

LCD Display. Instruction Manual & Details

Pro-Research, PrO-Xtract, PrO-Cyt LCD
PrO-ASTM BC & FSC models

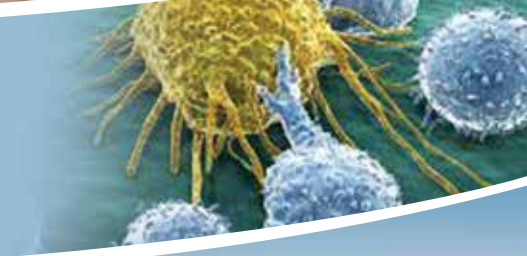
PrO-Research



PrO-Xtract



PrO-Cyt LCD



PrO-ASTM BC
& FSC



It is imperative to read
the full manual before use.
A full rotor manual is also
supplied. Information
is also available from
our website.

Before setting up

- Check the Centrifuge and the Packaging for any shipping damage. Inform the shipping company and Centurion Scientific immediately
- Check the order for completeness, if not contact Centurion Scientific

Location

The Centrifuge should only be operated indoors.

The set up location must fulfil the following requirements

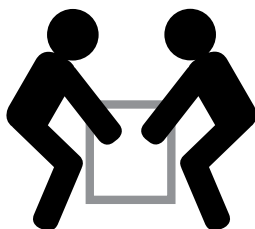
- A safety zone of at least 300cm must be maintained around the Centrifuge
- People and hazardous substances must be kept out of this zone during centrifugation

Warning

- The bench or supporting structure must be stable and free from resonance
- The Bench or supporting structure must be suitable for horizontal use of the centrifuge
- The Centrifuge should Not be exposed to heat or strong sunlight
- Ultra violet rays can damage the stability of plastics and coatings
- Do not subject the Polypropylene, Delrin rotors or accessories to direct sunlight
- The Zone location must be well ventilated at all times

Transporting the Centrifuge

- Always remove the Rotor before transportation
- Due to its weight the Centrifuge should be carried by several people
- Transport the Centrifuge upright and if possible in its packaging
- Always lift the centrifuge at both sides (see below). NOT front to rear.



Notice

- Store the original packaging, Keep this for future service to base , if required.

Alignment after moving

The Horizontal alignment of the Centrifuge must be checked if the unit has been moved. Further the Bench used must be suitable (see Transport and set up page)

Caution

If the Centrifuge is not level, Imbalances can occur and damage caused. Do not place objects under the feet to level, this is not safe or good practice.

Mains connection



- Make sure the Voltage and Frequency correspond to the rating plate on the rear
- Check if the power cable supplied complies with the safety standards of your country
- If so connect the cable to the rear socket
- Plug the other end to your power source (Grounded Electrical socket only)
- Turn on the unit with the switch marked 0/1

Storage

When removing the Centrifuge, rotors and accessories from use you must clean and if necessary decontaminate or disinfect all parts. Please contact us our Service department for assistance.

Store each in supplied separate cartons.

Avoid storing in direct sunlight and always in a dust free environment.

Be sure the centrifuge is vertical and on its feet

Shipping the Centrifuge and parts

- Always remove the rotor and its components
- The Centrifuge, rotor and accessories must be clean and decontaminated
- Certificate of Decontamination must be sent (Environmental & Health/Safety rules)
- Use the original packaging and pack safely with confidence.
If not, the liability of damage will be your responsibility.

Separate rotor manual supplied. Instructions must be followed

How to use & Program

Start point

FIRST build a program



Display shown at turn on

PRESS program key
(book emblem top right)



Display shown when program key pressed

PRESS Page number rectangle

SELECT page number required

1-9 pages with 12 names per page (a total of 108 programs can be stored)



Display shown when Page key pressed

PRESS Set Name



KEY in name required

Upto 14 characters, letters & numbers
(we have chosen Biochem8 for these illustrations)



Display shown when Set Name pressed

PRESS tick if correct



Display shown when chosen name is being entered

ROTOR PROGRAMMING

PRESS Set Parameters



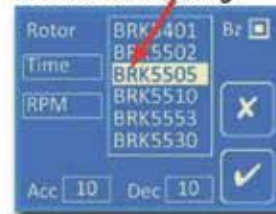
Display shown after pressing Tick on name settings

PRESS Rotor rectangle



Display shown after pressing Set Parameters

SELECT rotor required by pressing down and releasing



Display shown after pressing Rotor rectangle

continued...

Correct rotor should be shown in Rotor display



- Turn ON Shows white square in centre

Turn end of run buzzer off by PRESSING Bz (Top right of display)

Display shown after selecting rotor

TIME PROGRAMMING

PRESS Time rectangle



Display shown

SELECT and PRESS desired timer type:



Display shown when timer rectangle key pressed

Time 0 - 9999 minutes

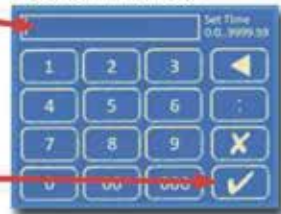
RCft See Wst document for explanation

Pulse Timer counts up in seconds when START button held down. (90 seconds max)

Hold Timer is held on till stop button is pressed

PRESS Rectangle next to Time box

SELECT Time required in minutes & seconds
Hold and Pulse cannot be changed
Or select RCft number from previous run

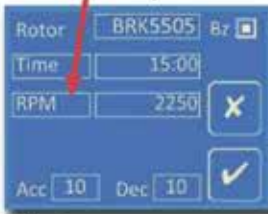


Display shown when Time Numerical rectangle is selected

PRESS Tick after selection

RPM PROGRAMMING

PRESS RPM square



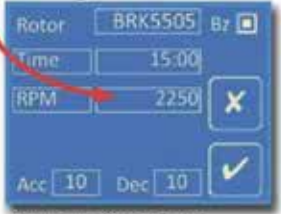
Display shown

SELECT RPM (speed) or RCF (G Force)



Display shown when RPM pressed

PRESS Numerical rectangle next to box



Display shown after selecting RPM

, continued...

How to use & Program

SET Speed (RPM) or RCF in numerical form



Display shown after pressing numerical rectangle

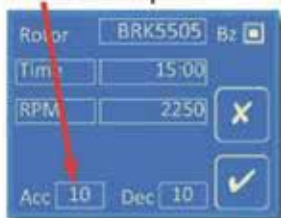
PRESS Tick after selection.

for REFRIGERATED MODELS only SET Temperature - SEE following page 7A, then return to set Acceleration and Deceleration rates below

ACCELERATION and DECELERATION rates

SET Acceleration rate

PRESS Acc Square



Display

SELECT Rate 1-10

(1 is slowest 10 fastest)



Display shown when Acc pressed

PRESS number required & release



Display after selecting Acc

SET Deceleration (Brake) rate

PRESS Dec Square



Display

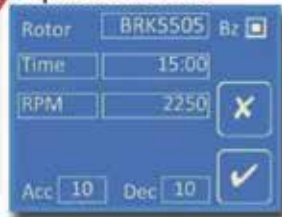
Select rate 1-10

(1 is off 10 full braking)



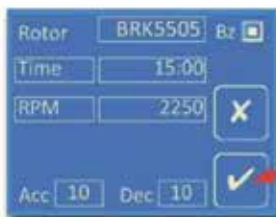
Display shown when Dec pressed

PRESS number required & release



Display after selecting Acc and Dec rates

If you are satisfied with all parameters Check Rotor, timer type, RPM or RCF Acc & Dec rates



Then PRESS Tick box (bottom right)

continued

NOW LOAD THE CENTRIFUGE



Display

PRESS Central button on right to open lid

LOAD your samples evenly

FIT LID to rotor (if part of rotor type)

CLOSE Centrifuge lid pressing both sides down firmly.

PRESS Start button (arrow triangle, bottom right)

RUNNING screen display



Display showing running screen

If you require early termination

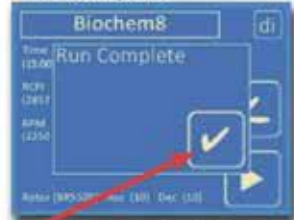
Time, Hold, RCFt
PRESS Square bottom right.

OR in pulse mode

RELEASE when counter (seconds) has reached desired number

PRESS run complete Tick (only shows IF Buzzer is selected)

Run Complete



Display showing screen when run finished (with Buzzer selected)



PRESS lid open button (centre right)

You may now retrieve your samples

HOW TO RETRIEVE SET PROGRAMS

PRESS program button (top right)



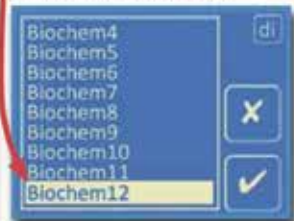
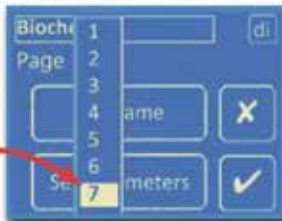
Display

PRESS Page numerical box (9 pages available)

Note:

Centurion K3 range centrifuges can store up to 108 programs, these are conveniently grouped into 9 pages with up to 12 names available per page, each name can consist of up to 14 alphanumeric characters.

PRESS & SELECT required name then **PRESS** desired name (12 names available)



your stored program will now be retrieved.

Refrigerated Centrifuge only

Centurion and nobody else, can bend the rules of Physics therefore. For correct use and stability of sample's, please follow these instructions.

If the unit has been used for some time, over an hour, at the same temperature, then equilibration is not necessary. However if it has just been turned on then we recommend the following for the best and most accurate results.

Below ambient or 18C (4-18C)

Turn on the unit. Select your temperature, make sure the rotor is in position and firmly fixed. Close the lid. Wait at least 20 minutes.

Whilst waiting place your samples, with tubes in refrigerated unit at the desired temperature.

After your set temperature has been reached use the precondition mode by pressing down the Function button and Start stop button together. Two dots will appear on the display showing precondition has been activated.

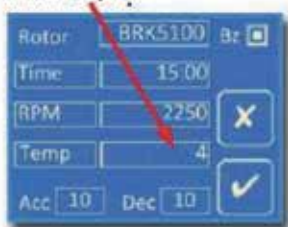
Precondition mode runs the centrifuge to ensure full mixing of the chamber air and therefore equilibrates all areas of the rotor and parts for maximum efficiency.

Once this has finished, lift the lid and load your samples in position See page 17 for correct fitment

See below pictures

TEMPERATURE PROGRAMMING

PRESS Temperature numeric square



SET Temp (-9°C to 40°C) In numeric form



Note: See rear appendix for minimum possible temperature at maximum speed per rotor.

PRESS Tick after selection

Display shown when Temp is pressed

Note: Display illustrated elsewhere in this manual do not show the temp square or the temperature numeric square however they will be present on all refrigerated model displays as will set temperature and actual temperature where appropriate



Preconditioning Start button

See instructions above detailing use of this feature- note that this screen will show your selected parameters.

Above ambient or 18C (18-40C)

Turn on the unit. Select the temperature to 4C, make sure the rotor is in position and firmly fixed.

Close the lid. Wait at least 20 minutes. This method allows the gases to warm up for higher temperature use. Once 4 has been reached set your desired temperature above ambient.

Whilst waiting, place your samples with tubes in a heated unit at the desired temperature.

After your set temperature has been reached use the precondition mode by pressing down the Function button and Start stop button together. Two dots will appear on the display showing precondition has been activated.

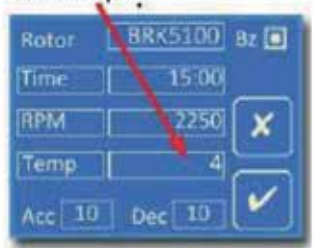
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PRESS Temperature numeric square



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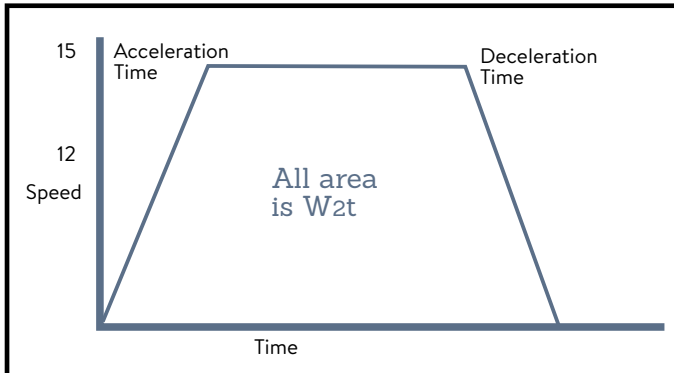
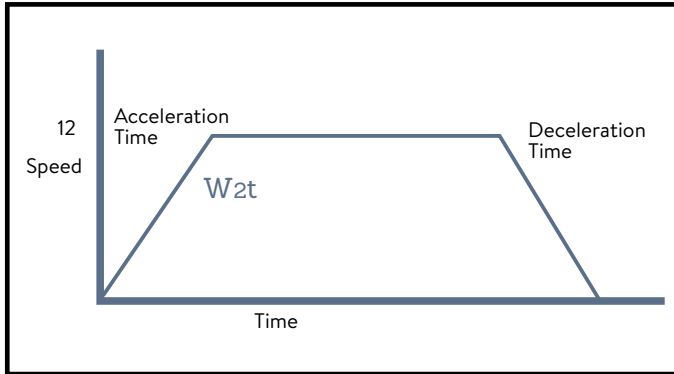
W2t

This is a method of replacing runs, but changing the parameters to suit your sample. Example, you find the speed rate of Rcf is too high and cells rupture or, acceleration rate is too high and proteins are sticking to the tube sides. Or maybe, you find the run time simply too long and wish to increase the speed.

Please look at the W2t graphs below. As you can see, it maps the area of accelerations to speed. The time actually at speed, and a proportion of decelerations time.

By finding a suitable set of run parameters, taking a note of the W2t on the screen. You can then make a program with that figure.

This time you can change any parameter, acceleration rate, speed/RCF, time and deceleration rate. Simply press start, the system will adjust the time needed and as it progresses the W2t figure on screen will reduce to zero then brake to a stop. Or, you can use this methodology to copy your runs time after time for true repeatability.



Mechanical Emergency Door release

During a power failure, you will not be able to open the Centrifuge lid via the Display
 A mechanical override is provided to allow sample recovery
 However this is for Emergency use only
 This should Not be used for normal use.

Warning

The rotor can still be spinning at a high speed, if touched it can cause serious injuries.
 Always wait till the rotor has stopped.
 Proceed as follows

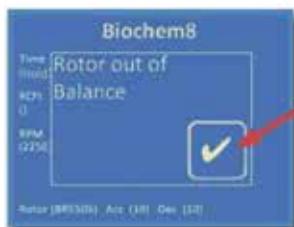
- Make sure the Rotor has stopped (view via the port in the Lid)
 - Once stopped unplug the power line
 - Pull the Centrifuge slightly over the bench (as shown).
 - You will notice one or some models two plastic plugs
 - Pop open with a screwdriver (tool) and pull downwards The lid will pop open
- You can now retrieve your samples



After replace the Plastic plugs back into their original position.
 Reconnect the centrifuge power line once the mains power has been restored.
 Check all is working correctly by closing the lid, wait 5 seconds then press lid open.

If not working refit or Contact your Distributor

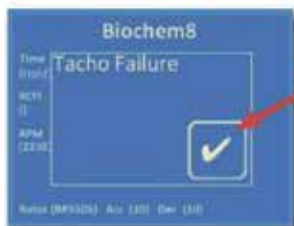
ERROR CODES ON DISPLAY



Error code shown on display

If Display shows Rotor out of balance
An imbalance has occurred

When centrifuge has stopped PRESS tick button
PRESS Lid open button
Check for:
Improperly loaded tubes
(see Safety pages)
Broken tubes or
incorrectly measured tube



Error code shown on display

If Display shows Tacho failure
PRESS Tick button
PRESS Lid open button
Check rotor for free rotation
Are the tubes too tall?
CALL service department



Lid Open! Error code shown on display

If Display shows Lid Open!
Check lid is closed correctly
PRESS down firmly on lid (at both sides near front)
If not then CHECK SENSOR as below
Or CALL Service Department



To check sensors go to parameters page.

First make sure Centrifuge lid is open.

Press 'dl' (top right small button) for Diagnostics screen. (Shown below)

It reads as follows: (either 0 or 1 may show when this screen first appears, follow instructions below to perform diagnostic checks)



... or greater (version number of installed firmware)

... 0 or 1 ...By rotating rotor Tacho will show 0 or 1 as rotor turns if so Tachometer is workin

... 0 or 1 ...By rotating rotor Rotor Rec will show 0 or 1 as rotor turns if so sensor is workin

... 0 or 1 ...By pressing rotor firmly or shaking hard Balance will show 0 or 1

... 0 or 1 ...By shutting the lid the Lid switch will go from 0 to 1 showing correct sensing

Fault seen

tACHO Shown on the display

NOTE this does not necessarily mean a Tachometer or board fault.

First check that the sample tubes are too tall and preventing the rotor to move when the lid is shut

Check the rotor and motor for movement, they must rotate smoothly

Check through the opening in the base that no intrusions or dust are fouling the sensor.

bAL shown on the display

An imbalance has occurred

Check your sample tubes for equal weight and opposite positioning (see Rotor manual supplied)

Check your sample tubes for breakage or rupture and the bowl bottom for liquid

NOTE. Always weigh and balance to <2grams for best results and oppose each in the rotor.

Turn off the unit and back again AFTER 2 minutes.

If the fault bAL still shows the detector is damaged.

If none of the above Contact your Distributor

Speed will not go beyond 2000 Rpm.

- The Electronics have set the unit to SAFE Mode
- Check the "hall sensor" on top of the motor and its wires.
- Check connection to mother board on the underside of the motor.
- Remove the rotor. Check the magnets on the underside for fit and cleanliness

If none of the above Contact your Distributor

Noisy

Un balanced tubes or not opposing (see Rotor manual supplied).

Lid seal broken or not fitted correctly

Lid support is weak

Spring or gas strut failure. **Contact your Distributor**



EC Declaration of Conformity

Declares that product: PrO-ASTM, PrO-Research, PrO-Xtract, PrO-Cyt Centrifuge Series
Product options: Rotor plus Accessories

This instrument is fully guaranteed against manufacturing defect for a period of three years from date of purchase.

Service and technical manual can be obtained via our website and address below.

Conform to the following Product Specifications:

IEC 1010-1, 1010-2 020, IEC 1010-2-0202 020, 7.2.101
EN 61010, EN 61010-1, 7.5 expelled parts, BS 5724, BS 7687:2.20
BS EN 61010-2-020 1195, 73/23/EEC Low voltage directive
EMC EU 89 336 (INCLUSIVE 93/68/EEC)

Supplementary Information CE Marking

The product herewith complies with the requirements of the following Directives and carries the CE mark accordingly.

The Low voltage Directive 73.23/EEC

The EMC Directive 89/336/EEC (inclusive 93/68/EEC)

This product was tested in a typical configuration with Centurion Scientific Ltd and other test House Facilities.

Quality Control. ISO 90001:2008

internal systems for testing sub assemblies (5) and final product.

IVD 98/79CE - European Directive.

Self certified group C.

IVD 9879EC

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all the applicable essential requirements of directives.

Certified by: K. Cooper QA Manager

CENTURION
SCIENTIFIC LIMITED

Certificate of Origin

Centurion Scientific Ltd of The Old Stables, Church Farm,
Stoughton, Chichester, West Sussex, PO18 9JL,
UNITED KINGDOM, hereby confirm that all centrifuges and
accessories supplied by us are of UNITED KINGDOM origin.

Signed for and on behalf of Centurion Scientific Ltd
Granted 2016



Company Representative



CENTURION
SCIENTIFIC LIMITED



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