INSTRUCTION MANUAL

DIGITAL CONTAMINATION MONITOR

TYPE: CM 710N (PANCAKE)

NUCLEONIX SYSTEMS PRIVATE LIMITED

Plot No: 162 A & B, Phase II, I.D.A. Cherlapally, Hyderabad - 500 051.
Phone: 040-29706483 / 84 / 85, Mobile No: 7331104481 / 82
E-mail: info@nucleonix.com Web : www.nucleonix.com

File Name : NSPL/DOC/MAN/CM710N/01
VER_20170709

CONTENTS

CHAPTER- I

INTRODUCTION

Digital Contamination Monitor Type : CM 710N(Pancake) is a portable micro-controller based battery operated instrument designed primarily for measurement of Beta / Gamma contamination normally encountered in Nuclear Laboratories, Nuclear Medicine Centres, etc., where radioactive isotopes are used in open form. In addition this instrument has been specially designed so that handling tools, work space, clothing, etc., can be conveniently monitored after handling the activity. **Digital Contamination Monitor** can be used for measurement in three modes CPS, CPM,& Doserate(mR/h,µSv/h) .The unit can measure up to 0-200mR/hr with end window detector in dose rate mode for gamma measurement. These can be set by the software as per the sensitivity of the detector.

Some important features of this unit are:

- Microcontroller based design
- Compact, Elegant and light weight
- External probe with removable end cap for Beta / Gamma measurement
- Measures contamination in CPS / CPM
- Accuracy +/-15%
- Measures dose rate in mR/hr
- Facilitates data storage

GENERAL VIEW OF DIGITAL CONTAMINATION MONITOR

CHAPTER - II

FRONT PANEL & SIDE PANEL CONTROLS

2.1 FRONT PANEL CONTROLS AND INDICATIONS

2.1.1. LCD DOTMATRIX DISPLAY

This is a 16 X 2 alpha numeric LCD dot matrix display and responds to all the commands from the keypad and displays programme parameters like Acquisition modes (CPS, CPM & DOSE RATE), Calibration factor, Recall, Save etc.

2.1.2. INTELLIGENT KEYPAD

(a) PROG key button: This key is an important one which facilitates the user to programme the operation of the instrument for different modes / conditions.

(b) START key button: This is used for starting of acquisition once all the programme parameters have been set.

(c) STOP key button: This key can be used to stop acquisition.

(d) INC/DEC key button: These keys are used while setting the programme parameters to increment and decrement a value or to change the option selected to another value available.

(e) STORE key button: This key is used for storing the readings or data values in the following way.

If you want to store the data, then press STOP button to stop acquisition and then press STORE button.

Note: Keypad commands have been explained in detail under chapter IV - 4.1.

(f) ON/OFF BUTTON : This key is used to switch ON/OFF the unit

2.2.3. TO DETECTOR (MHV)

Contamination probe is connected through a co-axial cable to this connector.

CHAPTER - III

SPECIFICATIONS

Radiation Detected	:	Beta and Gamma Radiation
Detector	:	Halogen quenched G.M. Detector **a.** Pan Cake - LND7311 or LND7312
Range	:	i. ii. CPS, CPM or mode (0-999999) Doserate(mR/h,µSv/h): a. (0 - 200) mR/hr of Gamma for End Window
Alarms	:	Provision for audio/visual alarms of Doserate(mR/h,µSv/h) exceeds preset level.
Calibration Accuracy	:	Within (a) +/-15% from (0-200) mR/hr. (b) +/-25% from (0.1 to 1) mR/hr (when calibrated with a Cs-137 standard source having NIST traceability)
Data storage		Can store upto 1000 data readings stored data can be recall back on to display.
Serial port (optional)	:	Built-in serial port facilitates data downloading in to PC. Data communicaton software with connecting cable can be provide at extra cost as an additional option.
Detector Operation Voltage	:	+530V
Control Buttons	:	ON/OFF, START, STOP, PROG, STORE, INC & DEC are the SEVEN Control buttons provided on the instrument. The above buttons allow the user to program & operate the instruments in appropriate manner.
Power	:	6 volts DC, Alkaline, Size AA, LR6 (4x1.5Volts), BPL EXCEL/ DURACELL ULTRA (MN1500) or its equivalent
Dimensions (in mm)	:	106W x 196L x 105Ht (Approx. in mm)

CHAPTER IV
OPERATING INSTRUCTIONS

4.1 INSTRUCTIONS ON INTELLIGENT KEY PAD COMMANDS

When we switch on the unit, the display will show up, **Backlite** is ON till the acquisition mode is executed.

CONTAMINATION MONITOR	For 3 Sec.

NUCLEONIX SYSTEMS	For 3 Sec.

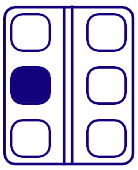
Note: **Backlite** for this unit is ON for about 6 seconds on operation of any key.

4.1.1 ACQUISTION MODE SELECTION

By default, it will be in Dose rate mode and it will acquire in mR/h mode

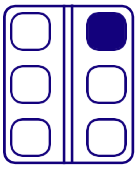
D. RATE A **XXX.XX mR/h**	→ Blinks

User can straight away measure the contamination in mR/h. If user wants to change to other modes (i.e. CPS /CPM/µSv/h) than the default selection then press STOP key to notice that blinking "A" vanishes and display appears as,



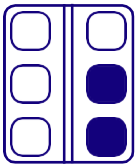
D. RATE **XXX.XX mR/h**

Now by pressing PROG key, display changes to



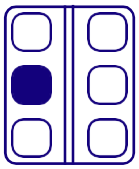
ACQ MODE mR/h

For changing ACQ MODE to different modes, user can change the mode by using ▲or ▼ keys to change the mode to CPM or CPS, Dose rate (µSv/hr).

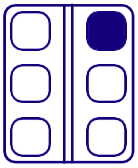


4.1.2 ACQUIRE IN CPM MODE

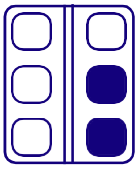
If user wants to acquire contamination in CPM mode he can now stop the acquiring of contamination by pressing STOP key and press PROG key once again, display appears as follows.



D. RATE
XXX.XX mR/h

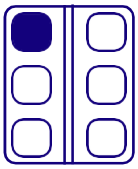


Now press ▲or ▼keys to change the mode to CPM.



Having selected CPM mode one can acquire the dose rate in CPM mode by

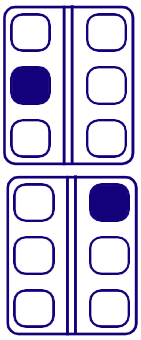
pressing START key Now display appears as,



CPM **A** → Blinks

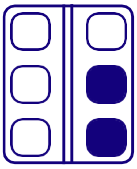
4.1.3 ACQUIRE IN CPS MODE

If user wants to acquire contamination in CPS mode he can now stop the acquiring of contamination by pressing STOP key and press PROG key once again,
display appears as follows.

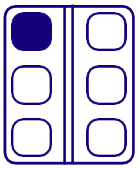


D. RATE
XXX.XX mR/h

Now press ▲ or ▼keys to change the mode to CPS.

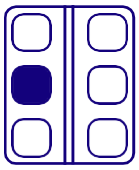


Having selected CPS mode one can acquire the dose rate in CPS mode by pressing START key,
Now display appears as,



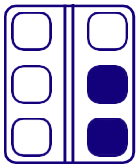
CPS A
XXXXX

It will indicate CPS with time constant of 1 second, to stop the acquiring of contamination press STOP key



4.1.4 ACQUIRE IN DOSE RATE MODE:

Now press Increment or Decrement keys to select DOSE RATE



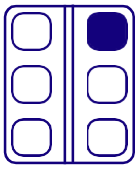
ACQ MODE mR/h

This mode is selected for Gamma Dose rates up to 200mR/hr.

4.1.5 SETTING OTHER PARAMETERS

Press PROG key to select the required parameters.

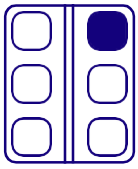
By pressing PROG key, display changes to



ACQ MODE mR/h

If one presses PROG key, then the option changes from ACQ MODE to other option as follows

4.1.6 STORED READINGS:

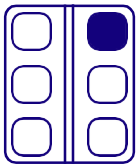


STORED READINGS xxxx

STORED READINGS: This displays the number of readings stored in unit.

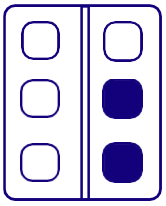
4.1.7 SETTING ALARM SET POINT:

Having selected pre set time, user needs to enter the pre set time for which he intends to acquire. He can be do so by first setting ACQ mode to Dose rate/count rate mode.

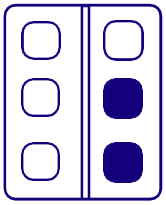


ALARM mR/h
SET PT XXX.XX

Now using Increment or Decrement buttons Alarm set time can be adjusted.



Now using increment or decrement buttons we can adjust the alarm set point time in the range of 0-99999 CPS / 0-99999 CPM / 200.00 mR/hr, 2000.0 µSv/hr



4.1.8 **PASS CODE:** This is a very useful & important feature ,it allows one to enter the calibration factor to obtain expected dose rate. Since the unit is calibrated at factory, user is advised not to disturb the calibration. This is to be changed only if user intends to recalibrate the unit.

PASS CODE **90**

If you want to change the Calibration factor, use increment or decrement keys set for PASS CODE 90 Then press PROG KEY to change the calibration factor, then the display will appear like this. By using the keys change the Calibration factor

```
CAL FACT.
XX.XX
```

4.1.9 **BUZZER :** On pressing PROG key the following display appears,

```
BUZZER          OFF
```

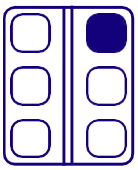
The default buzzer condition is OFF. User can change this by pressing increment or decrement keys

```
BUZZER          ON
```

4.1.10 RECALL DATA READINGS:

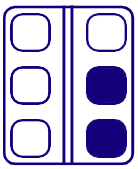
This is a very useful feature that has been provided in this unit. At the end of storing/saving of a set of readings, this feature will enable the users to recall the readings on to the display

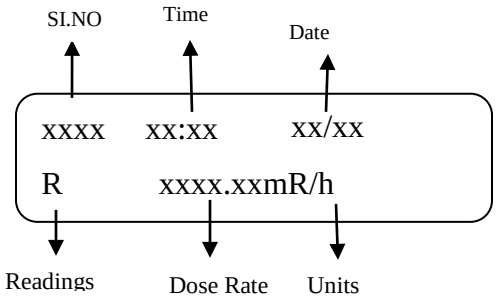
By pressing PROG key, display changes to,



```
xxxx      xx:xx     xx/xx
R         xxxx.xxmR/h
```

Recall the stored data in serial wise by pressing increment or decrement

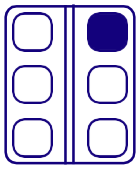




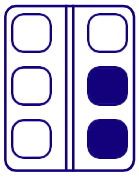
4.1.11 ERASING THE PROGRAMME PARAMETERS:

ERASE MEMORY?

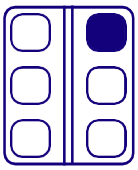
To erase stored values press Increment or Decrement keys.



"OK" will be displayed on erasing parameters (PROG)

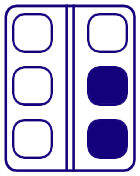


4.1.12 REAL TIME CLOCK(RTC):

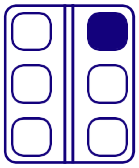


RTC xx:xx xx/xx

User can change date and time by using the increment or decrement



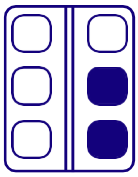
4.1.13 BACKLITE CONTROL:



BACKLITE

ON

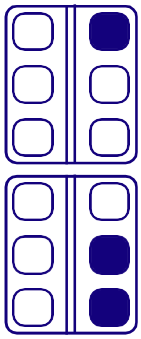
This is having two option as ON and OFF . We can select by using these increment or decrement keys.



4.1.14 SAVING PROGRAMMED PARAMETERS:

All the programmed parameters are to be saved by the user before he can start acquisition. Without saving, the system will use the previous parameters for acquisition.

By pressing PROG key, display changes to,



SAVE? (PRG)

<u>SAVE?</u>

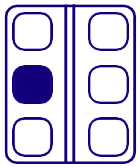
To save the above parameters press Increment or Decrement keys. "OK" will be

displayed on saving of parameters (PRG).

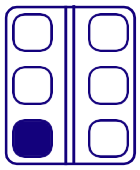
4.1.15 STORING OF DATA READINGS:

This system has CMOS memory to store upto 1000 readings. To store any data use the following procedure.

Press STOP key to stop acquisition.



Then press STORE key to store the current data or readings, and the Sl. no in the display increments to the next value.



MENU	OPTIONS
ACQ MODE	DOSE RATE,CPS,CPM
STORED READINGS	XXXX
ALARM SET PT?	XXXXX.X mR/h
PASS CODE	90
CAL. FACT	XX.XX
BUZZER	ON/OFF
RECALL DATA	
ERASE MEMORY?	
RTC	XX:XX XX/XX
BACKLITE	ON/OFF
SAVE?(PRG)	

4.2. OPERATING PROCEDURE

1. This unit is packed and dispatched in ready to use condition. On unpacking, user is advised to go through Instruction Manual including instructions under Chapter IV (4.1) completely.

2. Now switch ON the power to the unit by pressing the Power button to the ON position.

3. User can now operate the equipment to make measurements in CPS/CPM or DOSE RATE modes as per the requirement .User can store and recall the readings if required also.

4. Optional feature (offered against specific order only):

Stored readings can be downloaded into a PC if required under the control of data communication software which is supplied at extra cost as an optional accessory.

CHAPTER -V
CALIBRATION

PROCEDURE FOR CALIBRATION WITH SOURCE

This unit namely **Digital Contamination Monitor type CM710N** has been calibrated at **Radiation Standard & Calibration Lab-I** of Nucleonix Systems (P) Ltd., using **Gamma Survey Instruments Calibrator of AEA Technology, USA**. This standard is traceable to **NIST, USA**.

Digicon has three modes of operation (i.e.,) CPS, CPM for Contamination (Beta) and dose rate mode (0.1-200mR/h) for gamma radiation.

a) Calibration in CPS/CPM mode: CPS & CPM are calculated based on a fixed time constant. This time constant is accurate and no adjustment is needed. Hence data displayed on LCD display in CPS/CPM can be treated as correct irrespective of calibration.

b) Calibration in Dose rate mode: Initially using a standard source lookup table has been generated for various dose rates as given in the below table.

Dose Rate (mR/hr)	CPS obtained	Dose Rate (mR/hr)	CPS Obtained
1	96	300	9146
2	204	500	11255
5	487	600	12580
10	931		
20	1683		
50	3505		
100	5377		
200	7722		

Table for LND 7311

This data has been stored in the micro controller firmware. Based on this lookup table, for different frequencies generated by the detector corresponding dose rate will be calculated from the lookup table and displayed on the LCD display.

Now set the calibration factor to 1.00 by using program keys of the instrument and save the new setting.

Now select HIGH TC in dose rate mode of operation and acquire by keeping the detector at different positions.

Keep the detector probe in the source beam such that axis of the probe is perpendicular to the beam. Keep the end cap closed.

Now refer to the distance Vs dose rate chart of Cs-137 source of Radiation calibration Lab I (chart preparation date should be < 15 days old), if calibrated at NUCLEONIX SYSTEMS.

Now place the monitor at below dose rates and record observations. If observed dose rate is within +/-15% of expected dose rate, the instrument is said to be calibrated.

For Beta Measurement open the cap of the detector probe

<u>Very Important Note</u>: Please note that for a required dose-rate, always choose to keep detector probe at maximum possible distance from source with minimum no. of lead block attenuators. This is to prevent scattering effect due to attenuator blocks at close distances (< 50 cm).

Distance of source to axis of detector is to be taken for making the below measurements.

Distance	Dose Rate expected (mR/hr)	Dose Rate observed (mR/hr)	% change < +/-15%
	1 5 10 20 50 100 200		

Now in case a reading exceeds the tolerance of +/- 15%, of expected dose rate then adjust calibration factor of monitor such as to make entire readings fall within +/- 15% of expected dose rate.

When the manual is dispatched to the customer, calibration factor is to be mentioned below and also saved in the instrument program.

NOTE: This instrument will show the constant reading above the 0-200mR/hr indicating the OVR in the 16x2 Display up to 2R/hr

Over Load Test Passed:

(a) 10 times highest range Yes/No
(b) 50 times highest range Yes/No
(c) 100 times highest range Yes/No
(d) 150 times highest range Yes/No
(e) 200 times highest range Yes/No

Calibration Factor : _____ Probe Type : _____

Calibration Date : _____ Calibrated by : _____

Calibration Due : _____ Instrument S.No. : _____

NOTE: Default calibration factor is stored in the unit and also recorded here. This factor can be entered as calibration factor in the above instrument.

CHAPTER -VI

BLOCK DIAGRAM DESCRIPTION

Digital Contamination Monitor Type: CM710N is designed around a eight bit micro-controller. Contamination G.M. probe which houses end window G.M. tube is connected to the main instrument through a short 1 or 0.75 meter cable.

Low voltage supplies, to the circuit are provided from the output of a low dropout regulator chip, which receives 6V (1.5Vx4cells).

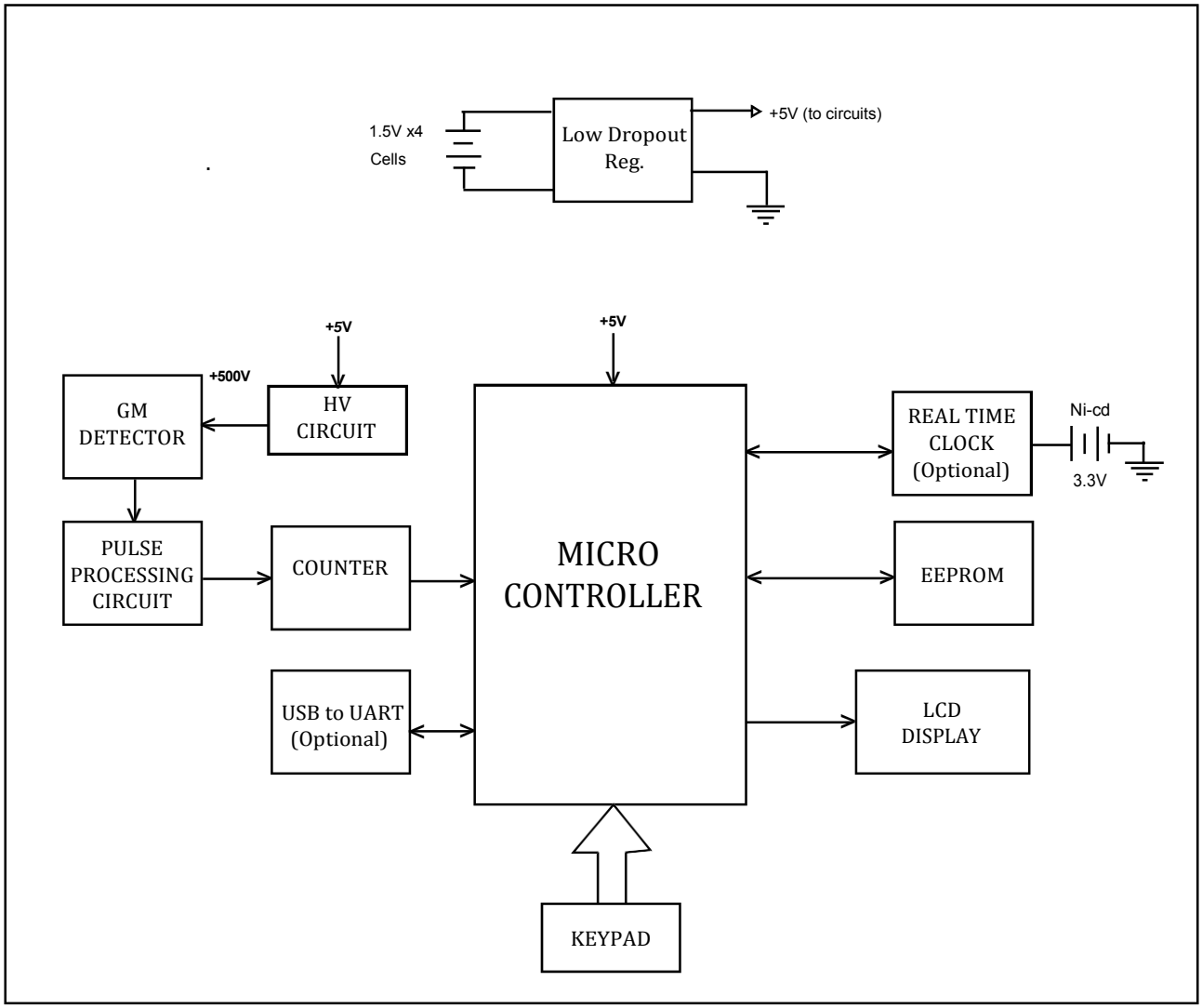
A compact blocking oscillator based HV circuit generates +500V/+900V required for biasing of the detector. Tail pulses generated from the GM detectors in the presence of radiation field, are converted to TTL pulses by the pulse processing circuits. These TTL pulses are fed to a serial counter (I2C bus based), which counts these pulses for a Time Constant set under the control of embedded code from micro-controller. These counts are interpreted in CPS or CPM or in dose rate (i.e., mR/hr) depending on the mode selected by the user.

Built-in keypad with the following command buttons START, STOP, INC, DEC, STORE, PROG, ON/OFF provide user interface to the instrument.

16x2 LCD dot-matrix display interfaced to the micro-controller displays all the programmed parameters and output

results to the user.

Built-in EEPROM stores data readings upto 1000. User can store and recall them for later visualization



CHAPTER – VII

USB to UART DATA COMMUNICATION

A) Verify if Windows 7 is installed on Target PC. Nucleonix provides support only for Windows 7.
In case, for whatever reason, it is required to demonstrate the software on Windows XP, install the Service Pack 3 (if it is not already installed).
1. Double click on "windowsxp-kb936929-sp3-x86-enu._u5Kng" file in "windows xp service pack3" folder.

B) Login with Administrator privileges on your PC.
Insert NucSoft software CD and run NucSoft.bat to start installation. The Batch file automatically installs the necessary files.

C) NucSoft.bat should have installed NucSoft.xls and NucSoftLogin.xls automatically in C:\.
In case you do not find these files in C:\, Copy NucSoft.xls and NucSoftLogin.xls to c:\

D) NucSoft.bat should have installed USB Serial Bridge drivers automatically.
In case it is not installed, Install by
1. Double Clicking on driver.exe in BAFO Prolific_USB Serial Bridge_Driver folder in CD and follow the steps.

E) NucSoft.bat should have installed dot NET framework
automatically. In case it is not installed, Install dot NET framework
by
1. Double Clicking on dotNetFx40_Client_x86_x64.exe in dot NET Client folder in CD and follow the steps.

F) NucSoft.bat should have installed Setup.exe for NucSoft automatically.
To verify this, click on Start --> All Program --> Nucleonix Systems. If you do not find NucSoft shortcut, then it means, NucSoft is not installed. Run NucSoft Setup by double clicking on "Setup.exe" application in Debug folder.

G) NucSoft should have installed Skype automatically. In case it is not installed,
Run Skype Setup by Double clicking on "Skype Setup" in Skype Setup folder. Internet Connectivity is required. Skype is required for Remote technical support.

H) In case your PC does not have Windows Live Movie Maker / Windows Media Player, Run Windows Live Movie maker Setup by Double clicking on "windows Live Movie Maker setup-web" in Windows Live Movie maker setup folder. Internet Connectivity is required.
Windows Live Movie Maker is required to play Movie files (Documentation).

I) Go through the following Videos to understand the working of NucSoft, before running the application. To locate the Videos, click on Start --> All Programs--> Nucleonix Systems.
1. NucSoft_About Us
2. NucSoft_User Manual_System Requirements
3. NucSoft_User Manual_Making Connections
4. NucSoft_User Manual_Identifying COMPOrt
5. NucSoft_User Manual_Software Features

J) Default Login and password for NucSoft software is 'admin' and 'Nucleonix'.

CHAPTER – VIII

AVAILING OF MAINTENANCE/ CALIBRATION SERVICES AND WARRANTY CLAUSE (with in India)

8.1 GENERAL

As per the warranty clause of the company, we provide one year warranty during which period we provide free service at our works. Hence in case of any mal-function in our instruments, you are requested to send the unit back to our works by RPP/COURIER/SPEED POST PARCEL/GATI/XPS/door delivery. We shall arrange immediate rectification/replacement within two weeks from the date of receipt of the equipment at our place. Please note that the equipment will be serviced at our works only.

The equipment is to be sent to:

The Servicing Department
NUCLEONIX SYSTEMS PRIVATE LIMITED
Plot No: 162 A & B, PHASE II, I.D.A. Cherlapally, Hyderabad - 500 051
Phone: 040-29706483 / 84 / 85, Mobile No: 7331104481 / 82
E-mail: info@nucleonix.com Web : www.nucleonix.com

For all the Radiation monitoring equipment, detectors built-in or external probes will not have one-year warranty, but only inspection warranty at the time of supply is provided. Since detectors will / may have fragile glass construction, we do not provide warranty. In case of failure of these components, Nucleonix will supply detector replacement at cost-cost price.

Note: In respect of all types of portable radiation monitors, it may be necessary to checkup and recalibrate the equipment once a year at our works.

8.2 EQUIPMENT REPAIRS / SERVICING POLICY (WITH IN INDIA)

(a) During Warrantee

The following procedure is to be followed by the customers with in India for availing services/ repairing facility during warrantee period.

- Equipments are to be **sent to our works** for availing free repair services during warrantee, after the customer receives approval from the customer support division, by sending an e-mail.
- For all equipments, costing less than 6.0 lakhs one year warrantee & free service is offered, when the equipments are sent to our works only. For larger systems such as installed systems, networked systems, specialized systems, costing more than 6.0 lakhs during one year warrantee, free service is offered at site. Field service Engineer will be deputed subject to warrantee terms & conditions.
- This does not include personal computer related problems, for which local computer service provider of the PC vendor is to be contacted. Also for

software related problems online support will be provided. Software support doesn't include cleaning of virus problems etc.

- When the equipments are sent to our works for warrantee services, they are to be properly packed with adequate cushion to prevent any transportation damages. **Nucleonix Systems** is not responsible for damages or loss during transportation.
- Packing / Freight charge is to be borne by customer when he sends the equipment to our works. However when we return after servicing packing will be Nucleonix responsibility & Freight charges will be to your account. Only services are free.
- Please indicate in your correspondence equipment model & serial number.
- All the equipments are to be sent to our works only on door delivery basis.
- For Door Delivery Transportation contact XPS/GATI cargo in your city / town or a reliable courier service to pick the consignment from your place. For their nearest local address & phone no's look into their websites. Transit insurance if the customer feels is necessary it is to be covered.
- Nucleonix Systems will not receive the equipments sent by other modes of transportation, such as Rail/Road.
- After servicing, equipments will be sent back by same mode of transport such as XPS/GATI/COURIER/RPP.
- All types of Radiation detectors, glass ware, PMTs etc which are fragile are not covered in warrantee, if the failure is due to physical damage, external or internal due to shock, dropping, miss-handling etc. If the failure is due to a natural fault then only it is covered under warrantee for a limited period of three months. However complete electronics is covered for 1 year warrantee.
- You can also send the equipment personally to our works for repairs either during or after warrantee, after fixing up with our service dept (Customer Support Division). If possible we may repair on same day or your person can stay for a day or two & get it repaired & or calibrated.

(b) After warrantee Services

- On expiry of 1yr warrantee if you like to send the equipment (low cost less than 6.0 lakhs) for repairs to our works, you may please observe the following procedure.
- Send an e-mail with details mentioning that you agree to pay service charges which includes: Basic service charges per unit / module in the range of Rs: 2500 to Rs : 10,000 depending on the sophistication of the unit calibration charges (if applicable for your equipment) + cost of components + packing charges + Return Freight charges @ actual.
- Once our customer support department responds & requests you to despatch the equipment to our works for repairs, you may do so by following the steps given below.
- Followed by this you can send the equipment straight away if it is within 5 yrs old. If the equipment is beyond 5 yrs old, then also you can send it for repairs, however only after you receive confirmation from Customer Support Division, that it is repairable & is not an obsolete model. If the design is obsolete then customer support division (CSD) may give you

'buy back' offer to replace with new model or upgrade it with electronic circuit boards & enclosure.

- For all installed equipments costing above Rs: 6.0 lakhs which are larger in size & for which field servicing only is recommended, you can obtain a quotation with relevant details by sending an e-mail & avail the services accordingly.
- For all field servicing jobs, since we need to depute engineers, it is likely, to take time & also it will cost more which includes Engineer's TA & DA etc., apart from basic service charges + cost of spares etc. Please note that basic service charges will be different for different products depending upon sophistication.
- Also in some cases it may not be possible to fix-up the problems in the field itself, in such cases we may advise you to send them to our works.
- For all jobs to be serviced in the field, customer is requested to provide adequate details on the nature of problems, to enable our engineer to come prepared with adequate spares.
- For any additional information send an e-mail to **info@nucleonix.com**, Atten: Customer support division.

8.3 EQUIPMENT REPAIRS / SERVICING POLICY (FOR EXPORTS)

Equipments, manufactured & exported are subjected to a well defined quality assurance (QA) plan & Factory acceptance tests (FAT). Nucleonix systems has the following policy to provide maintenance support to overseas customers either directly or through international dealers / distributors.

(a) During & after warranty:

- For minor problems, which can be handled by customers, servicing tips have been provided in the user manual / servicing manual.
- Also most of the equipments have built-in fault diagnostic features which will indicate to the user nature of problem in the equipment. Based on the visual indication in the instrument Display, user can take corrective action or contact Nucleonix systems by email for help.
- Nucleonix systems will guide in localizing the defective part / module or sub-system by interacting with the customer if required. Skype will be used for communication.
- During warranty free replacement of sub-system or board (PCB) will be done. However customer has to send defective sub-system back to Nucleonix system with-in 15 days on arranging replacement.
- During & after warranty, any Freight charges & customs clearance charges are to be borne by customers, both ways.
- If it is a manufacturing defect, then Nucleonix system will bear the replacement cost of sub-system / unit. However any Freight charges & customs clearance charges in their country are to be borne by customer.
- After warranty, services will be similar to that of services during warranty. However, customer will have to pay for cost of parts replaced, freight charges both ways & customs clearance charges in both the countries. Nucleonix systems plans to introduce audio visuals on web or on CDs to facilitate product demonstration, installation & minor maintenance very soon.

8.4 HOW TO AVAIL CALIBRATION SERVICES (FOR INDIAN CUSTOMERS)

Nucleonix Systems offers radiation calibration services to its customers. Calibration services are provided for Nucleonix Systems manufactured products only, in general, as a company policy.

How to avail calibration services:

It is best advised that each of the Radiation monitors including Area monitors are calibrated once in a year. When you want to send your Radiation monitor / Area monitor / Contamination monitor for calibration to our works. You may send the equipment for calibration, by following the steps given below:

1. Our standard calibration charges per equipment (All types of Radiation monitors including portable survey meters, contamination monitors & Area Gamma Monitors) are Rs: 2500 + Packing + Freight charges. You can email a '**work order'** accepting these charges.
2. Email your **work order** and despatch / send the equipment to our works if it is 5 years old or less including details of mode of transport sent with docket particulars.
3. Also mention in your work order & clearly indicate that you will agree to pay calibration charges & also equipment repair charges additionally if the unit is faulty & requires repairs before one can take it up for calibration.
4. You are requested to ensure **good packing** to avoid any transportation damages. Especially if there are external detector probes, they are to be packed with sufficient soft foam to ensure no damage in transportation.
5. Use only the specified following mode of transportation system for dispatching on door delivery basis. XPS/GATI cargo / Courier/RPP/Speed Post parcel etc. Send the equipment on freight paid basis. (Equipments sent by other methods such as Rail/Road etc will not be collected). Also you can cover for transit insurance **both ways** if you wish. Nucleonix system is not responsible for any transportation damages or loss during transportation both ways.
6. Immediately on receipt of the equipment, we will send an acknowledgement & also a proforma bill by email/ post.
7. Based on the proforma bill, once we receive the payment, equipment will be dispatched back by similar mode of transportation as mentioned above.

8.5 HOW TO AVAIL CALIBRATION SERVICES (FOR FOREIGN CUSTOMERS)

Foreign customers can calibrate Nucleonix make Radiation monitors / equipments in their country at any of their accredited Radiation calibration labs. Nucleonix systems will be happy to provide any help and guidance if needed, for calibration. Alternatively if you send the equipment here to India we can also provide calibration services.

Calibration Standards Lab & Facility:
We have two calibration labs.

i. Low Level Calibration Lab.
ii. High Dose Rate Calibration lab.

Low Level Calibration Lab: This has a Cs-137, 165 mCi standard. "Gamma Survey Instruments Calibrator" from Amersham.
This calibration service has NIST Traceability standard. Calibration of all portable radiation monitors, survey meters, contamination monitors, Area monitors etc., is carried out in this lab upto 1 R/hr max dose rates.

Gamma Survey instruments calibrator has Cs-137 source 161.5 mCi as on 05 Aug 2002. It is basically a gamma survey instruments calibrator procured from AEA Technologies UK/USA. Has NIST traceability accuracy within +/_7%

High Dose Rate Calibration Lab: This lab has a 8 Ci , Co-60 standard housed in a CRC-2 camera, operated remotely viewed through CCTV arrangement. High dose rate survey meters, High level Area monitors etc are calibrated in this lab. This CRC-2 camera is housed in a separate concrete building. All the radiation monitors manufactured by Nucleonix Systems are authentically calibrated at this facility, before they are shipped /dispatched.

CRC-2 camera has Co-60 standard obtained from Bhabha Atomic Research Centre, Mumbai. It is a certified source.

8.6 ANNUAL MAINTENANCE CONTRACT (AMC) Annual maintenance contract (AMC) services:

For all sophisticated instruments & systems and also for installed monitors & networked systems in a nuclear facility or a Radiological lab or in a Medical cyclotron facility where no. of instruments are networked, it is advised that customer enters into an economical Annual maintenance contract with Nucleonix system.

Detailed AMC proposal can be obtained from our customer support division (CSD), by giving required inputs.

Inputs required by our CSD to send you AMC proposal:

- Name, year & data of purchase, Sl. Nos. of equipments, Model No's, No. of equipments for which AMC is required. Additionally no. of calls per annum required for preventive & breakdown maintenance may also be indicated.

Advantage of entering into AMC:

- Equipment services offered will be prompt & timely
- Nucleonix systems maintain required spares, spare tested PCBs, detectors & other critical components which may become obsolete.
- Obsolescence in electrons is quite rapid. If you enter into AMC guaranteed service for the period of AMC will be the responsibility of Nucleonix Systems.
- Nucleonix Systems will maintain Engineers at your disposal to attend to AMC calls on time
- Without AMC prompt service calls are not guaranteed.
- If some critical components become obsolete, then Nucleonix systems may request you to upgrade the product with new model or new electronics which may be expensive if you are not under AMC.

Training on maintenance / servicing:

- To a limited extent, we offer training on maintenance / repairs at our works to customers on chargeable basis. Details can be obtained from our customer support division, by customers who may require such services.

HOW TO REPLACE BATTERY

When you observe battery low voltage indication 'LB', on left corner of LCD display, it is advised that the battery be replaced to ensure correct calibration and indication of the dose rates. Follow the below procedure for replacement of battery.

a) Lift the two latches and disengage the top unit from its bottom cover. Now holding the bottom cover lift off the top unit by its handle. (Steps 1 & 2)

b) Notice battery holder on the bottom side of instrument electronic unit cover for battery holder is to be removed by unscrewing holder lid screws. (Step 3)

c) Now the existing batteries mounted in the **battery holder** are to be removed and replaced with new set of batteries ensuring proper polarity. (Step 4 & 5)

d) Now check battery voltage again, for that switch 'ON' the unit and see that 'LB' is not displayed on LCD display.

e) Now assemble back the top unit in its bottom cover and close the unit using the latches provided.

Step-1

Note: To separate the top instrument panel with handle which also contains electronics PCB, from the bottom cover follow the instructions given below;

A. Hold the latches both sides as shown in the above figure with thumbs touching onto the top of latch and first finger touching on to the bottom of the latch.

B. Now bottom of the latch should be pulled outwards by using first finger as indicated in figure, by arrow.

C. This will loosen in the latches, facilitating one, to separate the top instrument panel with handle, from the bottom enclosure of the unit.

Step-2

Step-3

Step-4

Step-5

CHAPTER – IX

CONTACT US FOR AVAILING SERVICES

Postal/Mailing Address (Phone / Fax / Email)

Nucleonix Systems Pvt Ltd.
Plot No. 162 A&B, Phase II, I.D.A.,
Cherlapally, Hyderabad - 500 051, Telangana, India.
Phone: + 91-4029706483 / 84 / 85
Mobile: 7331104481 / 82
Email : info@nucleonix.com
Website : www.nucleonix.com

For any information, Contact by email is always appreciated.
(This will help us to respond to you quickly)

Marketing Department :

a) Sales / Commercial Information / Field installation and servicing

For any Commercial, Price information, Product information, customer coordination & quotation of our products customer related commercial services, please contact front office marketing staff through the listed Email Ids or Phone Nos. given below

---

Whom to Contact:

Business Executives:	Contact Numbers	Contact by E-mail ID
1. R.Maniram (Sr. Business Executive)	Mob:7331104481, Ph: +91-7207034546	info@nucleonix.com
2. Ch.Gayatri (Business Executive)	Mob:7331104481, Ph: +91-7207034546	info@nucleonix.com
3. K.Swapna (Business Executive)	Mob:7331104481, Ph: +91-7207034546	info@nucleonix.com

Note: Our business executives will also connect you to concerned Engineer or General Manager for any technical clarifications if required

b) Factory Services

For **Servicing and Calibration** factory services & follow up on the above jobs including dispatch related/payment related issues of serviced & calibrated items please contact

Ms.K.Sowmya **Mob:**7331104482 **E-mail:** info@nucleonix.com
(Executive services)

She will also connect you to concerned engineer or general manager if required, for any clarifications & deficiencies in services

---

c) Dispatch Related Issues (Production Items)

For dispatch related issues of your ordered equipments, including delays, purchase order related document deficiencies, payment proofs, dispatch docket details and bills etc,.contact

Ms.V.Anusha / Renuka Devi
(Executive Dispatch)

E-mail: info@nucleonix.com

---

d) Product Technical Information / Clarifications

Whom To Contact:

Contact any front office "Business Executive"- He/She will take your details and connect you to concerned product engineer for any technical clarifications. Best thing is to email your technical queries and obtain the reply, rather than on telephone.

You can also contact General Manager or Director (Tech) if required.

e) Marketing Manager

On business matters for all your marketing services / techno commercial requirements about Nucleonix Products contact:

Bhaskara I.V.
Mob:8019662500

Email: info@nucleonix.com

f) General Manager

Dr.M.S.R.Murthy PhD (Nuclear physics)
Email: info@nucleonix.com

Contact General Manager for all sales / servicing and technical information including customer support related issues, on the delays, gaps & lapses by our staff. Contact G.M. regarding field installations & field servicing jobs schedule etc.

---

g) H.R -Incharge

Contact her regarding, job vacancies, sending resume for employment, H.R. related issues etc. contact

Ms. Shanthi Sri . P **Mob:**7331104480 **Email:** recruit@nucleonix.com

h) Director -Technical
Mr. J. Dheeraj Reddy

Email: jdreddy@nucleonix.com
Mobile No. +91-7674009005

Contact him for, any Technical Information and clarifications on products, which cannot be answered by General Manager / Customer support executives.

For any technical deficiencies in products, related issues & suggestions on product improvements you may contact by email or telephone. This will help the company to improve the product & serve you better.

Dealer's complaints, on commercials, lapses by our commercial staff, or any other discripancy, or you like to give any feedback on any Nucleonix staff doing any wrong thing against cleaner / ethical business principles / practices can be complained to any of the directors or managing director.

---

i) Director - IT
Mr. J. Nishanth Reddy
Email: nishureddy@yahoo.com; info@nucleonix.com
Mobile No. +91-9966691000

For any deficiencies in product software's, related issues, & any suggestions or improvisations in software's can be contact by email or telephone. This will help the company to improve the product & serve you better.

---

j) Managing Director
Shri. J.Narender Reddy (Managing Director)
Email : jnreddy@nucleonix.com; info@nucleonix.com

Contact Managing Director for, Foreign relations, International Business co-operation, Joint ventures, Exports, Dealership in other countries, Policy matters, Technology tie-ups etc.

k) Dealers Complaints :
Dealers complaints, on commercials, lapses by our commercial staff, or any other discripancy, or you like to give any feedback on any Nucleonix staff doing any wrong thing against cleaner / ethical business principles / practices can be complained to any of the directors or managing director.

An innovative company working towards excellence in the field of Nuclear Instrumentation

NUCLEONIX SYSTEMS PVT. LTD.
Plot No: 162 A & B, Phase II, I.D.A. Cherlapally, Hyderabad - 500 051.
Phone: 040-29706483 / 84 / 85, Mobile No: 7331104481 / 82
E-mail: info@nucleonix.com Web : www.nucleonix.com