



XFP-18[®]

Automatic flux dispenser

Operating & Instruction Manual



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KP9200A Rev 0

Thank you for having chosen the XFP-18 flux dispenser from Katanax. To enjoy years of reliable, efficient and safe use of this time-saving instrument, please read this manual thoroughly and keep it in a safe and handy place for future reference.

Should you have any questions regarding the use, maintenance or repair of your instrument, kindly contact Katanax directly for assistance (see page 29 for contact details).

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Contents

Section 1 - Warranty Information	5
Limited warranty.....	5
Section 2 - Main features of the XFP-18	6
Section 3 - What Is Included	6
Section 4 - Installation.....	7
Location.....	7
Leveling	7
Connection.....	7
Parts nomenclature	7
Assembly instructions	10
Section 5 - Cautions and Warnings	17
Read manual	17
Risk of slipping	17
Original accessories.....	17
Flux Handling Warning.....	17
Section 6 - Introduction	17
Flux weighing basics.....	17
Automatic dispensers	18
Weighing vessel	18
Section 7 - The XFP-18	19
General view	19
Section 8 - How the unit works.....	19
Dispensing modes	19
Section 9 - Using the XFP-18	20
Amount of flux and sample to use	20
First use.....	21
Fixed weight mode.....	22
Using Ratio	24
Manual mixing	24
A complete dispensing procedure	24
Settings	25
Change between 18 Crucibles and 25 vials CAROUSEL	26

Section 10 -	Service operations	27
	Dosing axle stepper motor tests	27
Section 11 -	XFP-18 Maintenance.....	27
	Inspection schedule table	27
Section 12 -	Accessories, Consumables and Services	28
	Method development.....	28
	buy scrap.....	28
Section 13 -	Appendix A – Technical specifications.....	29
	Electrical.....	29
	Physical	29
Section 14 -	Appendix B –	29
	Setting the communication parameters.....	29
Section 15 -	Contacting Katanax®	29

Section 1 - Warranty Information

LIMITED WARRANTY

All Katanax® instruments have been carefully inspected and tested before shipping and are warranted to be free from defects in parts, material and workmanship for a period of 1-year from date of shipment.

During the warranty period, Katanax® guarantees the product against defective workmanship and material, provided the equipment has been installed according to the manufacturer's instructions. This warranty does not apply to any product which has been altered, damaged, tampered with, or subjected to misuse or abuse including substituting parts or accessories of other manufacturers without the written consent of Katanax®. Minor adjustments are not covered by warranty.

Katanax® disclaims any responsibility for misuse, misapplication, negligence or improper installation and maintenance of equipment. Katanax® makes no warranty or representation regarding the fitness for use or the application of its products by the purchaser.

Katanax® is not liable for costs incurred in installation, removal or unauthorized repair of the product or for damage of any type, including incidental or consequential damage.

At its option, Katanax® will repair or replace any defects that are exhibited under proper and normal use. Replacement parts are covered for one month after shipping. All customs- and freight-related charges are customer's responsibility: items returned to Katanax® for any reason shall be via freight prepaid, while parts sent to customer will be either sent collect, or shipping charges will be invoiced.

Katanax® reserves the right to make changes to the design or to make additions or improvements with respect to its product without incurring any obligation to modify or install the same on previously manufactured products.

Section 2 - Main features of the XFP-18

Accuracy

- Real-time weight display

Safety

- No strain on workers due to keeping the same position

Versatility

- Weight or ratio modes
- Fully customizable weight

Productivity

- Automatic operation
- UP to 18 Crucible or 25 vials at the same time

Durability

- Sturdy industrial-grade modular electronics
- Industrial interface
- Dedicated PLC-based programming (not Windows® dependent)
- Low maintenance

Simplicity

- Easy installation, easy use
- Intuitive touch-screen color LCD graphics interface
- Easy navigation
- Easy component access
- 1-year limited warranty

Section 3 - What Is Included

The instrument comes with its essential accessories. In addition to optional items you might have ordered, the box should contain:

- XFP-18
- Dispenser module
- Flux hopper
- Spill catcher
- Weighing plate
- Heating sleeve
- Metallic Carousel for 18 crucibles
- Metallic Carousel for 25 vials
- Transparent Carousel for 18 crucibles
- Transparent Carousel for 25 vials
- 50 weighting vials
- This instruction manual

Section 4 - Installation

Congratulations on your acquisition of the XFP-18 flux dispenser, from Katanax. Please read the following section for proper commissioning of your instrument. Do not hesitate to contact Katanax with any questions you might have with this crucial step.

LOCATION

The counter on which the instrument is to be used must be very stable, in order to obtain fast and accurate weight measurements. In some industrial environments, installing the unit on a vibration-dampening table may be necessary.

It is recommended to use the instrument from a standing position and adjust table height accordingly.

Environmental condition

The XFP-18 is designed for indoor use at altitudes not exceeding 2000 meters. Ambient operating temperature should be kept between 5 and 40°C. The maximum relative humidity is 80% below 31°C and decreases linearly to 50% at 40°C. The applicable pollution degree is classified as Level 2, meaning the environment where the instrument is used has a moderate level of contamination. The instrument is built to handle occasional moisture-related conductivity issues.

LEVELING

In order to obtain good results, the balance must be manually levelled. Refer to the balance instructions for this operation.

CONNECTION

The XFP-18 works on 115 or 230 VAC ($\pm 10\%$), 50/60 Hz. Connect the instrument to a mains power with a protective earth connection. The equipment is designated as Transient Overvoltage Category 2 (OVC-II). The instrument intended to be supplied from the building wiring. The instrument is pre-configured to operate under the ordered model (115 or 230 VAC). The operating voltage can be changed if needed. Please contact Katanax to get all the details to proceed (see page 29, Contacting Katanax®).

PARTS NOMENCLATURE

A. Dispenser module



B. Flux Hopper



C. Weighing plate



- D. Metallic Carousel for 18 crucibles and 25 vials (18 crucibles is shown below)
- E. Transparent Carousel for 18 crucibles and 25 vials (18 crucibles is shown below)



- F. Scale cover
- G. Spill catcher



H. Heating sleeve



ASSEMBLY INSTRUCTIONS

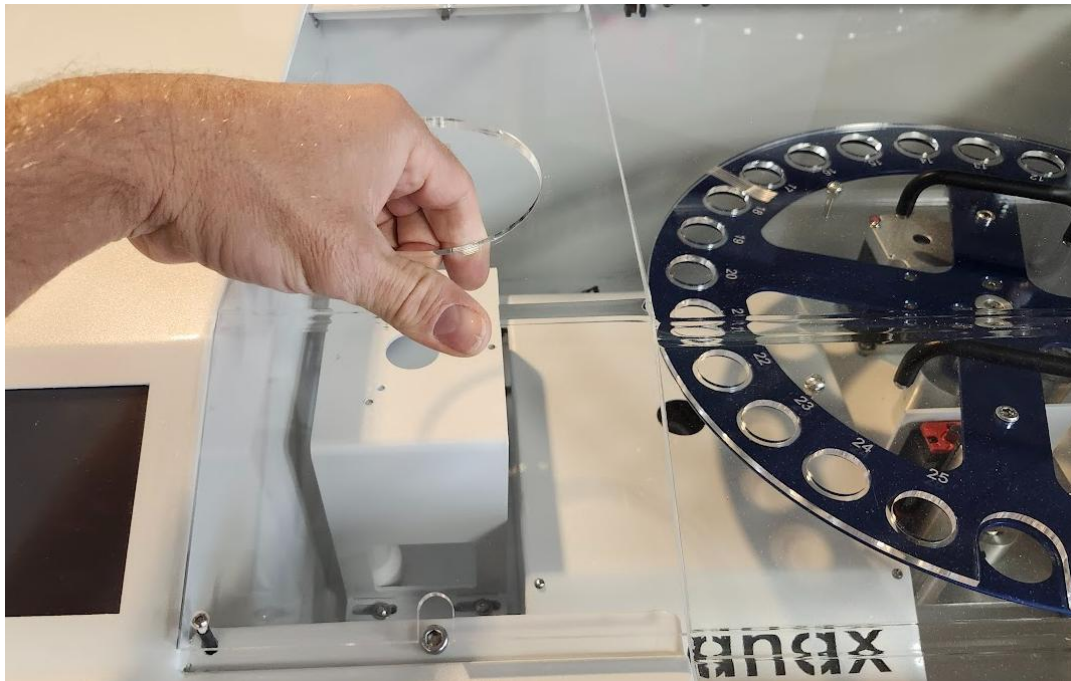
IMPORTANT: REFERENCE KEY HANDLING

Metallic carousels feature a Reference Key on the underside used for position adjustment. This piece is critical for alignment and must not be bent or damaged. When removing carousels, always lay them down on their top surface to avoid putting weight on the key.

1. Unit Preparation

1.1. Lid removal

- Remove the left acrylic lid and open the right-side lid.



1.2. Carousel Removal

- Detach the transparent carousels and the metallic carousel.
 - i **For shipping:** The transparent carousels (2) and the spare metal carousel are fixed with tie-wraps to a metallic carousel screwed in place.
 - ii **Reminder:** Pay special attention to the reference key on the bottom of the metallic carousel.



1.3. Disassemble Metallic Carousel

- Remove the three screws securing the blue carousel to the pivot base.
 - i Retain these screws for later use.



- Remove the blue carousel and carefully lay it upside down (on its top surface) to protect the reference key.
 - i **Reminder:** Pay special attention to the reference key on the bottom of the metallic carousel.
- Remove the securing foam that were installed under the metallic carousel for shipping.

2. Scale Configuration

2.1. Scale cover removal

- Unscrew the front and back screws of the scale cover and remove it.

2.2. Scale installation

- Screw the weighing support onto the mass cell
 - i This component is often detached during shipping to prevent load cell damage.



- Remove the top section of the Weighing Plate and install the base onto the scale.



2.3. Leveling

- Ensure the entire unit is level using an external spirit level (not included) and the instrument's adjustable feet.
- Level the scale specifically using its built-in spirit level and its two rear leveling feet.

2.4. Scale Cover installation

- Center the protector around the plateau post and secure it with the two screws removed in Step 2.1.
- Connect the LED cables at the back of the protective scale cover.



2.5. Flux Collector installation

- Install the flux collector around the plateau post and over the casing.



2.6. Top Plate installation

- Reinstall the top part of the weighing plate assembly.



3. Dispenser Module Installation

3.1. Heating Module installation

- Remove the plastic cover from the tip of the dispenser module.
 - i **Spare the plug to be inserted on the dispensing module when the unit is not in operation.**
 - ii This prevents humidity ingress, airborne contamination, and accidental flux discharge, all of which can worsen clogging and affect future weighing accuracy.
- Fully insert the cylinder heating module and tighten the pressure screw to secure it.



3.2. Flux Hopper installation

- Screw the hopper onto the dispenser module.

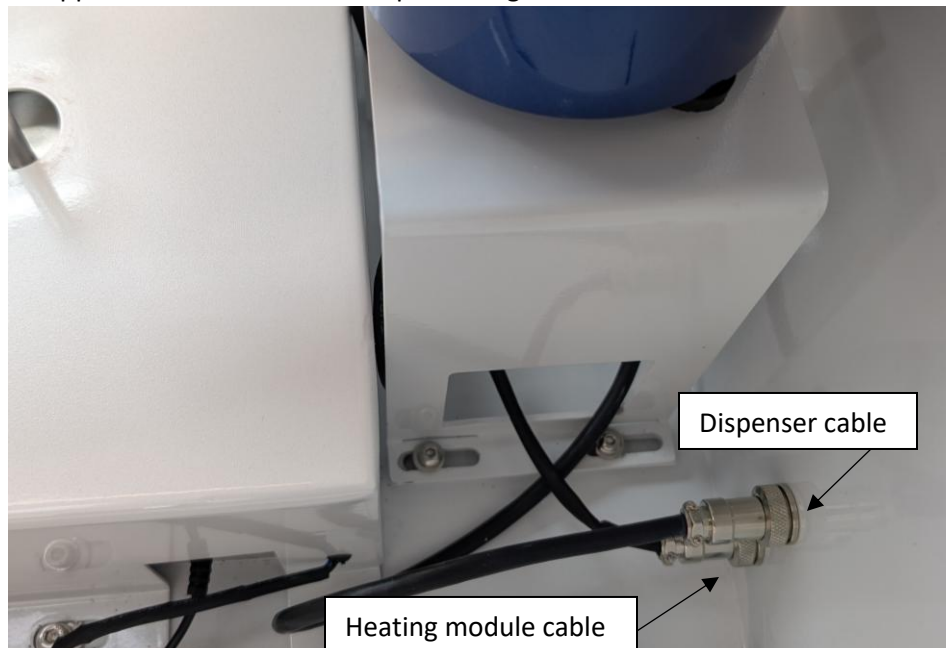
3.3. Dispenser Mounting

- Align the three-rubber damping supports and seat the dispenser module onto its metallic stand.
 - i Ensure the dosing nozzle faces the interior of the machine.



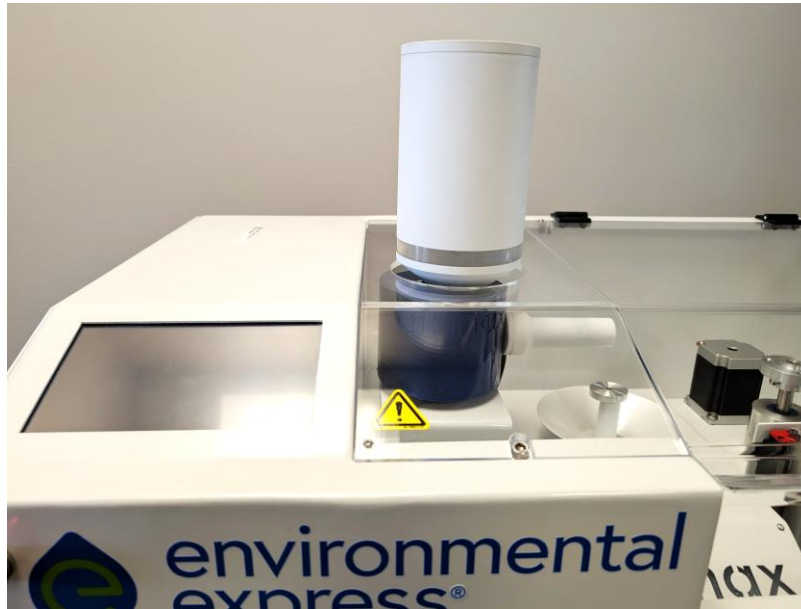
3.4. Dispenser connection

- Plug in the cables.
 - i The lower connector is for the heating module.
 - ii The upper connector is for the dispenser logic.



3.5. Lid installation

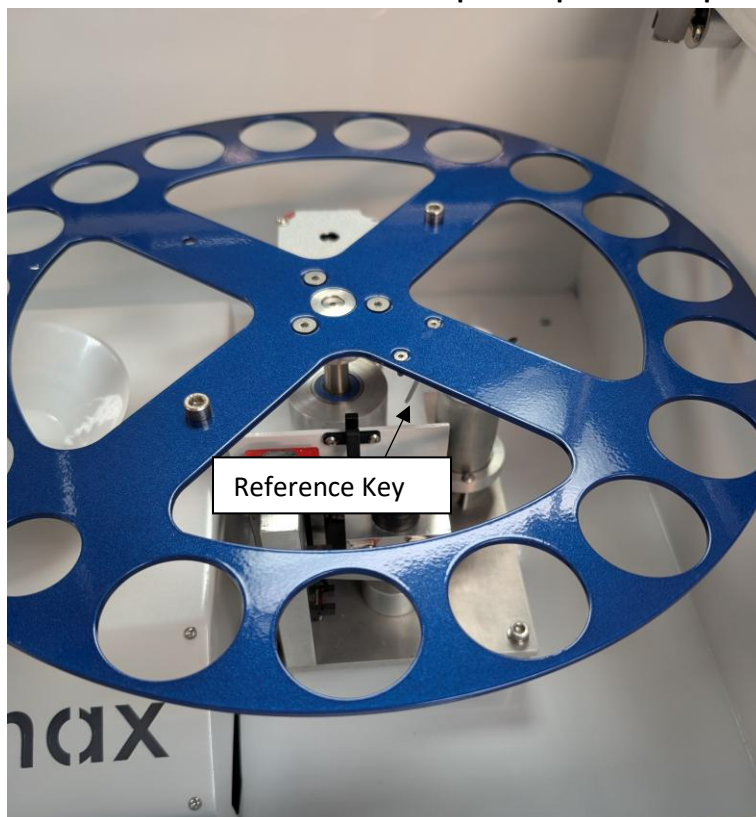
- Install the acrylic lid designed to fit the flux hopper.



4. Tray Installation & Alignment

4.1. Metallic Carousel installation

- Select the desired carousel (18-crucible or 25-vials).
- Lower it onto the pivot base,
 - i Ensure the **Reference Key** aligns correctly.
- Tighten the 3 screws.
 - i **Caution: Watch the clearance around the plateau post and dispenser nozzle.**



4.2. Power On

- Close the lid.
- Connect the power and flip the rear switch to ON
 - i Verify that the front Emergency Stop is released.

4.3. Initialization

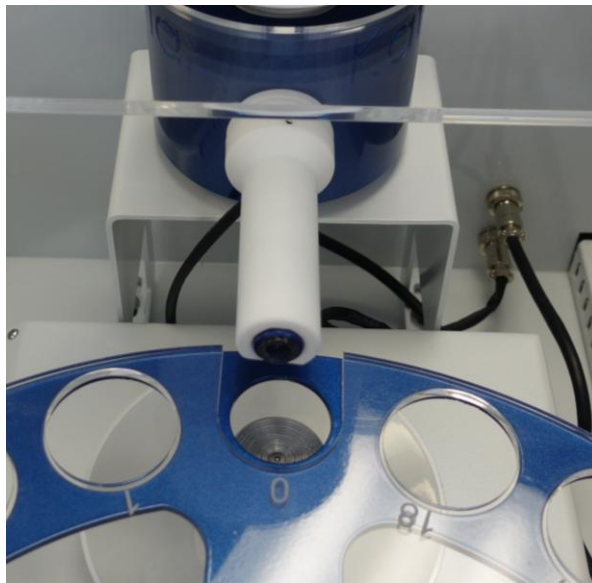
- Wait for the instrument to complete its homing sequence.

4.4. Transparent Carousel

- Open the lid and place the matching transparent carousel over the metallic one.

4.5. Alignment Verification

- Verify that the balance pedestal (weighing plate) is centered within the disk's hole.
- The dosing nozzle, hole center, and weighing plate must be perfectly aligned.
 - i If misaligned, check if the metallic reference key is bent.
 - ii If adjustments are made, power the unit off and on again to re-initialize and confirm the new alignment.



Section 5 - Cautions and Warnings

READ MANUAL



This documentation must be consulted before operating this unit.

RISK OF SLIPPING

Some flux types are made up of spherical micro-beads, which are very slippery when spilled on a floor. Promptly clean up any flux spill to prevent hazardous situations.

ORIGINAL ACCESSORIES

For your safety, use only the original power supply cord and Katanax-approved peripherals to this equipment.

FLUX HANDLING WARNING

Flux used in the XFP-18 has a high bulk density and a spherical, bead-like physical shape, which makes it naturally prone to clogging inside the dispensing module. If not properly managed, this behavior can lead to bridging, flow obstruction, inconsistent dosing, and general operational issues within the instrument.

To minimize these risks, the following precautions must always be observed:

Heating Module Usage

The heating module must remain ON at all times, even when the instrument is not actively dispensing.

Maintaining gentle heat prevents moisture absorption and reduces the likelihood of flux clumping, which is a primary cause of clogging.

Plug Installation on the Dispensing Tube

When the instrument is not in use, the plug must always be installed on the extremity of the dispensing tube.

This prevents humidity ingress, airborne contamination, and accidental flux discharge, all of which can worsen clogging and affect future weighing accuracy.

Purging After Periods of Inactivity

If the instrument will not be used for more than one week, it is strongly recommended to purge the entire flux content from the hopper, and Empty the dispensing module completely

Flux left inside for extended periods is more likely to compact, absorb moisture, and form blockages that can impair operation or require maintenance intervention.

Section 6 - Introduction

This section intends to introduce the basic flux dispensing techniques and to familiarize users with the XFP-18.

FLUX WEIGHING BASICS

When preparing samples for XRF by fusion, the spectrometer will measure the concentration of the sample atomic components in the flux matrix. This means that the matrix itself must be accurately known and prepared.

This assumption means that there are two methods to dispense the sample and flux: an “absolute” (fixed weights) method and a “relative” (ratio) method.

In the absolute method, both the sample and the flux are dispensed in pre-established amounts, e.g. 7.0000g flux and 0.2000g sample. This is the traditional method, when both the sample and the flux are weighed by hand.

In the ratio method, the sample is weighed first, and then the flux is added in an accurate proportion. In the previous example, the ratio is 7:0.2. If the amount of sample weighed is 0.1980g then the amount of flux should be 6.9300g to maintain the desired ratio. As long as the ratio is maintained, there will be no analytical difference, but that requires manual calculations, unless an automatic dispenser is used.

AUTOMATIC DISPENSERS

Because of the risk of human errors, and to increase productivity, many laboratories are now adopting automated flux dispensers as the standard equipment to weigh the fusion flux.

Furthermore, while the XFP-18 does not dispense the sample, it can dispense the flux as a function of the sample amount, which does not need to be accurate as the dispenser will ensure that the desired ratio is maintained.

WEIGHING VESSEL

The XFP-18 can be configured to accept 2 types of weighing vessel.

- Katanax crucible used with the 18 positions carousel.
- Small vial used with the 25 positions carousel.

Using the Katanax crucible in the XFP-18 help reduce manipulation. The crucible when ready can be placed in your Katanax instrument to start your fusion cycle.

When using the vials you will need to transfer the flux and sample mix into a crucible to start your fusion cycle. The vials can however be a simple method to improve efficiency when the quantity of Platinum crucible is limited.

Section 7 - The XFP-18

GENERAL VIEW

Enter the XFP-18, the automatic flux weighing and dispensing system compatible with the Katanax® crucible.



The XFP-18 is a great tool when multiple Fusion samples are needed. Reducing manipulation error and improving uniformity. The system can be configured to dispense directly in Katanax® crucible reducing to a minimum the manipulation required to complete a Fusion inside a Katanax® Fluxer.

The easy-to-use touch screen let you configure your dispensing exactly as required and enables you to monitor the dispensing during all the process.

Section 8 - How the unit works

DISPENSING MODES

This instrument offers two (2) very different operation modes. The choice of the mode will depend on internal laboratory procedures, as well as on the type of intended analysis.

Fixed-weight mode

When preparing a sample for fusion, the laboratory protocols often call for a fixed amount of sample to be mixed with a fixed amount of flux.

This instrument can be set to deliver accurate fixed amounts of flux. Every time the user activates the dispensing, the same weight will be dispensed in all crucibles or vials.

Ratio mode

When preparing a sample for fusion with a view to analyze the results by XRF (X-ray fluorescence), the analytical instrument will measure the concentration of the elements present in the flux-and-sample mix.

Once the sample is weighed, the mass can be recorded internally and then automatically multiplied by a ratio, to obtain the same sample/flux ratio at every dispensing.

Example: with a sample/flux ratio set at 1/8

- If the amount of sample is 1 g, then the amount of flux will be 8 g.
- If the amount of sample is 1.1 g, then the amount of flux will be 8.8 g.

As long as the ratio is the same, the XRF spectrometer will not “see” any difference in the concentration of the sample.

This gives a tremendous advantage, as this allows the operator to weigh the sample quickly and fairly approximately, while the unit takes care of adjusting the ratio perfectly.

Section 9 - Using the XFP-18

AMOUNT OF FLUX AND SAMPLE TO USE

Today’s market has seen a proliferation of various mold diameters. Consequently, one must adapt the amount of flux and sample to obtain a full disk that will not overflow out of the mold.

Our recommendation is to measure the actual inner diameter on the bottom of the mold and apply the following formula, to obtain the total mass of sample and flux:

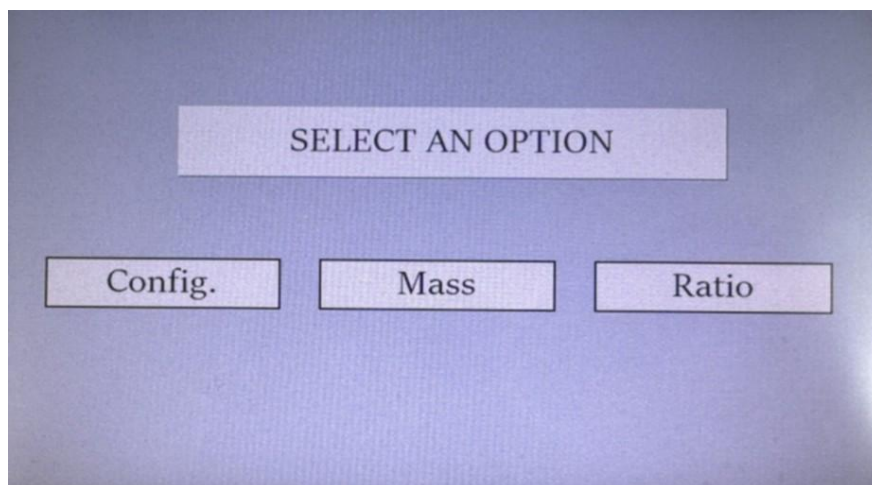
$$\text{Total mass [g]} = \frac{(\text{Mold diameter [mm]})^2}{150}$$

Thus, for a 32-mm inner diameter mold (recommended diameter), we obtain $32^2 / 150 = 6.827$ g, which we can round up to 7 g.

There are also molds on the market that are very shallow (despite the thickness of the metal they are made of). Those molds will require less flux to fill correctly but using the right amount of releasing agent and properly leveling the mold are more critical.

FIRST USE

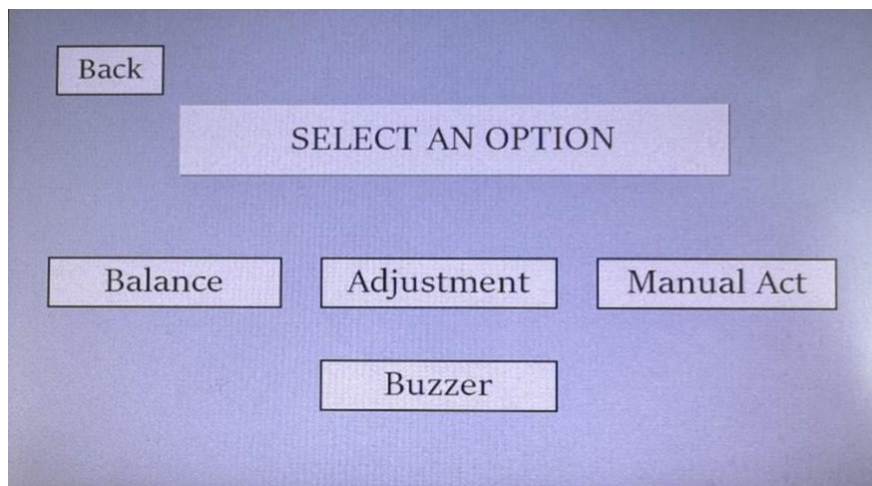
When turning on the XFP-18, the following image will be shown on the display:



1. Perform a test run

1.1. Manually start the unit

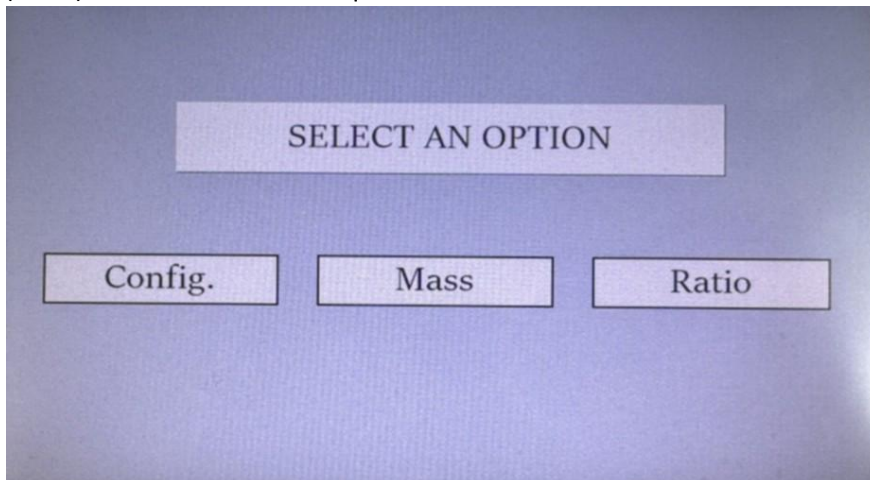
- Press the (Config) button.
- Press the (Manual Act) button on the screen below:



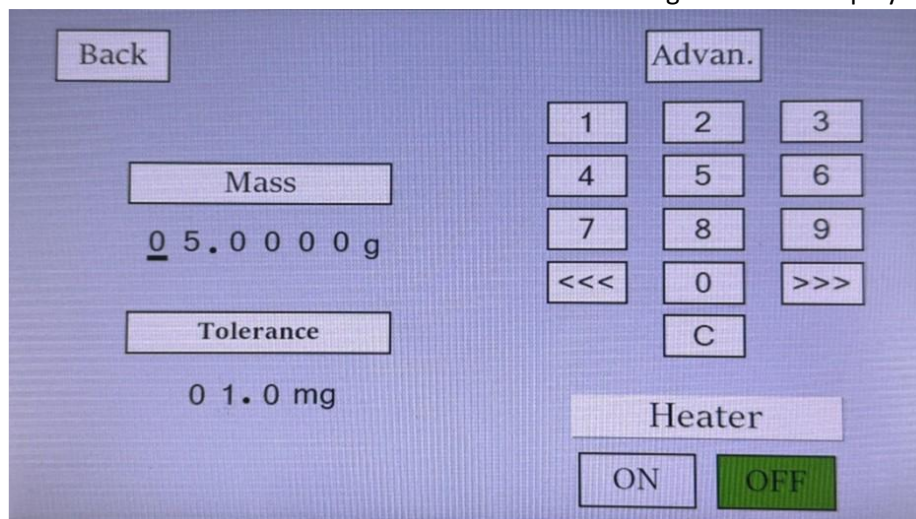
- On the "Manual Act" screen, press the ON button to perform the test.
 - i If flux has been loaded in the dispensing module and hopper, make sure to put a recipient to receive to poured material.
- Do a visual verification inside the dosing head to check if the spiral is turning and with your hand on the blue part to feel its vibration.
 - i If both are working as intended, turn off the manual act and return to the home screen.
 - ii If they aren't, check the assembly steps.

FIXED WEIGHT MODE

1. Use the unit in Fixed weight mode.
 - 1.1. Enter Fixed weight mode.
 - Press the (Mass) button to launch a sequence.



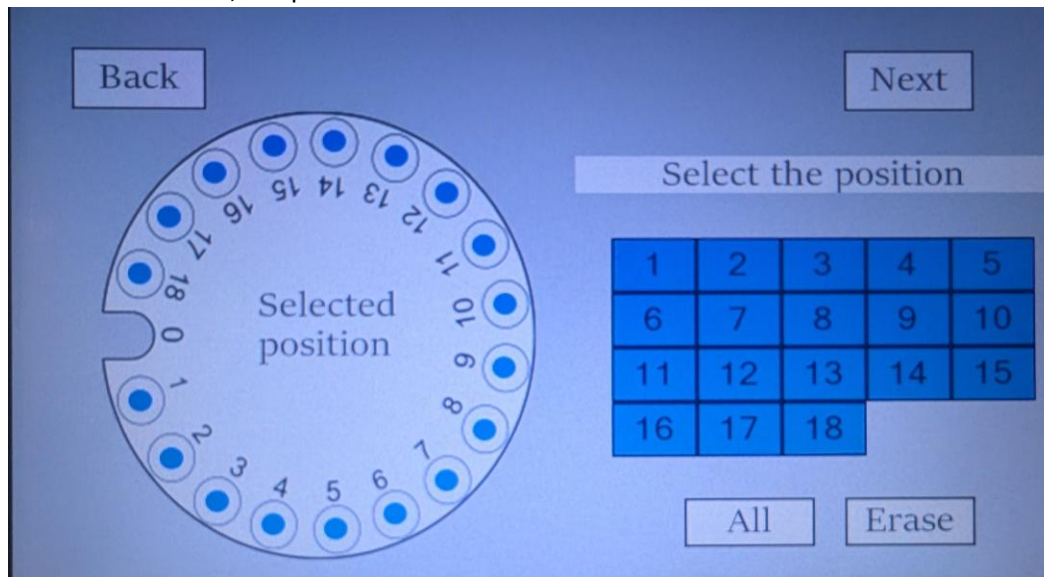
- i The screen to select the mass and the tolerance to be weighed will be displayed.



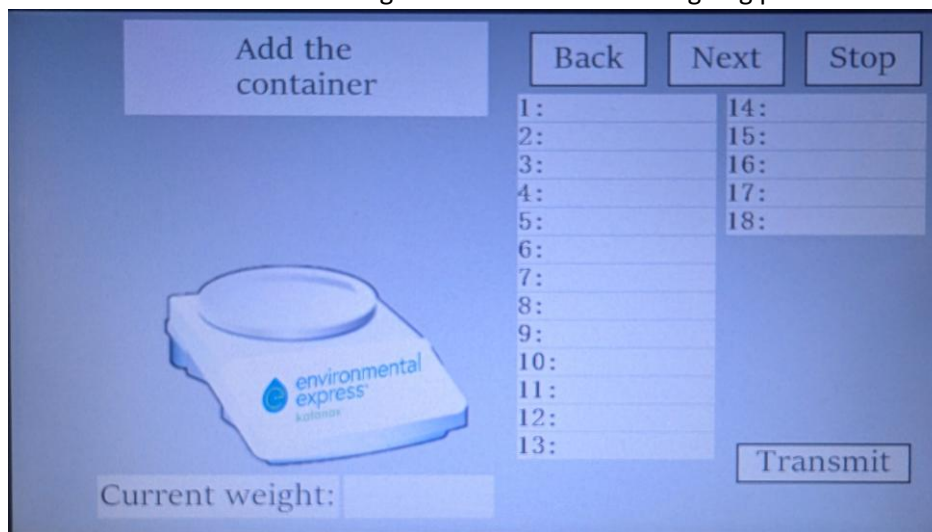
- Using the virtual keyboard, select the desired mass and the tolerance.
- Press (Advan.) to continue.
 - i This data will be kept saved for the next weighing.
 - ii If the heating module is installed, we recommend activating it by pressing ON button. This will minimize the risk of flux clumping with humidity.

1.2. Position selection screen

- On the screen bellow, the position can be selected:



- Using the positions frame, you can select which positions will be weighed.
 - i It is also possible to select all positions by pressing the (All) button.
- Press the (Start) button.
- The software will move to the following screen and start the weighing process.

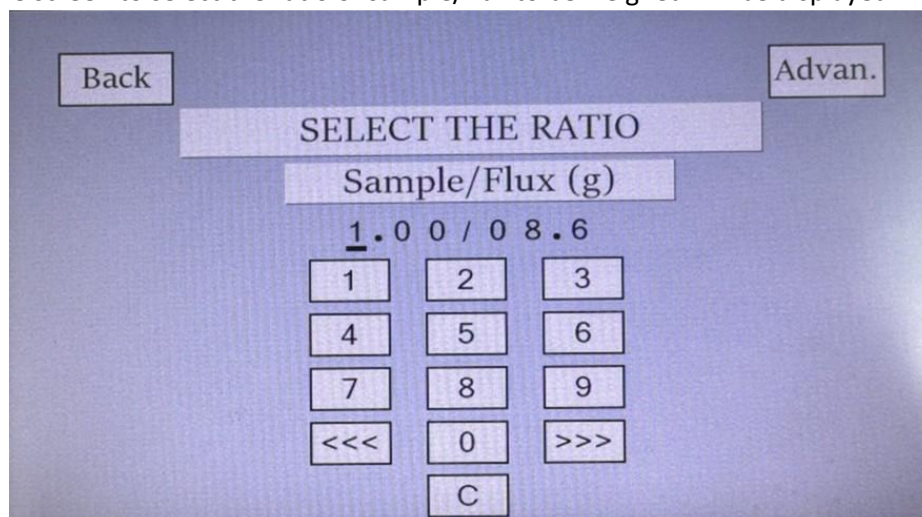


USING RATIO

1. Use the unit in Ratio mode.

1.1. Enter Ratio mode

- Press the (Ratio) button to start a sequence.
 - i The screen to select the ratio of sample/flux to be weighed will be displayed.



- Enter the desired amount of sample and flux in grams
- Press (Advan.) to continue
 - i The equipment will add a small amount of flux on each vial
 - ii This quantity can be adjusted in the “Config.” menu.
 - iii When completed the equipment will wait for the sample to be added.

1.2. Add sample.

- Add approximately the sample quantity in each position.
- When ready press (Advan.)
 - i The equipment will weigh each vial to identify the amount of sample added and fill them with enough flux to maintain the requested ratio.

MANUAL MIXING

Once all the components have been weighed into the crucible, some manual mixing is typically recommended, to improve contact between the various reagents.

In particular, very fine sample particles have been observed to agglomerate, and a manual mixing will help breaking the lumps that might have formed during and after weighing.

Two notable exceptions to this general rule are high-carbonate samples and when using powder oxidizers. In those special cases, one want to first lay some flux on the bottom of the crucible, then add the sample (and oxidizer) on top. Manual mixing would ideally just be done with the sample and oxidizer, because one wants to have the most intimate contact between the sample and the oxidizer. Flux will merely act as a shield at first, protecting the crucible from alloying with the sample. In the case of high carbonate samples, it is best to lay the sample on top of the flux and not mix; the expelled gases will escape more freely.

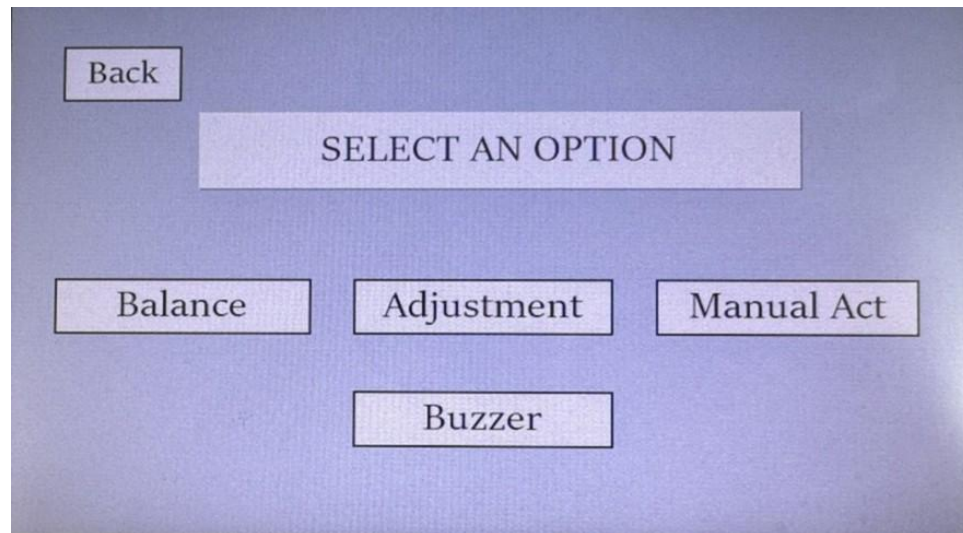
A COMPLETE DISPENSING PROCEDURE

1. Turn the units on.
2. Select the appropriate dispensing mode (fixed-weight or ratio).
3. Set the current weight (or ratio) and press Advance.

4. Select the quantity of Crucible (or vial) used.
5. Follow instructions on display and wait for the process to be completed.
6. Manually mix the flux with the sample, as needed.
7. Add other reagents, as needed.
8. Proceed to fusion

SETTINGS

Press the (Config) button to access the configuration.



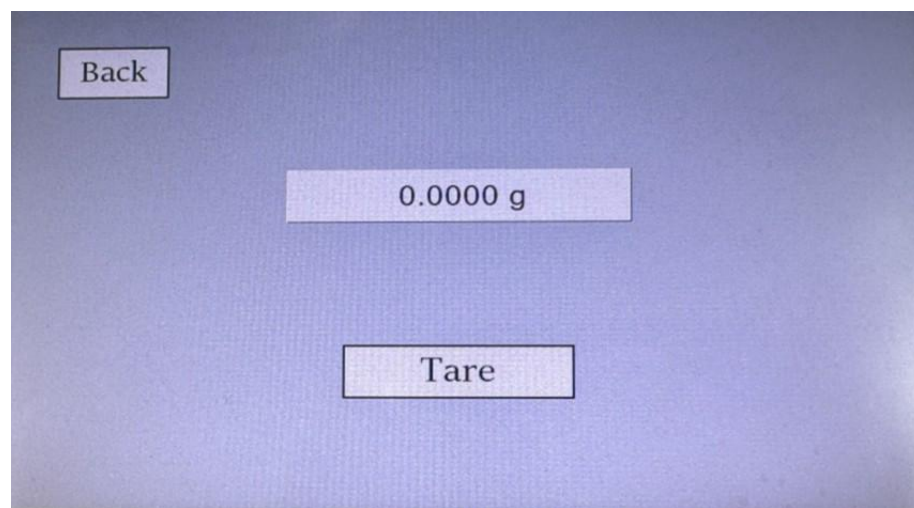
Buzzer :

The (Buzzer) button opens a screen where we can choose to turn on or off the sound signal when the machine completes an operation.

- Options: On/Off

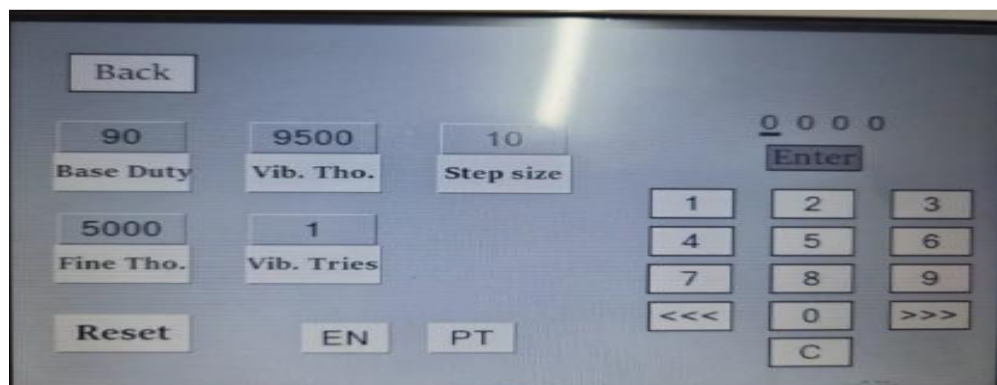
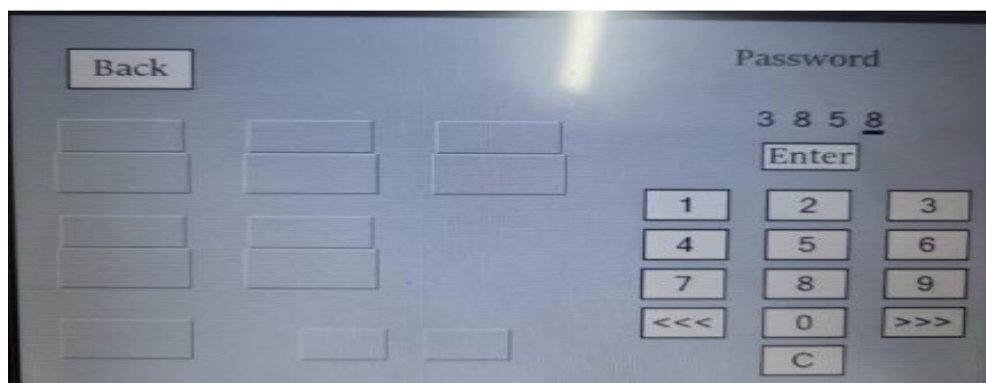
Balance :

This is where you can check the weight of the scale. Using the button Tare, the scale will turn into zero position on the display, and it will be ready to receive a standard weight for calibration.



Adjustment

This option is reserved to technical support

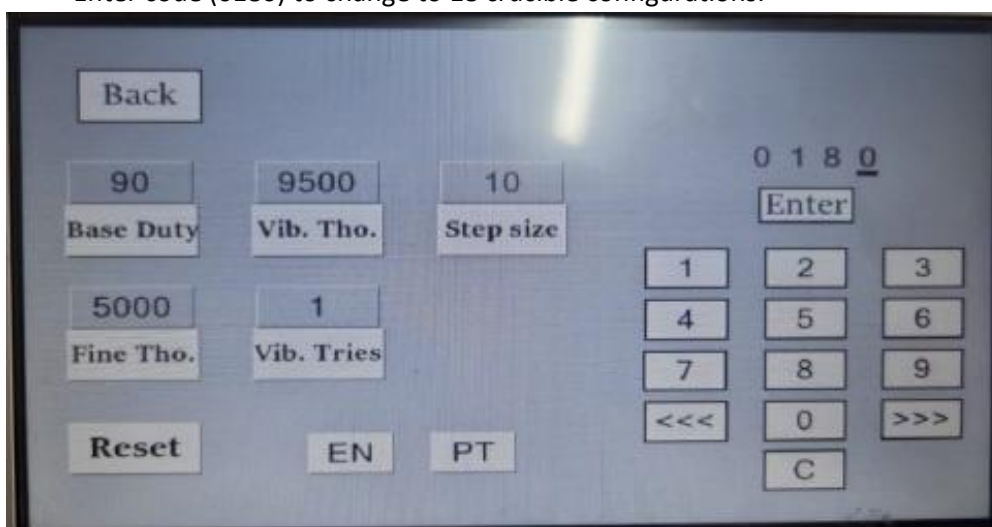


CHANGE BETWEEN 18 CRUCIBLES AND 25 VIALS CAROUSEL

1. Configure the carousel size

1.1. Access the configuration

- Press Config
- Press Adjustment
- Enter code (0180) to change to 18 crucible configurations.



- Enter Code (0250) to change to 25 vial configurations.
- Come back to the weighing screen, the number of positions will be updated.

Section 10 - Service operations

This section describes tasks that are performed on a regular basis, and are performed to adjust or repair a malfunctioning system of the instrument.

DOSING AXLE STEPPER MOTOR TESTS

To check if the dosing axle of the stepper motor is working correctly,

- go to Home> Manual Act / ON

If the axle does not rotate freely, the motor needs maintenance.

Section 11 - XFP-18 Maintenance

This instrument requires some regular checking, which is very important to keep your instrument up and running.

Katanax® knows that a broken instrument in a laboratory setting causes sample back-up and unnecessary costs. That is why this manual comprises not only a Periodic inspection section, but also a Service operations chapter (see page 27), which guides the user in a step-by-step fashion through operations that sometimes need to be performed on-site.

If unsure, do not hesitate to get in touch with a Katanax® technician (see page 29, Contacting Katanax®). Assistance by phone or email is always free of charge.

Note that no modifications of the instrument are allowed, except those explicitly described and permitted in this manual. Any undue modification automatically cancels the warranty and could endanger the user's life.

INSPECTION SCHEDULE TABLE

Frequency	Checkpoint	Description	Action (if problem found)	Page
Every use	Flux spillage in spill catcher	Check for flux spill	Clean	13
1 week	Flux spillage in unit	Remove Spill catcher and look for flux spill in the unit	Clean	13
1 month or bottle change	Flux hopper	Check for flux build up	Clean	14
	Head compartment	Check for flux build up	Clean	13
	Flux state	Check if flux absorbed moisture	Replace flux	28

Section 12 - Accessories, Consumables and Services

Fluxes 	Platinum 	Polishing kit 	Flux penser 
Full range of high-quality fusion fluxes	Full range of high-quality Crucibles and molds	All-inclusive solution for restoring the shiny finish to platinumware.	Automatic flux dispensing machine
			

METHOD DEVELOPMENT



Katanax® offer a service of method development. This service provides help to develop fusion methods for your samples. Use the following link to access the form required to access this service.

BUY SCRAP



Katanax® offers to buy scrap platinum accessories. Use the following link to access additional information on this service.

Section 13 - Appendix A – Technical specifications

ELECTRICAL

Voltage..... 115 or 230 VAC ($\pm 10\%$)
Main fuses 250 VAC, 2 A
(F2AL250V – low capacity and fast acting type – 5X20mm)

PHYSICAL

Total weight..... 47kg (104 lbs.)
Width..... 82 cm (32 in)
Depth..... 54 cm (21 in)
Height 50 cm (20 in)

Section 14 - Appendix B –

SETTING THE COMMUNICATION PARAMETERS

Select the right model according to the connected balance.

To allow connection and data exchange, please make sure the settings below are used in the scale:

- Baud Rate: 2400
- Data Bits: 8 bits
- Parity: No Parity
- Stop Bit: 1 Stop Bit
- Handshake: No Handshake

If the scale was provided with the flux dispenser, these parameters have been adjusted in factory. Otherwise, your balance must be pre-registered in the Balance Menu.

Section 15 - Contacting Katanax®

Katanax® sales and technical staff can be reached at the following address:

Katanax® inc.
2500, Jean-Perrin, suite 100
Quebec, QC
Canada G2C 1X1

Tel.: (+1) 418-915-4848

E-mail: info@katanax.com
Web: www.katanax.com

When contacting us, kindly have the serial number of the instrument at hand.

Customers are invited to visit our web site regularly, since useful information is periodically added.

An illustrated online parts browser is also available; kindly contact us to register.