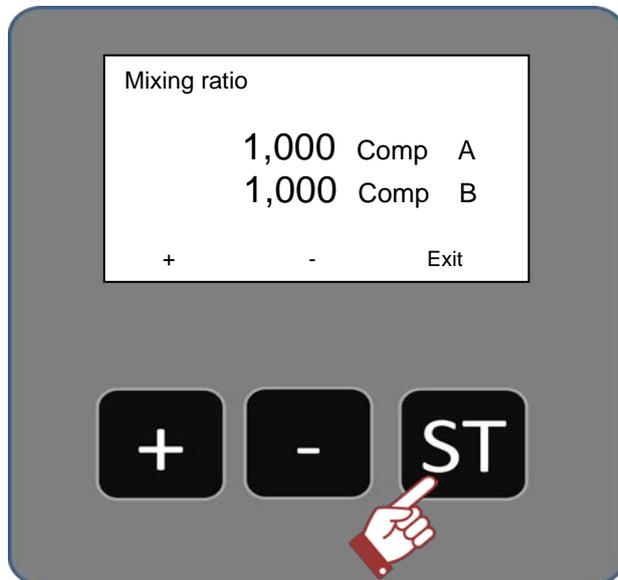
Mixing ratio

Define which pump is A and which is B.

1:2   A=1   B=2

2:1   B=2   A=1

=> A = always 1

IMPORTANT NOTICE

The mixing ratio is always based on gravimetric values due to the calibration process. see chapter 3.3 "Calibration".

Dispense speed

1288	S/sek
0,100	g/min

+   -   Exit

+   -   ST
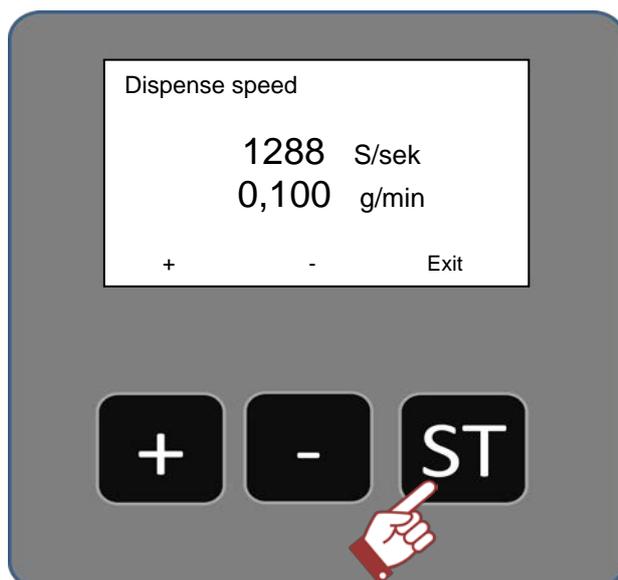
SPEED

The speed refers to the speed of pump A

Pump B is automatically calculated, example: 1:2

A = 0,100 g/min

B = 0,200 g/min

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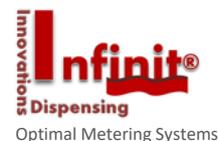
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> **Notice: pump A is the master pump. All changes will be done thru the setting of pump A.**
> **Pump B will be calculated according the settings of pump A. In case pump B cannot**
> **achieve the needed speed, you have to slow down the speed of A.**

3.2.3.1 Set time: You can select the needed dispense time in steps of 0.1 seconds.

After pressing "SET" you can select further options:

"START" You can start the pump. Please make sure you have enough material inside.
Otherwise you may risk dry running which will destroy the pump wearing parts (cfr. manual of the pump and 3.3 "Calibration"

"SET" via - button. You can choose a new time and speed.

Pictures show only example

If you have programmed a suckback, it will automatically be performed after every stop. See chapter "Suckback" 2.3.5 and 2.3.9

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Mixing time

0,089 g   Comp. A

0,169 g   Comp. B

10,0   sec
Start   Set   Exit

set time, speed and ratio
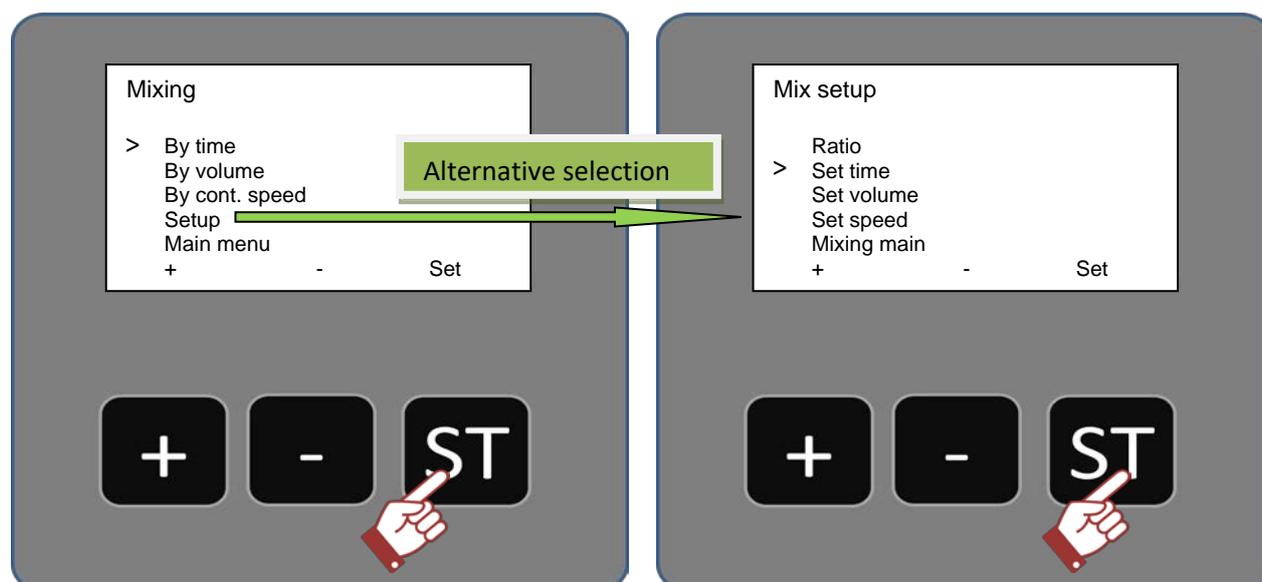
Mixing time

Too short mixing time can result in bad mixing results.

Make sure the suckback time is not bigger than the mixing time.

3.2.3.2 By volume: you can program an exact volume in milligrams

Mixing

> By time
> By volume
> By cont. speed
> Setup
> Main menu
> +   -   Set

Bild 1: Funktionsebene

Mix volume

180   Vol   mg

1,000:   1,900   A:B   ratio volume
62:          117   mg:mg
Step
701:          1854   S/sec   amount of steps per sec
Start   Set   Set

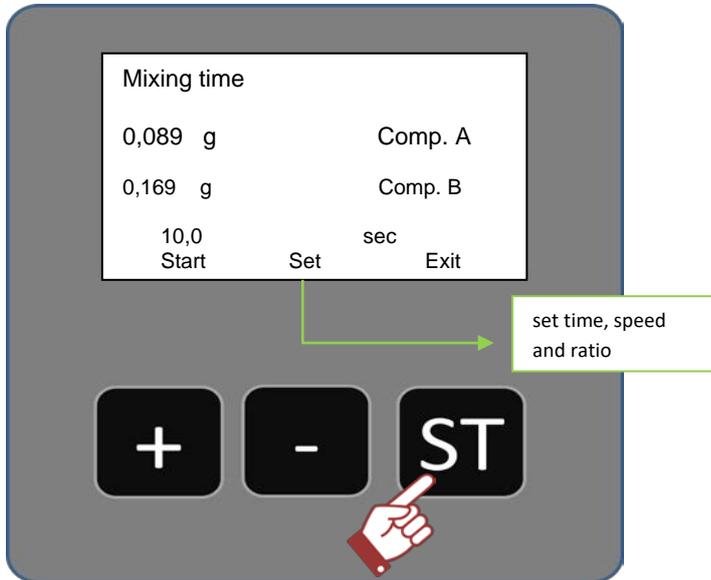If you have programmed a suckback, it will automatically be performed after every stop. See chapter "Suckback" 2.3.5 and 2.3.9

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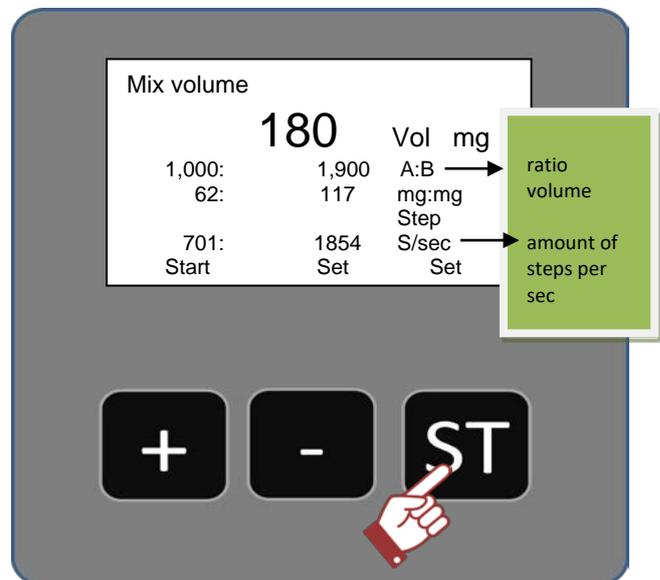Dispensing
Optimal Metering Systems

3.2.3.3 By continuous speed: both pumps run with constant speed until a stop is activated
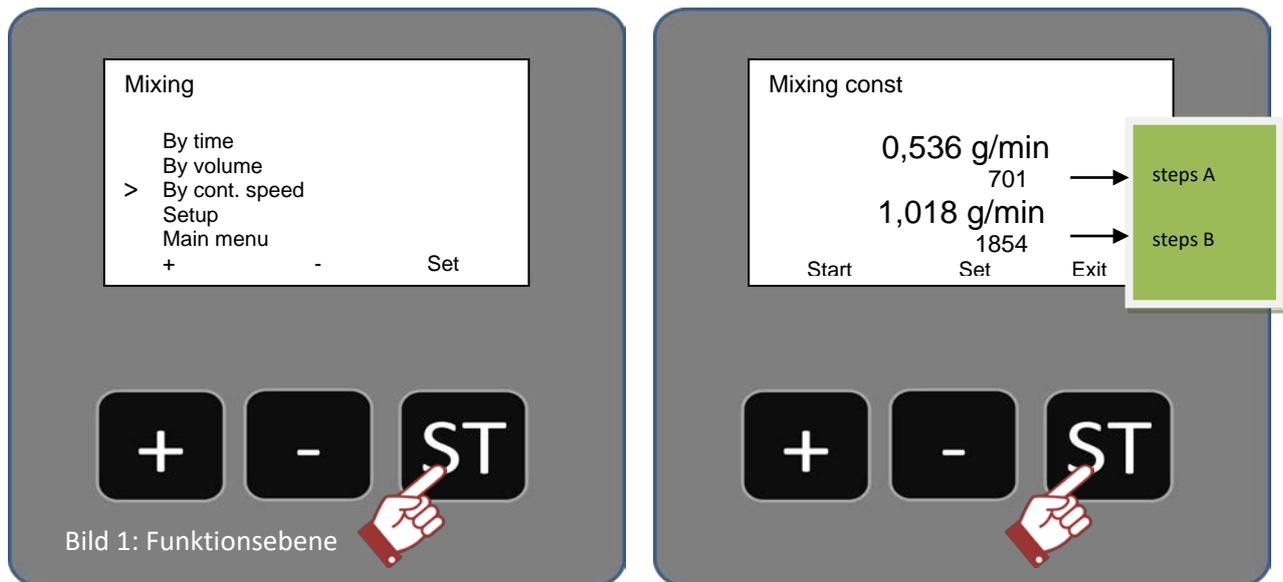
```
Mixing

     By time
     By volume
 >   By cont. speed
     Setup
     Main menu
     +              -           Set
```

```
+   -   ST
```

Bild 1: Funktionsebene

```
Mixing const

        0,536 g/min
               701        →    steps A
        1,018 g/min
               1854       →    steps B
 Start          Set        Exit
```

```
+   -   ST
```

If you have programmed a suckback, it will automatically be performed after every stop. See chapter "Suckback" 2.3.5 and 2.3.9
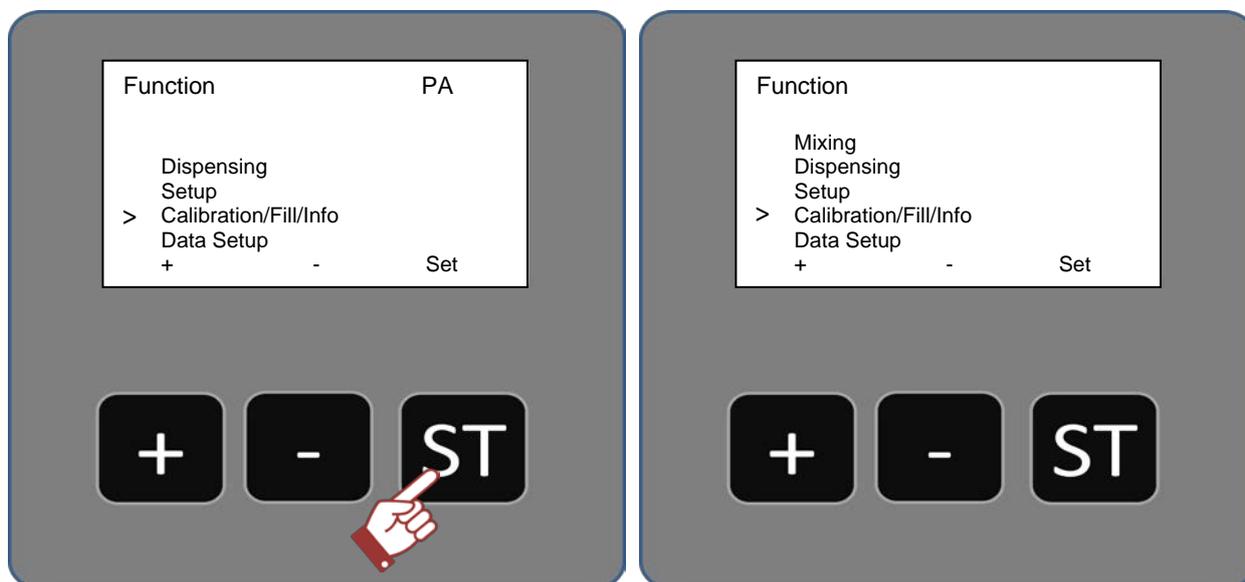
☞ **Notice: pump A is the master pump. All changes will be done thru the setting of pump A. Pump B will be calculated according the settings of pump A. In case pump B cannot achieve the needed speed, you have to slow down the speed of A.**

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3.3 Calibration

To be able to achieve accurate dispensing, you have to calibrate the system first. Without calibration, the control box cannot know the volume per pump revolution. During calibration, the exact steps per revolution will be determined. This results in a factor that is used to convert the volume into needed steps. You will need a scale with at least 3 digits behind the comma.

Main menu: **Choose the correct value for your results first...see 3.4.10 and 3.4.12**

```
Function                PA


      Dispensing
      Setup
  >   Calibration/Fill/Info
      Data Setup
      +          -      Set
```
```
  [ + ]   [ - ]   [ ST ]
```

```
Function

      Mixing
      Dispensing
      Setup
  >   Calibration/Fill/Info
      Data Setup
      +          -      Set
```
```
  [ + ]   [ - ]   [ ST ]
```

aCCura-Box: 1K   *aCCura-Box AB: 2K*

IMPORTANT   NOTICE

Both pumps have to be calibrated separately.

```
Select Pump


            1

   Pump 1=B    /    0=A
   +           -        Exit
```
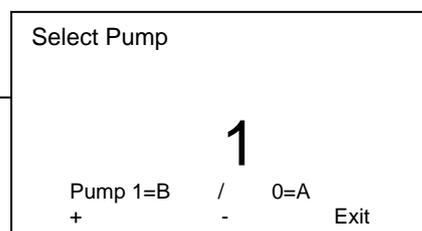
Please take enough time to calibrate the system. This process is needed to obtain accurate results. The calibration is done by steps. One motor revolution calculates 200 steps. Each step will be divided to obtain milligram per step. Your aCCura pump has a geared stepper motor. Example: Motor = 200 steps, 1 turn = 360°, gear box ratio = 14

=> 360 ° = 200 x 14 = 2800 steps per revolution

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8 steps to calibrate each pump

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```
Cali/Fill/Info

>   Calibrate
    Fill
    Info
    Init
    main
    +            -          Set
```

```
Calibration

>   Set Factor
    Motor / gear
    Motor current
    CW/CCW
    Main menu
    +            -          Set
```

1. Select "Factor" and press "Set"
2. Press "OK"

Scale: **You will need a scale with at least 3 digits**

```
Calibration
    200          Motor Stp
    13,730       Gear
    1,983        Volume
    14,582       Factor

        1        Pump
    ok       Set      Exit
```

```
Calibration
    2000         Volume
    0            M Puls
    0,000        Turns

    0,000        Factor

    Volume   Run      Exit
```

3. Press Run: (Minus)-button about 10 - 15 sec. (you can restart by selecting "Exit" and go to 1)
4. Choose "Volume"

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May be g/ml/mg/µl
depending on display settings

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5. Read value on the scale and enter that value in "Cal. vol Gramm" thru + and -
6. Press "SET"

```
Calibration

    2,000      Cal. vol
               Gramm


+              -            Set
```

```
Calibration
  200              Motor Stp
  13,730           Gear
  0,000            Volume
  0,000            Factor

       1           Pump
  ok        Set    Exit
```

7. Press "SET" again...you will see "Set OK", the value has now been saved
8. "Exit" to enable further selection in the main menu (to calibrate second pump if available)

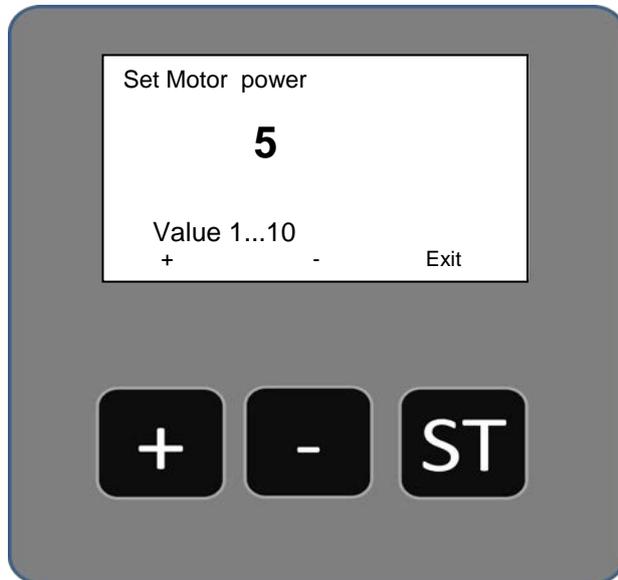**Motor / Gear:** *should be preset in the factory*

```
Steps Motor

    200    Pump A
    200    Pump B

Pump           1
   +       -       Exit
```

```
Gear

    13,730   Pump A
    13,730   Pump B

Pump           1
   +       -       Exit
```

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Motor Power

```
Set Motor  power

        5

    Value 1...10
    +           -        Exit
```

```
  +     -     ST
```

Motor power

regulates the power consumption whereby 10 is the highest value

Direction of motor

```
Set  direction

        0   L / R


    +           -        Exit
```

```
  +     -     ST
```
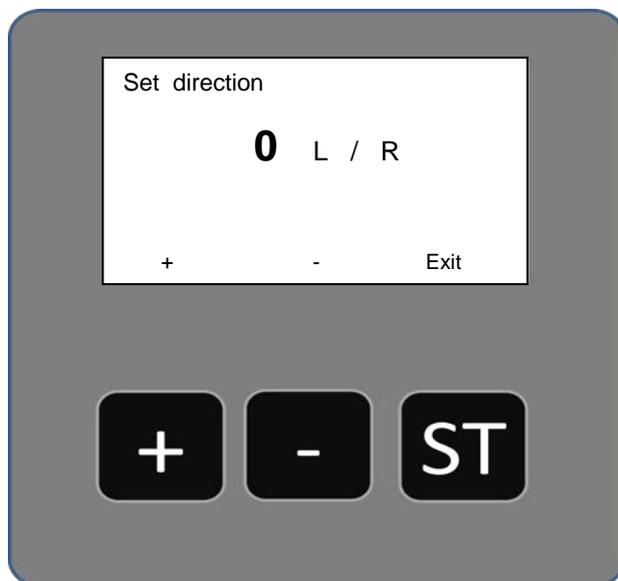
Direction

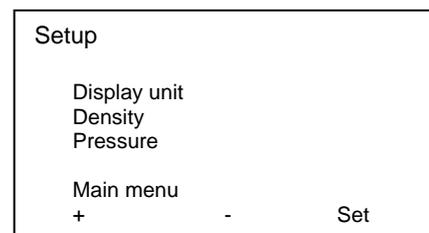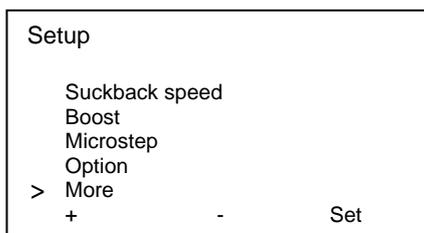**By changing the value, you can also use aCCura pumps to empty vessels...**

The correct value will be set in the factory

Mini and micro dispensing solutions for fluids and pastes

3.4 Setup

In this level, you can change the most important speed related parameters of your aCCura. By pressing "Set", your selection will be confirmed.
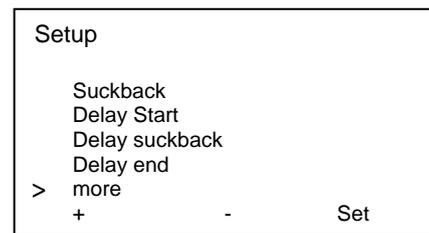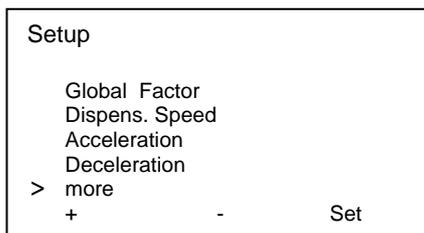
```
Setup

    Global  Factor
    Dispens. Speed
    Acceleration
    Deceleration
>   more
    +           -        Set
```

```
Setup

    Suckback
    Delay Start
    Delay suckback
    Delay end
>   more
    +           -        Set
```

```
Setup

    Suckback speed
    Boost
    Microstep
    Option
>   More
    +           -        Set
```

```
Setup

    Display unit
    Density
    Pressure

    Main menu
    +           -        Set
```

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3.4.1 Global Factor
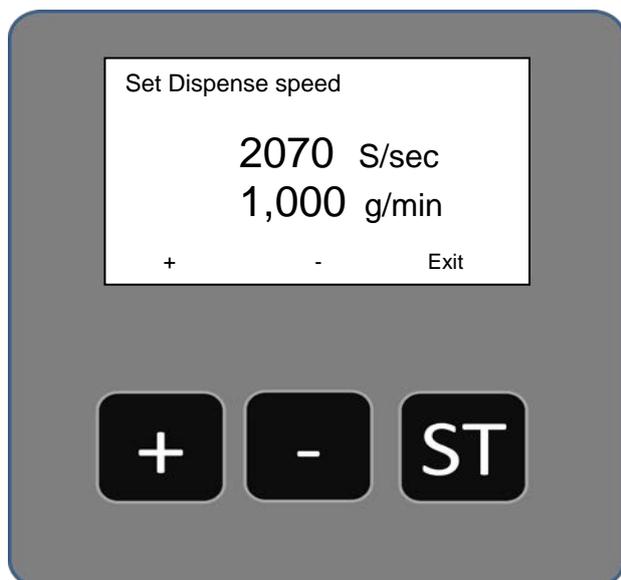
Set Global factor

100%

+   -   Exit

+   -   ST

Global Factor

This factor allows to make adjustments after calibration example in case of minor wear or needle change.

3.4.2 Set Dispense speed

Set Dispense speed

2070   S/sec
1,000   g/min

+   -   Exit

+   -   ST

Dispensing speed

The max. speed is depending on the aCCura model and microstep setup

When your aCCura does not start or stops automatically before the volume has been reached, you have to decrease the speed value

Microstep = 0 -> max 2500 (full step mode)

Microsteps =1 -> max. 5000 (1/2 step mode)

Microsteps = 2 -> max. 15000 (1/4 step mode)

Microsteps = 3-> max. 30000 (1/8 step mode)*

* less noise, less vibration of motor...see below 3.4.11

Mini and micro dispensing solutions for fluids and pastes

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3.4.3 Acceleration

```
Set  acceleration

        5        steps


   +          -        Exit
```

3.4.4 Deceleration

```
Set  deceleration

        5        steps


   +          -        Exit
```

Here you can control the way and how fast your aCCura starts and stops.
The amount of steps are to be seen as a time in which your aCCura has to accelerate and decelerate. Give your aCCura enough time to start and stop according the speed and the viscosity structure of the fluid.
Please note, that a low value can cause problematic behavior: increase the values in that case.

3.4.5 Suckback

```
Set  suckback

        0        Steps


   +          -        Exit
```

Suckback

to avoid after dripping

Do not select high values. In case, you may have to bleed the pump inlet housing again. Many fluids demand a short pause after the dispensing to allow the energy in the needle tip to stabilize.

Mini and micro dispensing solutions for fluids and pastes

3.4.6 Delay Start

```
Set  Delay Start

        0        ms


    +           -        Exit
```

3.4.7 Delay Suckback

```
Set  Delay Suckback

        0        ms


    +           -        Exit
```

3.4.8 Delay End

```
Set  Delay End

        0        ms


    +           -        Exit
```

Delay in milliseconds

Start = pump starts after x msec.

Suckback = pump performs suckback after x msec.

End = pump can be restarted only after x msec. have been reached

100 ms = 0.1 second

Mini and micro dispensing solutions for fluids and pastes

3.4.9 Suckback speed (reverse)

Set Suckback speed

500 S/sec
1,982 g/min
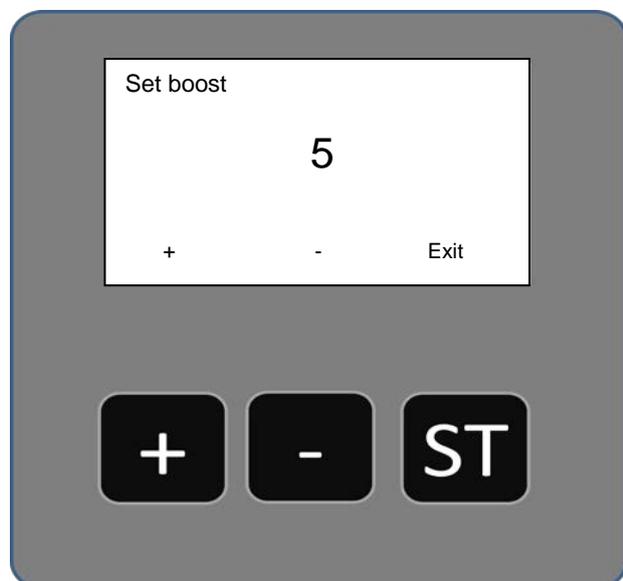
\+   -   Exit

+   **-**   **ST**

Suckback speed

the viscosity of the fluid may need adapted suckback speed to allow your aCCura to physically stop the flow

Tip: you may program a pause before suckback start to allow the energy of the flow to get stabilized

3.4.10 Boost

Set boost

5

\+   -   Exit

+   **-**   **ST**

Boost (starting torque)

this value has a relation with the motor power and the acceleration time.

The motor will start faster to reach the max. set motor power within the acceleration time.

Value = 1, the motor will use the max. time to accelerate.

Example: Motor power = 10, Boost = 5, acceleration = 50 steps you give the motor 50 steps time to reach the motor power starting already with 50% more boost. After 50 steps, the motor has to reach the programmed speed. If the speed is high, the acceleration may need more time to start properly. Notice: when both boost and motor power are the same, no boost can be achieved. The boost has to be smaller than the motor power.

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3.4.11 Microsteps

Set Microstep

**3**

+   -   Exit

+   -   ST

Microsteps

The max. speed is depending on the aCCura model and microstep setup.

By dividing the steps of the (stepper) motor thru our software, a higher accuracy can be reached. But also the motor behavior gets positively influenced to reach lower noise and lower vibration to achieve better performance. The max. speed of the motor goes down due to higher calculation capacity need.

Microstep = 0 -> max 2500 (full step mode)
Microsteps =1 -> max. 5000 (1/2 step mode)
Microsteps = 2 -> max. 15000 (1/4 step mode)
Microsteps = 3 -> max. 30000 (1/8 step mode)
Microsteps = 500 or 512 -> DC Motor

3.4.12 Option

Options

0   Key

+   -   Exit

+   -   ST
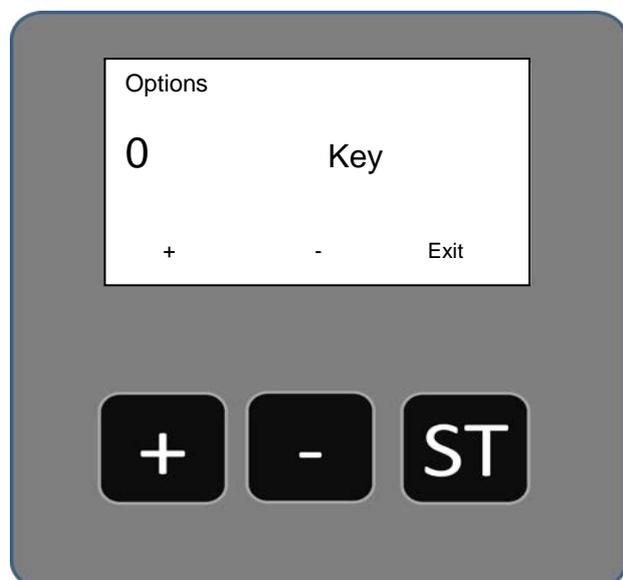
Option

with a 4-digit code, you can activate and deactivate the mixing mode.
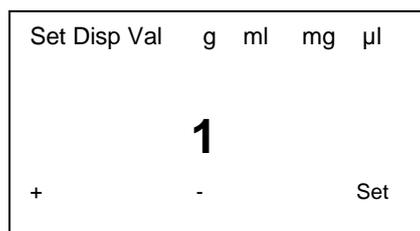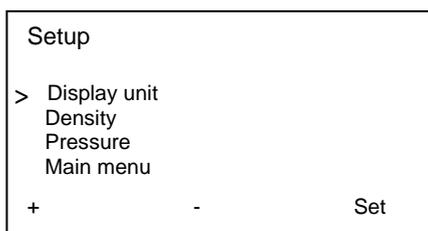
Ask your supplier or

 info@infiniti-dosing.com

NOTICE: if you have an INFINITI 1K solution, you will need to upgrade your aCCura-Box by ordering the upgrade. A second motor controller has to be built in and wired.

Mini and micro dispensing solutions for fluids and pastes

3.4.13 Setup display and density

```
Setup

>   Display unit
    Density
    Pressure
    Main menu
+               -           Set
```

```
Set Disp Val    g   ml   mg   µl


              1

+               -           Set
```

You can change the value of the reading in the display from gravimetrical to volumetrical dispensing and vice versa. You have to know the density (= weight per unit) to switch to volumetrical dispensing. **If the value is not correct, you may get wrong readings when checking the results via the scale.**

```
Set Density


   1,00

+           -           Exit
```
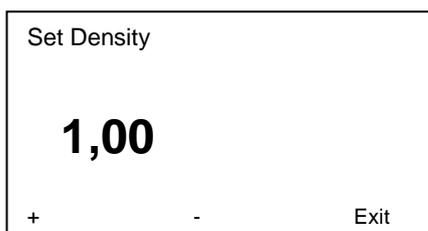
The density, or more precisely, the volumetric mass density, of a substance is its mass per unit volume. The symbol most often used for density is ρ (the lower case Greek letter rho), although the Latin letter *D* can also be used. Mathematically, density is defined as mass divided by volume.

g/cm^3

Settings for both A and B by pressing next

Mini and micro dispensing solutions for fluids and pastes

4. Start-UP

Initially, your aCCura pump is empty and has to be filled. **Please read thru the extra manual of your aCCura product to commission correctly.**

First of all, you have to select **a low speed** to fill the pump. Select "Fill".

```
Function


    Dispensing
    Setup
>   Calibration/Fill/info
    Data Setup
    +              -          Set
```

```
Function

    Mixing
    Dispensing
    Setup
>   Calibration/Fill/Info
    Data Setup
    +              -          Set
```

```
Fill  / Info




    A           B          Info
```

```
F i l l      A




    Run           Set        Exit
```

Choose the pump to be filled......   **Select "Set" to change the speed: see next**

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Changing the speed for commissioning **(*DC Motors max. 120)**

```
┌─────────────────────────┐        ┌─────────────────────────┐
│ Set Filling Speed       │        │ F i l l      A          │
│                         │        │                         │
│       500 P/sec         │        │                         │
│                         │        │                         │
│   +         -     Exit  │        │   Run       Set   Exit  │
└─────────────────────────┘        └─────────────────────────┘
```

Press "+" or "-" to select value P(ulses refer to speed)*   Press "Run" to start pump A

If you have a 2K unit, you have to fill pump B too.

Press "Exit" and repeat the routine but choose to fill B.

```
┌─────────────────────────┐
│ Fill  / Info            │
│                         │
│                         │
│   A        B      Info  │
└─────────────────────────┘
```
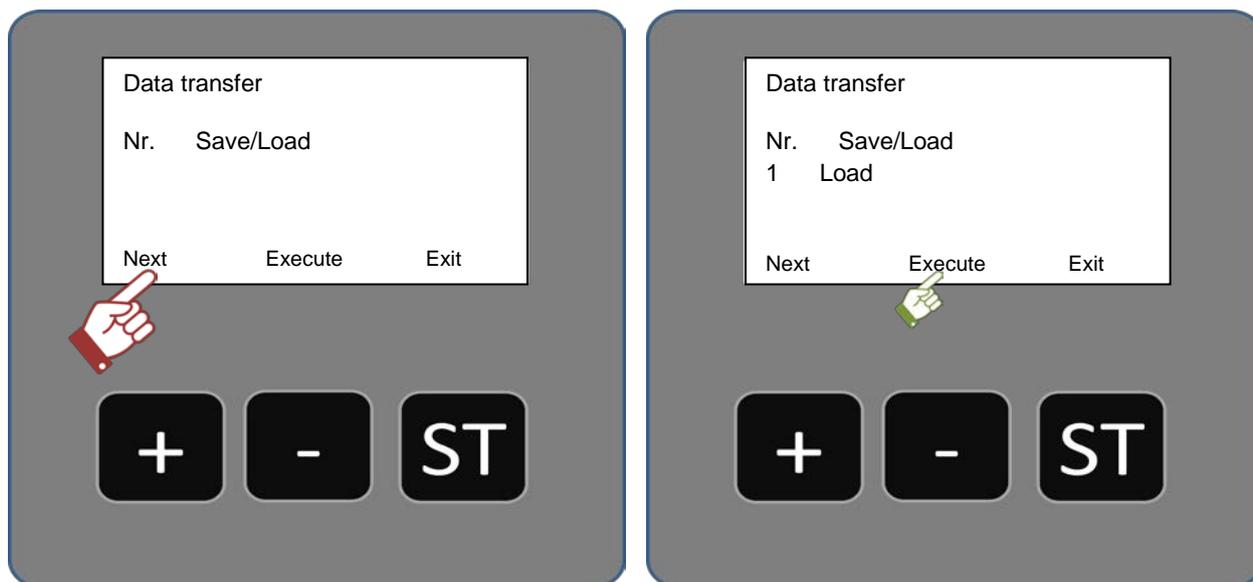
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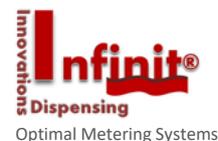
5. Data setup: save up to 10 programs: Go to the main menu

Logic:

First "Load" program 1 to 10, then followed by

"Save" program 1 to 10

Example 1: you want to start program 3:

press 3 x "Next" with "+", then press "Execute" with "-" to load program 3.

Example 2: you wish to save program 6:

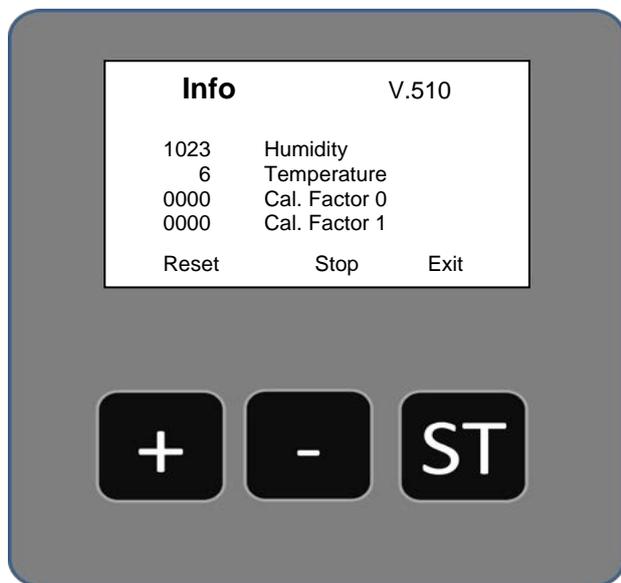Press "Next" 16 times with "+" till you can see 6 "Save", then press "Execute" with "-".

With "Exit" you go back to the main menu.

Option: **some boxes are equipped with the 4 pin connector. In this case, you can choose each program via external signal thru example a robot. In case not, ask your supplier or info@infiniti-dosing.com for more information.**

```
Option 4 pin connection:  1  2  4  8
Program 0 = 0000    no program choice
Program 1 = 1000   (pin 1 only)
Program 2 = 0100   (pin 2 only)
Program 3 = 1100   (pin 1 and pin 2)
Program 4 = 0010   (pin 3 only)
Program 5 = 1010   (pin 1 and pin 3).....
```

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6. Info

Info	V.510
1023	Humidity
6	Temperature
0000	Cal. Factor 0
0000	Cal. Factor 1
Reset	Stop Exit

+   **-**   **ST**

With "Exit", you return to the main menu

Info

Humidity: a sensor can be optionally installed.

Temperature: a sensor is installed on the main board and will shut-off system in case the °C is too high

Cal. factor: shows the amount of steps after calibration, see chapter 3.3

Reset: allows to switch languages (German/English)

Stop: will stop your aCCura

7. Service and -intervals

Your aCCura-Box can be cleaned with a soft tissue and little (alcoholic) water. Do not use solvents or other aggressive chemicals.
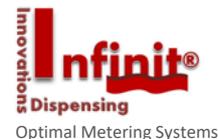
The housing is made of PU.

⚠ do not use sharp tools to clean the surface

⚠ You lose the INFINITI warranty by opening the aCCura-Box. Ask us: info@infiniti-dosing.com.

Mini and micro dispensing solutions for fluids and pastes

8. Init (protected by password >V9.7)

This function should only be used whenever your aCCura-Box or DS-Box is not performing at all and has blocked itself. INIT means initialization of the total software causing the unit to reset all parameters to default settings. **In this case, all saved data is lost and <u>cannot</u> be retrieved!**
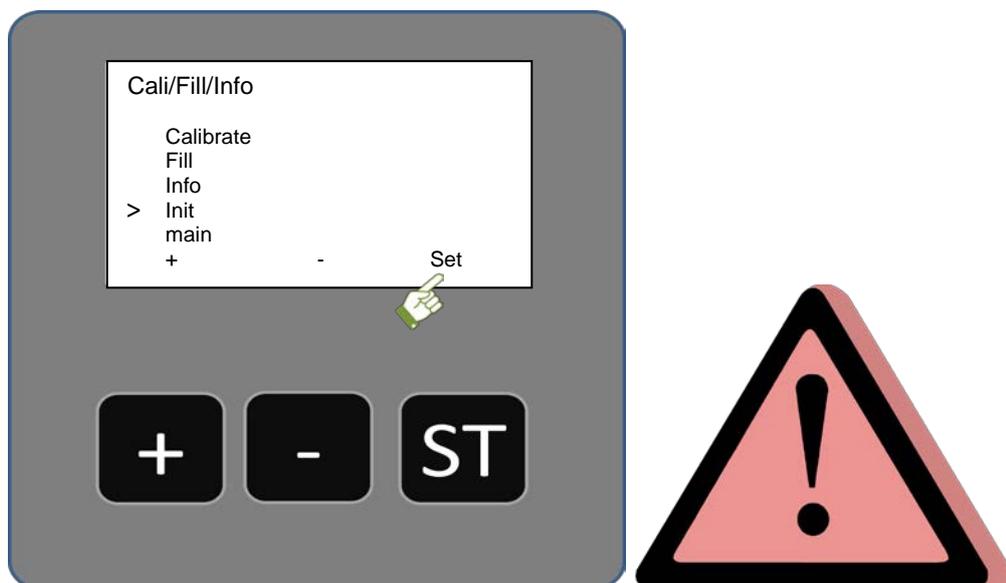
When INIT has been pressed, following parameters should be reinstalled:

1. Motor steps (200 for stepper, 500 or 512 for DC motor)
2. Gear ratio (aCCura-Mini/Cera 2 and 3 = 13.730, aCCura-Mini 1 = 19.190, DC = 82.730)
3. Microsteps (DC = 1, aCCura versions = best to use 3 see also 3.4.11)
4. Acceleration (aCCura-versions = 50, DC = 5)
5. Deceleration (aCCura-versions = 50, DC = 5)
6. Motor power = 5
7. Boost = 5

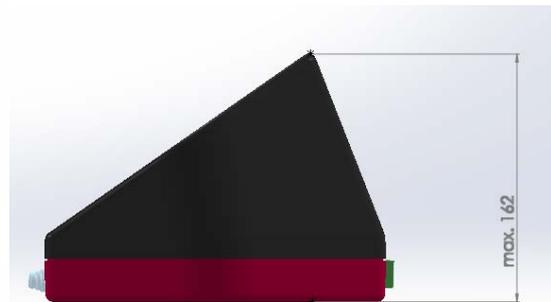# Mini and micro dispensing solutions for fluids and pastes

9. Measures

Write us under info@infiniti-dosing.com for more drawings.

Front:
M8 or M12 connector

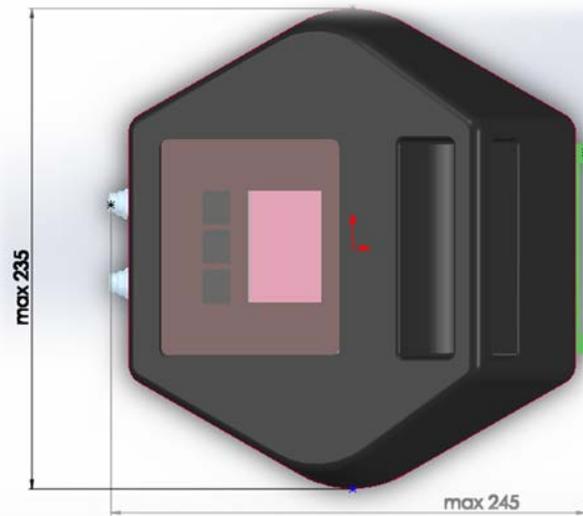| Back: |
| --- |
| - 230V |
| - RS232 |
| - RS485 |
| - I/O's |

Top   Side

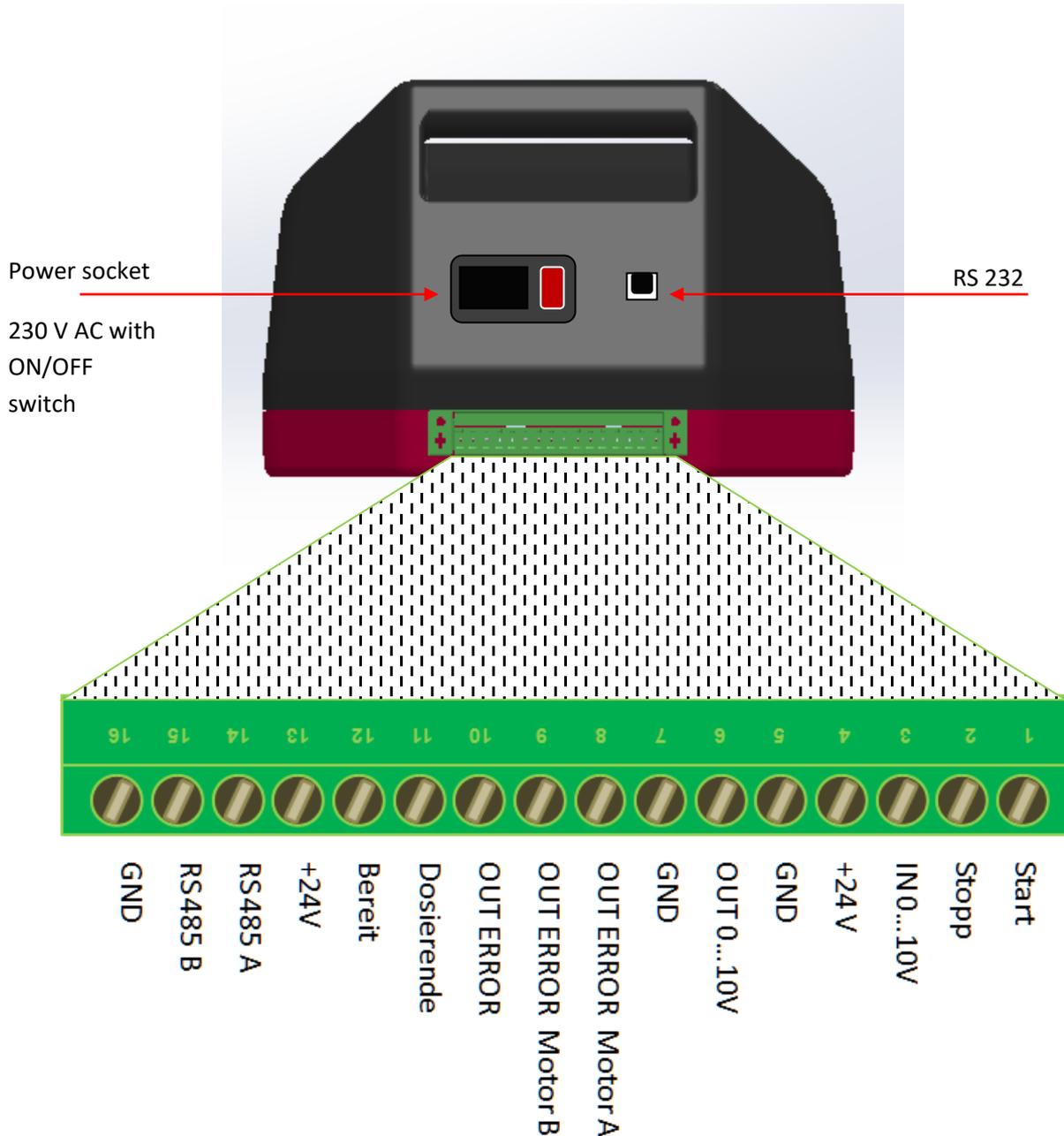max. 235 x 245 mm   max. 162 mm

Mini and micro dispensing solutions for fluids and pastes

10. Connection / Interface

As soon as the power cable has been connected, the ON/OFF switch will lighten red to show power is available. Your aCCura-Box will start as soon as you switch the power ON.

Power socket

230 V AC with ON/OFF switch

RS 232

| 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

GND — RS485 B — RS485 A — +24V — Bereit — Dosierende — OUT ERROR — OUT ERROR Motor B — OUT ERROR Motor A — GND — OUT 0...10V — GND — +24V — IN0...10V — Stopp — Start

NOTICE: the ERROR is generated when a control board is malfunctioning. The stepper motors have no encoder.

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Pin	Label	Description
1	Start	IN Start (need +24V pulse, standard config)
2	Stopp	IN Stop (need +24V pulse, standard config)
3	IN 0...10V	IN 0-10V analog input
4	+24 V	OUT +24 V DC
5	GND	GND (Ground)
6	OUT 0...10V	Output 0-10V analog output
7	GND	GND
8	OUT ERROR Motor A	OUT ERROR Motor A, PNP
9	OUT ERROR Motor B	OUT ERROR Motor B, PNP
10	OUT ERROR	OUT ERROR general, PNP
11	Dosierende	OUT Dispensing end, PNP
12	Bereit	OUT Ready, PNP
13	+24V	OUT +24 V DC
14	RS485 A	RS 485 A (+)
15	RS485 B	RS 485 A (+)
16	GND	GND

FAQ:

1. The controller will provide an analog output 0-10V (pin 6/7). What exactly is the meaning of this output and what is the scaling
It offers the possibility to control an external unit proportionally to the pump speed. The speed is depending on the pump model.

2. The controller accepts an analog input 0-10V for proportional dosing. What does that mean?
You can control the flow rate from an external device via this input. 0.1 V = min. speed. 10 Volt = max. speed. The variable speed is proportional to example, a robot speed.

3. Will the 'OUTERROR' (pin 10) also be set when 'OUTERROR Motor A' (pin 8) is set? Meaning it is a collective error signal?
The errors come together yes. They are separate on the connector so you can communicate them separately with the master.

4. Is the 'Ready' signal low while dosing and high when ready to dose? Or will this signal stay high while dosing and only gets low when controller/pump not ready to dose (during error or initialization)?
Yes. It tells you when the unit is ready so during operation, it is low. Ready = +24V DC

5. What is the minimum pulse-length for the 'Start' and 'Stop' signals?
It should be 20 ms

6. Are the 3 GND signals internally interconnected?
They are 1 potential without galvanic disjunction

7. Are the 2 +24V signals internally interconnected?
They are 1 potential without galvanic disjunction

8. Are the digital input signals current sinking?
They are ascending

9. Are the digital outputs 24V PNP?
Yes, PNP

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