MODEL 23 AND 23-1
ELECTRONIC PERSONAL DOSIMETER
SOFTWARE MANUAL

November 2014

Version 0.26

MODEL 23 AND 23-1
ELECTRONIC PERSONAL DOSIMETER
SOFTWARE MANUAL

November 2014

Version 0.26

Table of Contents

Section

1

1.0 Introduction

1.1 Overview

The Dosimeter Setting Device is designed for acquiring data from/changing settings of the Model 23 Electronic Personal Dosimeter via its infrared data communication interface. This device provides features such as reading out configurations/cumulative dose from the dosimeter, and writing PC-entered values into backward. The reading trend that is read out from the dosimeter can be exported in a text format. The Dosimeter Setting Device Program supplied with the Dosimeter Setting Device (hereinafter, the Program) is based on the Microsoft® Windows® operating system.

1.2 Product Package

- ☢ Dosimeter Settling Device   1

- ☢ Software CD-ROM   1

- ☢ User's Manual   1

Section

2

2.0 Software License Agreement

BY INSTALLING THIS SOFTWARE, YOU ARE CONSENTING TO BE BOUND BY THIS AGREEMENT. IF YOU DO NOT AGREE TO ALL OF THE TERMS OF THIS AGREEMENT, DO NOT INSTALL THE PRODUCT.

Single User License Grant: Ludlum Measurements, Inc. ("Ludlum") and its suppliers grant to Customer ("Customer") a nonexclusive and nontransferable license to use the Ludlum software ("Software") in object code form solely on a single central processing unit owned or leased by Customer or otherwise embedded in equipment provided by Ludlum.

Customer may make one (1) archival copy of the Software provided Customer affixes to such copy all copyright, confidentiality, and proprietary notices that appear on the original.

EXCEPT AS EXPRESSLY AUTHORIZED ABOVE, CUSTOMER SHALL NOT: COPY, IN WHOLE OR IN PART, SOFTWARE OR DOCUMENTATION; MODIFY THE SOFTWARE; REVERSE COMPILE OR REVERSE ASSEMBLE ALL OR ANY PORTION OF THE SOFTWARE; OR RENT, LEASE, DISTRIBUTE, SELL, OR CREATE DERIVATIVE WORKS OF THE SOFTWARE.

Customer agrees that aspects of the licensed materials, including the specific design and
structure of individual programs, constitute trade secrets and/or copyrighted material of Ludlum. Customer agrees not to disclose, provide, or otherwise make available such trade secrets or copyrighted material in any form to any third party without the prior written consent of Ludlum. Customer agrees to implement reasonable security measures to protect such trade secrets and copyrighted material. Title to Software and documentation shall remain solely with Ludlum.

LIMITED WARRANTY. Ludlum warrants that for a period of ninety (90) days from the date of shipment from Ludlum: (i) the media on which the Software is furnished will be free of defects in materials and workmanship under normal use; and (ii) the Software substantially conforms to its published specifications. Except for the foregoing, the Software is provided AS IS. This limited warranty extends only to Customer as the original licensee. Customer's exclusive remedy and the entire liability of Ludlum and its suppliers under this limited warranty will be, at Ludlum or its service center's option, repair, replacement, or refund of the Software if reported (or, upon request, returned) to the party supplying the Software to Customer. In no event does Ludlum warrant that the Software is

error free or that Customer will be able to operate the Software without problems or interruptions.

This warranty does not apply if the software (a) has been altered, except by Ludlum, (b) has not been installed, operated, repaired, or maintained in accordance with instructions supplied by Ludlum, (c) has been subjected to abnormal physical or electrical stress, misuse, negligence, or accident, or (d) is used in ultra hazardous activities.

DISCLAIMER. EXCEPT AS SPECIFIED IN THIS WARRANTY, ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS, AND WARRANTIES INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE, ARE HEREBY EXCLUDED TO THE EXTENT ALLOWED BY APPLICABLE LAW. IN NO EVENT WILL LUDLUM OR ITS SUPPLIERS BE LIABLE FOR ANY LOST REVENUE, PROFIT, OR DATA, OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGES HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY ARISING OUT OF THE USE OF OR INABILITY TO USE THE SOFTWARE EVEN IF LUDLUM OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH.

DAMAGES. In no event shall Ludlum's or its suppliers' liability to Customer, whether in contract, tort (including negligence), or otherwise, exceed the price paid by Customer. The foregoing limitations shall apply even if the above-stated warranty fails of its essential purpose. **SOME STATES DO NOT ALLOW LIMITATION OR EXCLUSION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES**.

The above warranty DOES NOT apply to any beta software, any software made available for testing or demonstration purposes, any temporary software modules or any software for which Ludlum does not receive a license fee. All such software products are provided AS IS without any warranty whatsoever.

This License is effective until terminated. Customer may terminate this License at any time by destroying all copies of Software including any documentation. This License will terminate immediately without notice from Ludlum if Customer fails to comply with any provision of this License. Upon termination, Customer must destroy all copies of Software.

Software, including technical data, is subject to U.S. export control laws, including the U.S. Export Administration Act and its associated regulations, and may be subject to export or import regulations in other countries. Customer agrees to comply strictly with all such regulations and acknowledges that it has the responsibility to obtain licenses to export, re-export, or import Software.

This License shall be governed by and construed in accordance with the laws of the State of Texas, United States of America, as if performed wholly within the state and without giving effect to the principles of conflict of law. If any portion hereof is found to be void or unenforceable, the remaining provisions of this License shall remain in full force and effect. This License constitutes the entire License between the parties with respect to the use of the Software.

Restricted Rights - Ludlum's software is provided to non-DOD agencies with RESTRICTED RIGHTS and its supporting documentation is provided with LIMITED RIGHTS. Use, duplication, or disclosure by the Government is subject to the restrictions as set forth in subparagraph "C" of the Commercial Computer Software - Restricted Rights clause at FAR 52.227-19. In the event the sale is to a DOD agency, the government's rights in software, supporting documentation, and technical data are governed by the restrictions in the Technical Data Commercial Items clause at DFARS 252.227-7015 and DFARS 227.7202. Manufacturer is Ludlum Measurements, Inc. 501 Oak Street Sweetwater, Texas 79556.

Section	# 3.0 Operation Environment
3	

3.1 General

Basic functions:
1. Reading out configurations and cumulative data from dosimeters
2. Writing user-edited configurations to dosimeters
3. Data trending and display in provided graph formats.

Peer: Electronic Personal Dosimeter NRF or Dose-i
Temperature: 0 to 40℃
Humidity: 30 to 85%
Power supply: DC4.5 to 6.0 V (supplied from a computer)

3.2 Required Environment

The following hardware of hardware and software with latest versions are required:

Hardware

☢ CPU: Pentium 2 GHz or greater

☢ Memory: 1 GB or greater

☢ Hard Drive: free disc space of 20 MB or greater

☢ Display: resolution 800 x 600 or greater

☢ Communications Interface: USB x 1 ch

☢ Others: mouse and keyboard

Software

The PC mentioned above should have the following software installed:

☢ Operating System: Windows®7 operating system

3.3 Device Structure

IR head

USB connector

Section	# 4.0 Descriptions and Set-ups
4	

4.1 System Configuration

System Configuration of the Dosimeter Setting Device
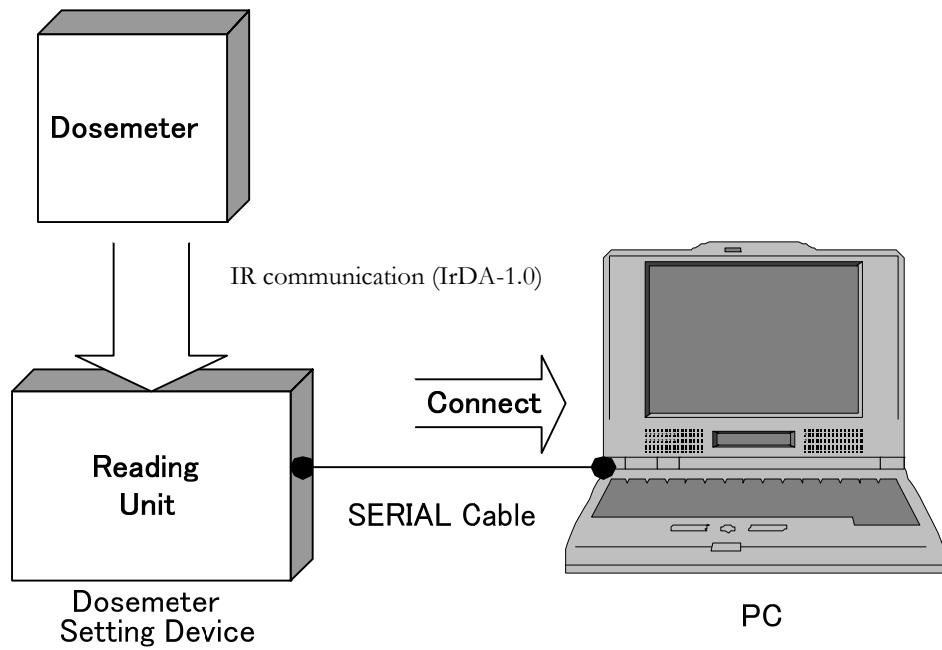
4.2 Product Configuration

The configuration of the Dosimeter Setting Device

USB Connector

Insert to serial port on your computer.

Dosimeter reading IR HEAD

This IR HEAD only use power supply from your computer, and not external power required.
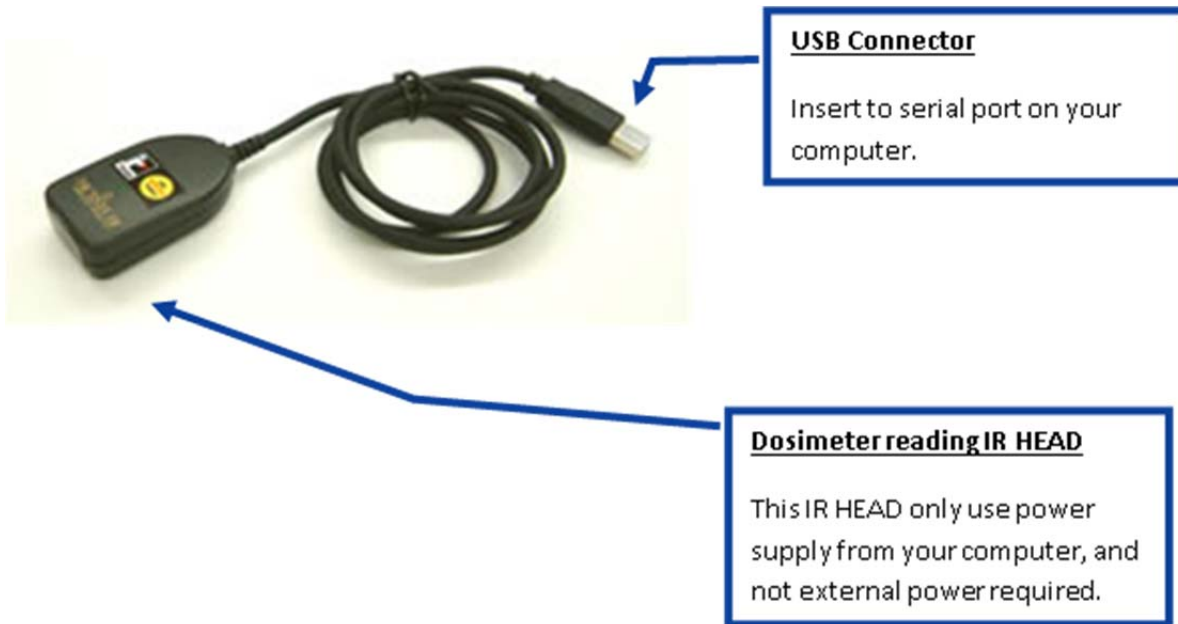
4.3 Program Menu Windows (The Dosimeter Setting Device Program)

Feature description of each program menu is shown on the following page:

Screen Flow   /   Section to refer   /   Overview of the feature

```
Start up
   ↓
Version Window ────────────────  5.1   Displays version of this software.
   ↓
Menu Window ───────────────────  5.3   Main Menu
   │
   ├→ Dosimeter settings ───────  5.4   Preview or update overall configurations
   │                                    such as serial number or alarm
   │                                    threshold
   │
   ├→ Indication Display ────────  5.5   Displays measurement data.
   │
   ├→ Data Trending Mode ────────  5.6   To choose display method for Trend
   │     │                               Data
   │     ├→ Table Display ───────  5.6.1 Displays Trend data in a table.
   │     │
   │     └→ Graph Display ───────  5.6.2 Displays Trend data in a graph.
   │
   ├→ Manual calibration ────────  5.7   To set calibration constant with direct
   │                                    input.
   │
   ├→ Maintenance Mode ──────────  5.8   To perform checks for LCD Display or
   │                                    buzzer.
   │
   ├→ System Settings ───────────  5.9   To refer or update safety factor or
   │                                    correction factor.
   │
   ├→ Client Control No. ────────  5.10  To refer or update client control number.
   │
   ├→ Dosimeter Data Reset ──────  5.11  To reset data in a dosimeter.
   │
   ├→ Dosimeter settings (dose rate) 5.12 To update configurations required for
   │                                    dosimeter settings (dose rate).
   │
   ├→ Counts Readout ────────────  5.13  Displays internal counter value in a
   │                                    dosimeter.
   │
   ├→ Entry/Exit Retention Data ─  5.14  Displays internal counter value in a
   │                                    dosimeter.
   │
   └→ Information Data ──────────  5.15  To update information of a dosimeter.
```

4.4 Setting Up

Set up the software first, then the hardware.

Required for setup:
- Dosimeter setting device   1 set
- PC   1 set

Software Setups
1. Place the program installation CD in the CD-ROM drive on the PC.
2. Launch "Setup.exe" file in the "NRF_Tool" folder.

Hardware Setups
1. Insert the USB connector of Dosimeter Setting Device into the USB port on your computer.

Note: If USB ports on your computer were already occupied with a mouse or modem, you are required to take one of them off or add a USB port to the computer.

<table>
<tr><td>Section
5</td><td><h1>5.0 Operational Instructions</h1></td></tr>
</table>

5.1 Starting the Program

1. Select the icon [NRF_Tool(Sv)Eng_R]

   NRF_V026.exe

   Start up the program.

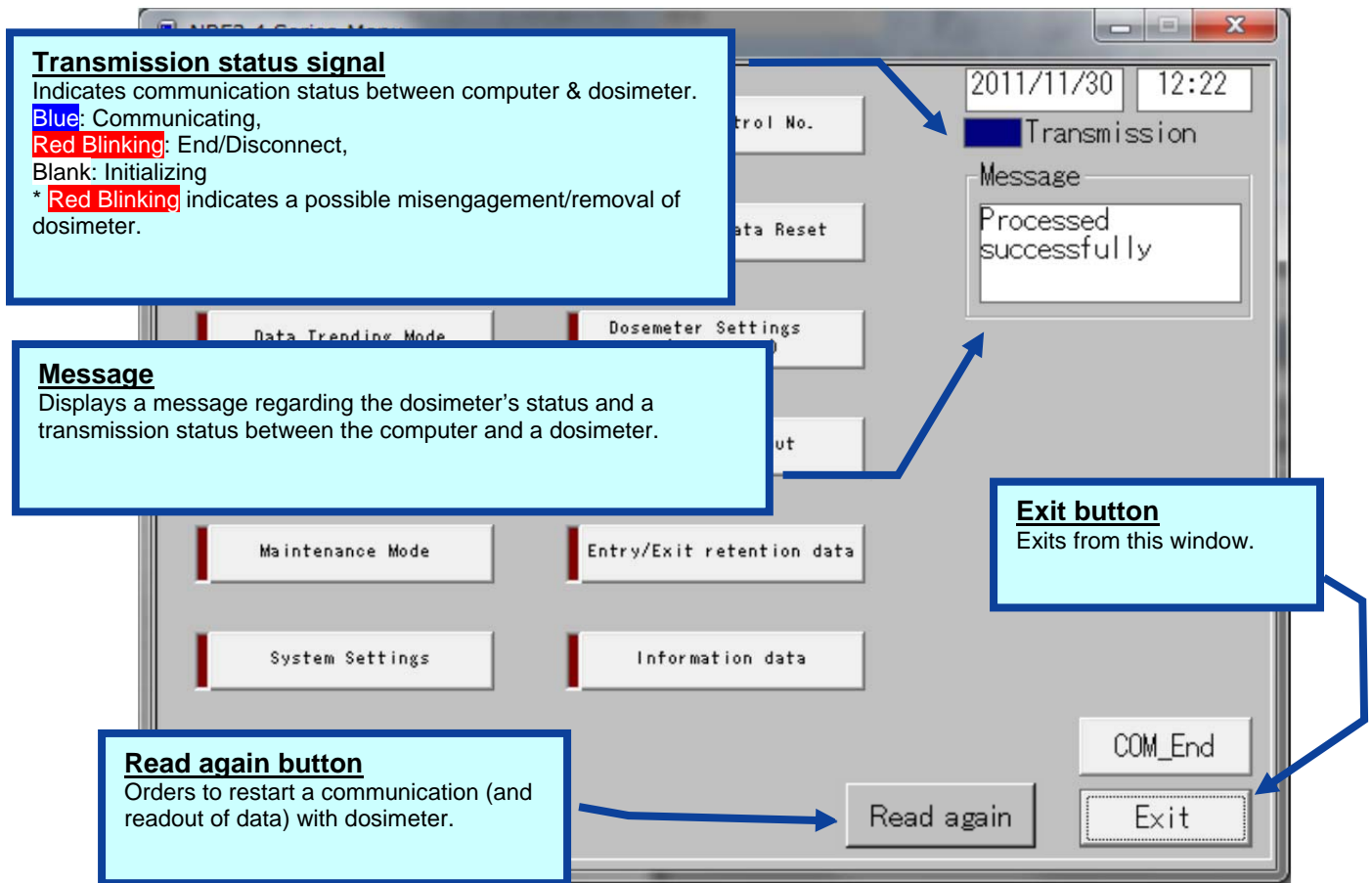2. When the software and dosimeter setting device program start running, the Version window will appear.
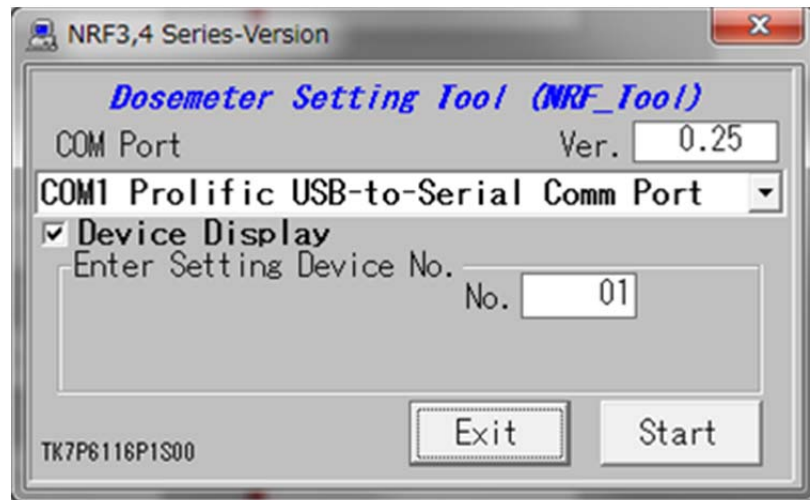
5.2 Screen Interface
The fields and buttons on the following screen are common to all windows. See the following sections for details of each window.

Transmission status signal
Indicates communication status between computer & dosimeter.
Blue: Communicating,
Red Blinking: End/Disconnect,
Blank: Initializing
* Red Blinking indicates a possible misengagement/removal of dosimeter.

Message
Displays a message regarding the dosimeter's status and a transmission status between the computer and a dosimeter.

Exit button
Exits from this window.

Read again button
Orders to restart a communication (and readout of data) with dosimeter.

Common features of the menu window (functions and layout)

These messages will be indicated in the Message box. The message severity is as follows:

Severity	Messages	Descriptions
1	LOW battery	Dosimeter's battery power is critically low.
2	Please place dosimeter into reader	Communication with dosimeter has not been established yet.
3	Maintenance mode	Dosimeter is in maintenance mode.
4	Processed Successfully	Communication between the setting device and dosimeter has been established.
5	Initializing...	In the process of establishing communication between the setting device and a dosimeter.

* Note: Features on the menu will function only when the dosimeter is in communication. If <Transmission> window is blinking Red, place/replace the dosimeter into the reading unit, and then click <Read again> button. Data communication will be started/resumed, and <Transmission> will be Blue.
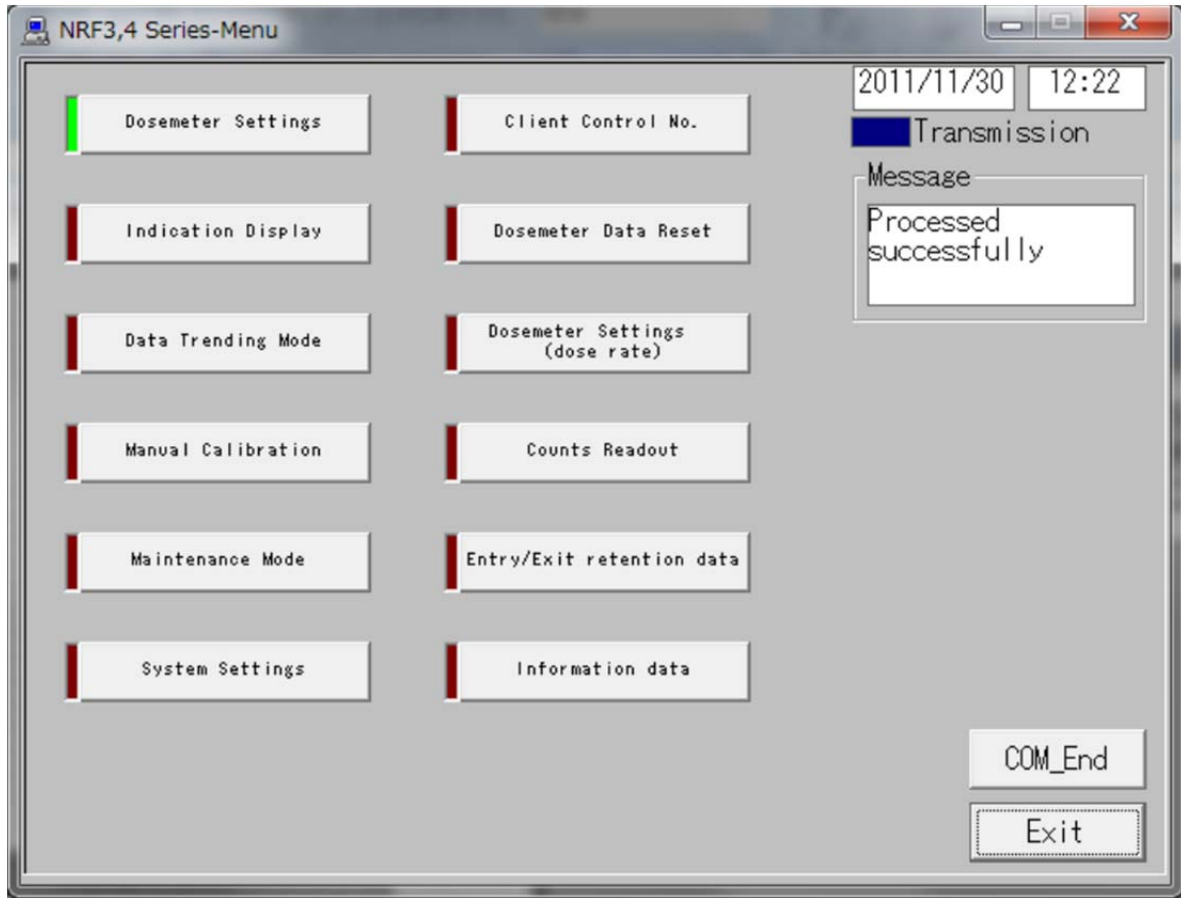
5.3 Menu

Figure 5-1 Menu screen

All functions that are performed via data communication with dosimeters are listed.
You can select one function to go to the window of the function selected.

\<Menu Button\>

Dosimeter Settings	Goes to the next window: Fig. 5-2
Indication Display	Goes to the next window: Fig. 5-3
Data Trending Mode	Goes to the next window: Fig. 5-4
Manual Calibration	Goes to the next window: Fig. 5-5
Maintenance Mode	Goes to the next window: Fig. 5-6
System Settings	Goes to the next window: Fig. 5-7
Client Control No.	Goes to the next window: Fig. 5-8
Dosimeter Data Reset	Goes to the next window: Fig. 5-9
Dosimeter Settings (dose rate)	Goes to the next window: Fig. 5-10
Counts Readout	Goes to the next window: Fig. 5-11
Entry/Exit retention data	Goes to the next window: Fig. 5-12
Information data	Goes to the next window: Fig. 5-13

\<Command Button\>

Read again*	Re-starts communication with a dosimeter. If it starts communication by establishing transmission, it processes data read out automatically. *: This is indicated while communication is not established.
Exit	Closes the current window

5.4 Dosimeter Settings
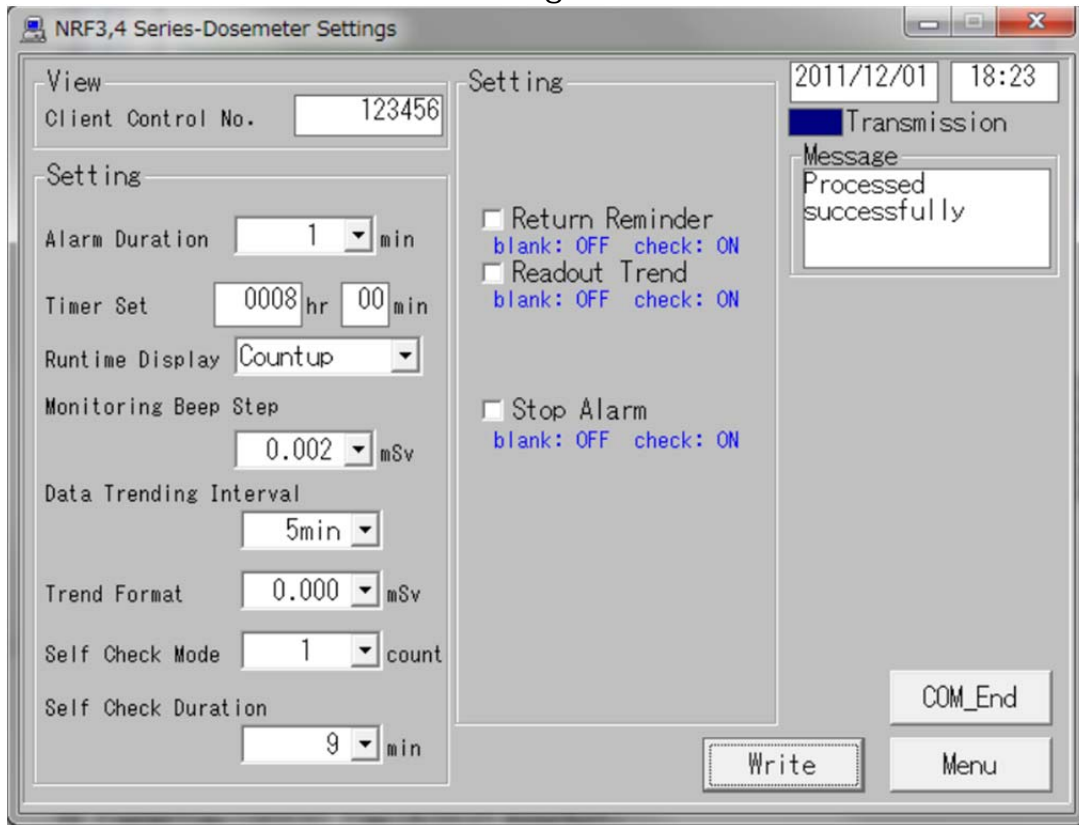
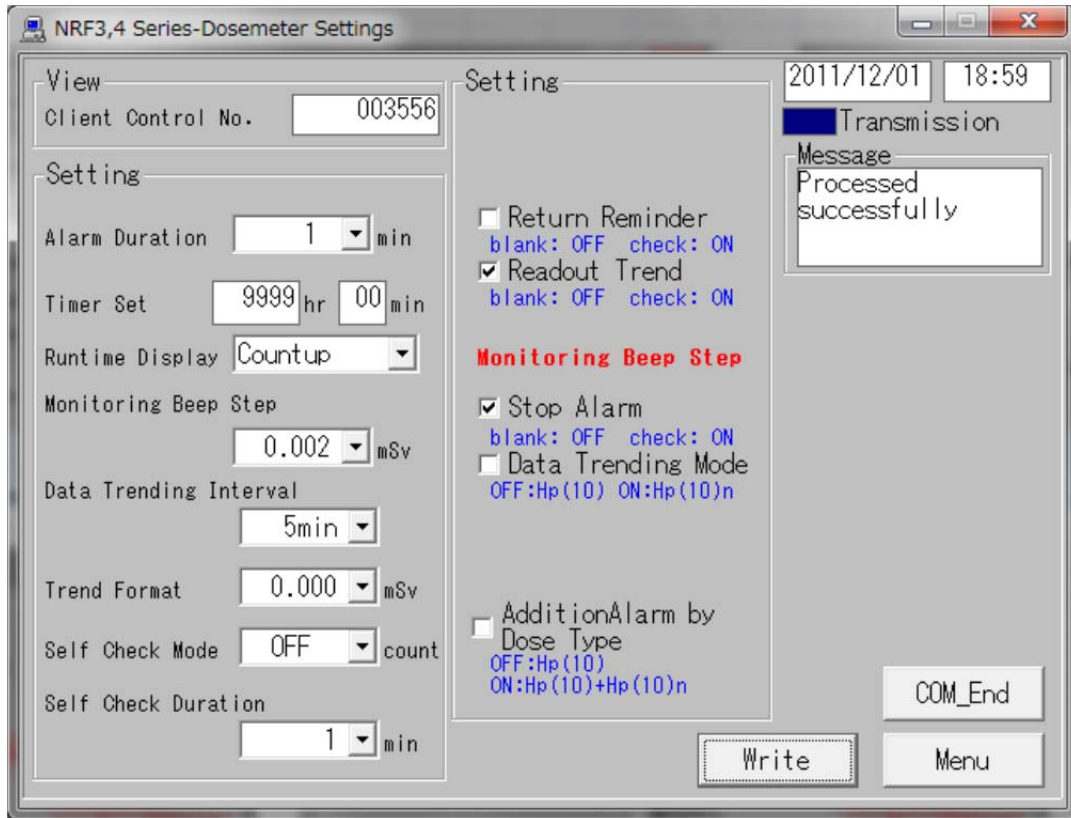**Fig. 5-2-1 Dosimeter Settings Window (for NRF30, NRF40 or Dose-i)**

Fig. 5-2-2 Dosimeter Settings Window (for NRF31)

The user can display the configurations read out from the dosimeter. You can also edit the configuration, and then write the values to the dosimeter.

<View>

Name	Definition, range and unit of the functions	
Client Control No.	Dosimeter ID	000001 to 999999

<Setting>

Name	Definition, range and unit of the functions	
Alarm Duration	Alarm duration length	1 to 9 min
Timer Set	Alarm activation when the work time limit is exceeded.	0000h:01min to 9999h:59min
Runtime Display	Mode selection for indicating operation time.	Count down Count up
Monitoring Beep Step	Beep activation intervals according to the dose increment.	OFF / 0.001 / 0.002 / 0.01 / 0.1 mSv
Data Trending Interval	Data Trending intervals	15 sec/ 30sec/ 1 min/ 5 min/ 10 min/ 30 min/ 60 min/ 90 min

Trend Format	Shifts the decimal point for data trending.	00.00 / 000.0 mSv
Self Check Mode	Enables/ disables Self check, and sets the check count value.	OFF / 1/3/5/10/20/40/80/100 count
Self Check Duration	Decision time for Self check.	1 to 10 minutes. (Note) The time is displayed except when the feature is disabled.
Return Reminder	Alarm to remind to return a dosimeter.	ON / OFF
Readout Trend	Enables/ disables data acquisition through a dedicated external device.	ON / OFF
Stop Alarm	Enables/ disables the button on the dosimeter for alarm cancellation.	ON / OFF
Data Trending Mode*1	Selection of the trend data storage format by dose type.	Hp(10)g Hp(10)n/ Hp(10)g
Addition Alarm by Dose Type *1	Dose type for cumulative dose.	Hp(10)g Hp(10)n/ Hp(10)g

*1: Indicated only on NRF31 and NRF34

<Command Button>

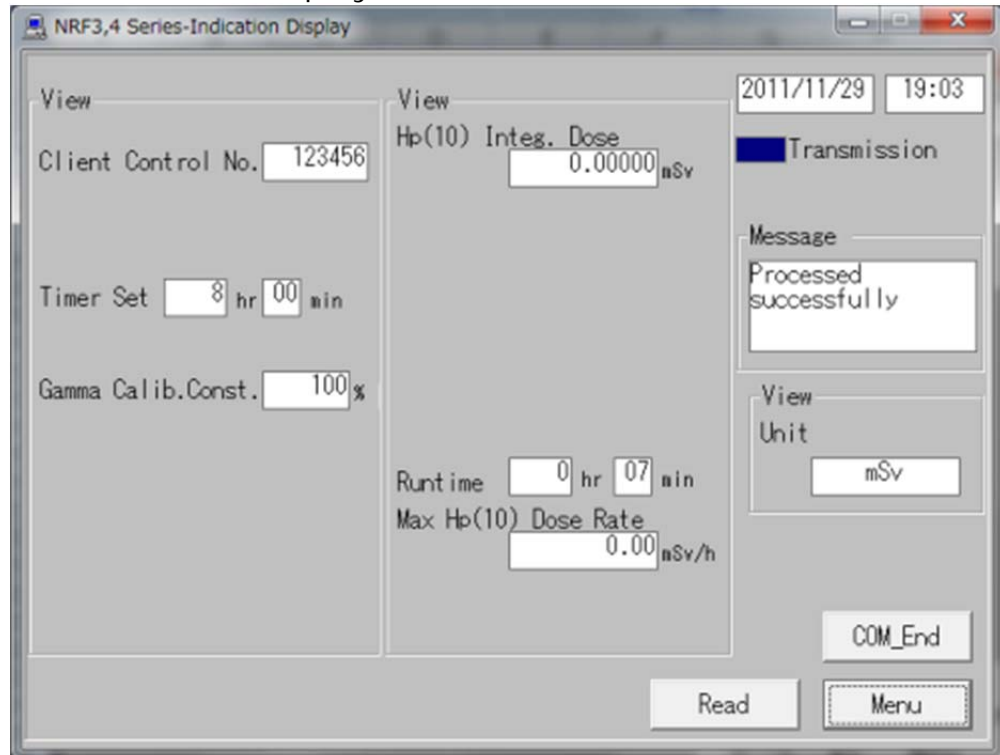| Com_End	Finishes the communication with a dosimeter.
Write	Updates the dosimeter in communication to the configurations on the screen.
Menu	Goes back to the Menu window: Fig. 5-1

5.5 Indication Display

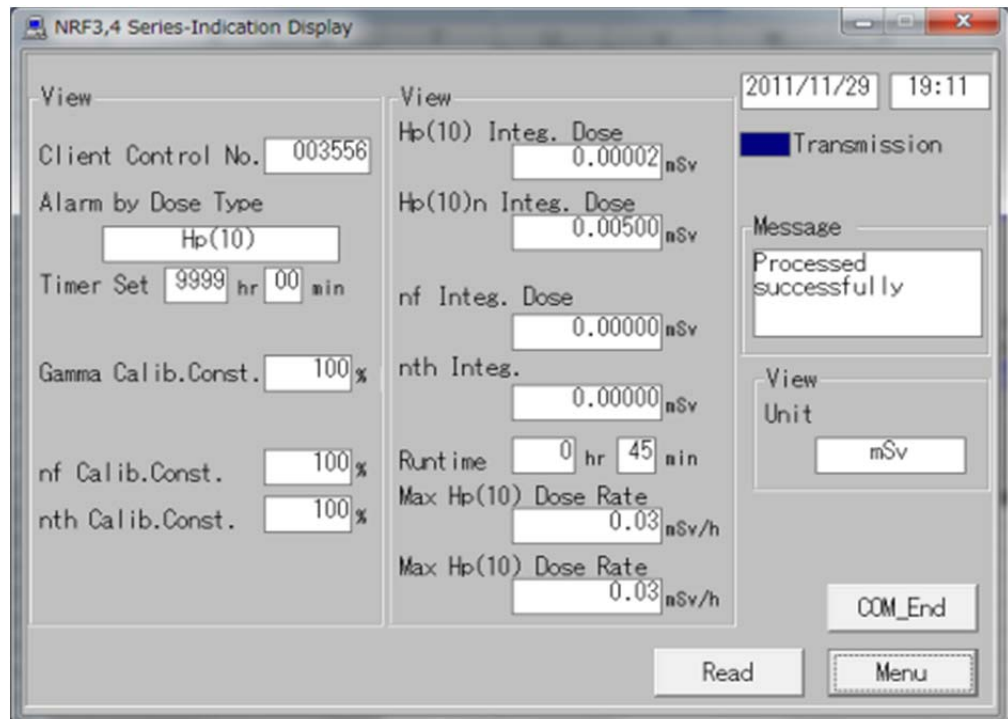**Fig. 5-3-1 Indication Display Window (for NRF30, NRF 40 and Dose-i)**

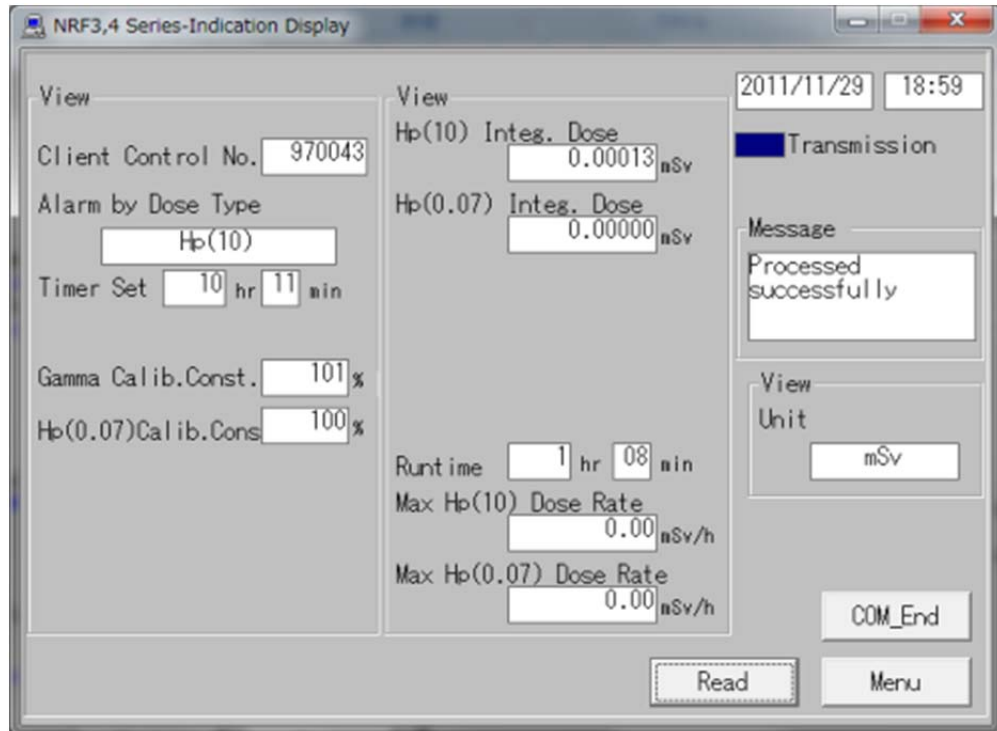**Fig. 5-3-2 Indication Display Window (for NRF31)**

Fig. 5-3-3 Indication Display Window (for NRF34)

You can preview the measured values read out from the dosimeter.

<View>

Name	Definition, range and unit of the functions	
Client Control No.	Dosimeter ID.	000001 to 999999
Alarm by Dose Type *[1]	Alarm output according to the provided dose type(s)	Hp(10)g alarm
Timer Set	Alarm activation when the work time limit is exceeded.	0000h:01min to 9999h:59min
Gamma Calib. Const.	Calibration constant for gamma-ray	Gamma: 60 to 160%
nf Calib. Const. nth Calib. Const.*[2]	Calibration constant for neutron	nf, nth: 20 to 255%
Hp(10) Integ. Dose	Integrated dose of gamma-ray.	0.0 to 9999.999 mSv
Hp(10)n Integ. Dose *[2]	Integrated dose neutron	0.0 to 9999.999 mSv
Hp(0.07) Calib. Const.*[3]	Calibration constant for Hp(0.07)	Hp(0.07): 60 to 160%
nf Integ. Dose *[2]	Integrated dose of nf.	0.0 to 9999.999 mSv

nth Integ. Dose *[2]	Integrated dose of nth.	0.0 to 9999.999 mSv
Runtime	Operation time length of the dosimeter.	0000 h 00 min to 99 h 59 min
Max Hp(10) Dose Rate	Maximum dose rate of gamma-ray	0.0 to 9999.99 mSv/ h
Max Hp(0.07) Dose Rate *[3]	Maximum dose rate of beta-ray	0.0 to 9999.99 mSv/ h

*1) Only displayed on NRF31 and NRF34.
*2) Only displayed on NRF31.
*3) Only displayed on NRF34.

<Command Button>

Com_End	Finishes the communication with a dosimeter.
Read	Starts reading out for data display. This will be executed from initializing the already established communication even during transmission.
Menu	Goes back to the Menu window: Fig. 5-1

5.6 Data Trending Mode
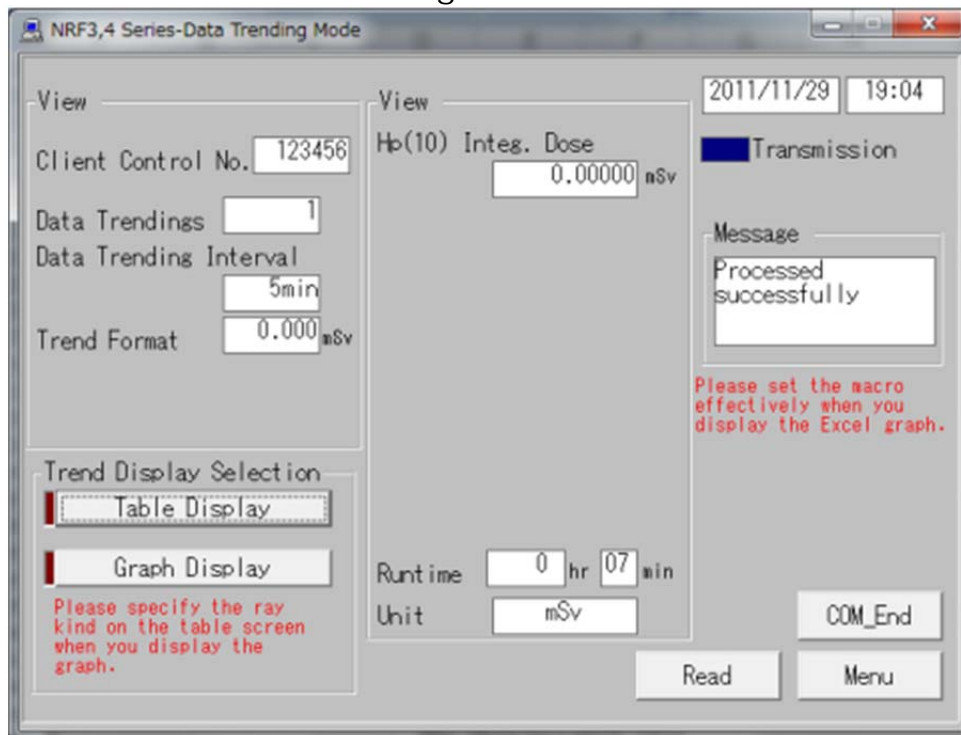
Fig. 5-4-1 Data Trending Mode Window (for NRF30, NRF40 or Dose-i)
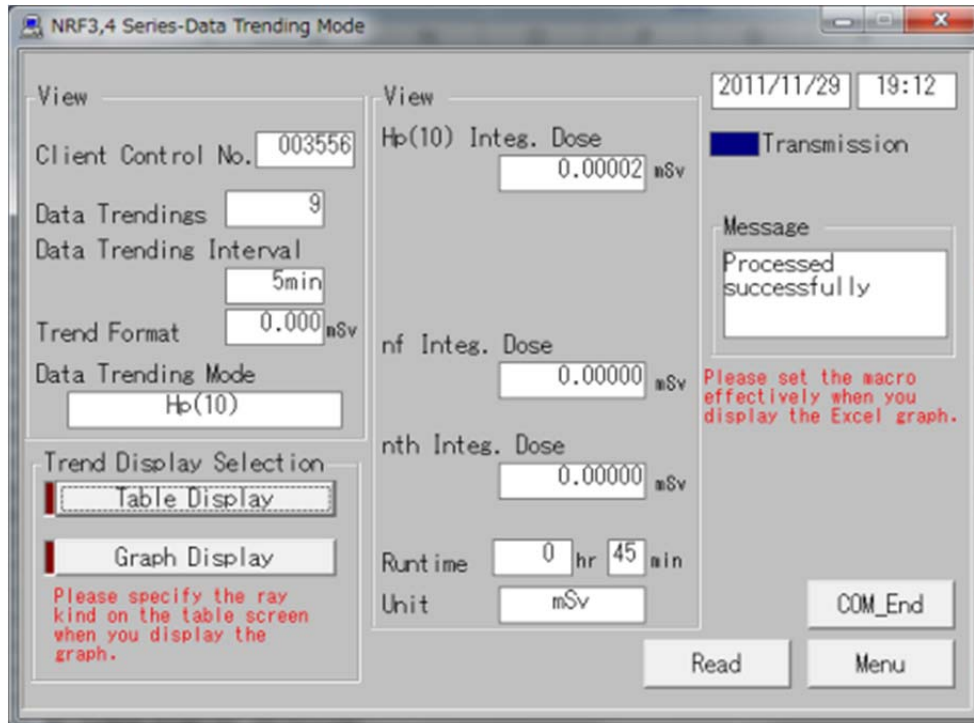

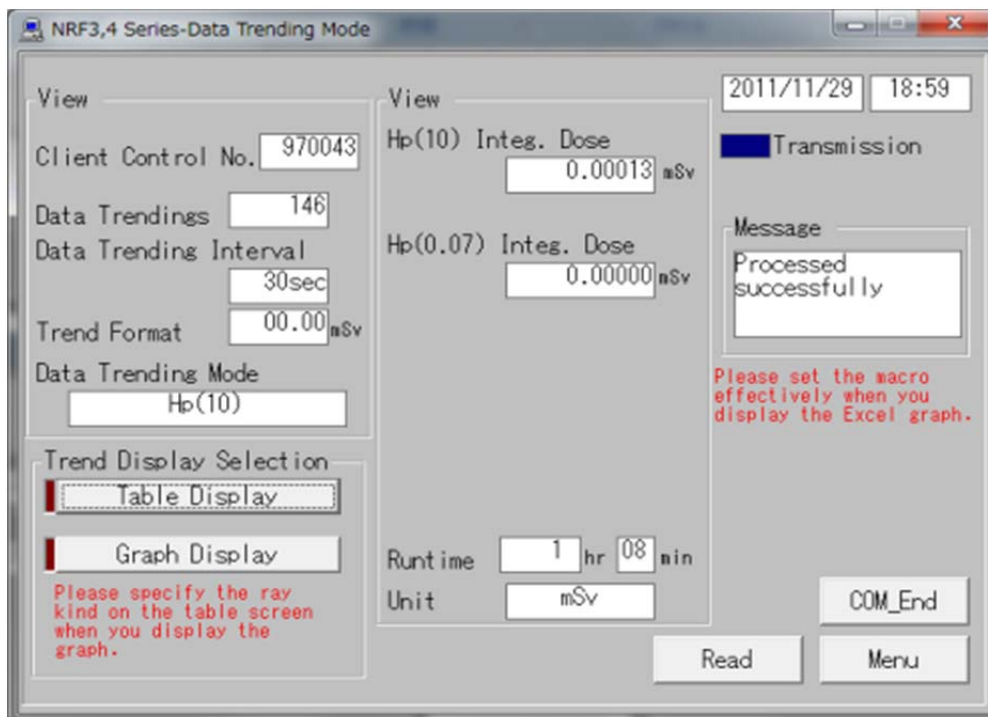**Fig. 5-4-2 Data Trending Mode Window (for NRF31)**

Fig. 5-4-3 Data Trending Mode Window (for NRF34)

You can preview the trend data read out from the dosimeter.

<View>

Name	Definition, range and unit of the functions	
Client Control No.	Dosimeter ID.	000001 to 999999
Data Trendings	The total of the variations of a trend.	One dose type: 1 to 600 Two dose types: 1 to 300
Data Trending Interval	Data Trending intervals	15 sec/ 30sec/ 1 min/ 5 min/ 10 min/ 30 min/ 60 min/ 90 min
Trend Format	Shifts the position of decimal point for data trending.	00.00 / 0.000 mSv
Data Trending Mode	Selection of the trend data storage format by dose type.	Hp(10)g, Hp(10)n / Hp(10)g
Hp(10) Integ. Dose	Integrated dose of gamma-ray	0.0 to 9999.999 mSv
Hp(0.07) Integ. Dose[3]	Integrated dose of neutron	0.0 to 9999.999 mSv
nf Integ. Dose[2]	Integrated dose of nf.	0.0 to 9999.999 mSv
nth Integ. Dose[2]	Integrated dose of nth.	0.0 to 9999.999 mSv
Runtime	Operation time length of the dosimeter	0000 h 00 min to 9999 h 59 min
Unit[1]	Unit to be used.	mSv, mrem

*1) <u>Unit of measurement can be switched for NRF series by this configuration. Regarding Dose-i, please don't change this configuration simply since the unit of measurement is printed on the surface of dosimeter. When unit of measurement of Dose-i is changed, both configuration and surface label shall be changed.</u>
*2) Only displayed on NRF31.
*3) Only displayed on NRF34.

<Command Button>

Table Display	Reads out the Data Trend, and then goes to the next window: Fig. 5-4-4
Graph Display	Reads out the Data Trend, and then goes to the next window: Fig. 5-4-5
Com_End	Finishes the communication with a dosimeter.
Read	Starts reading out for data display. This will be executed from initializing the already established communication even during transmission.
Menu	Goes back to the Menu window: Fig. 5-1

Attention: The prompt window <Communication error> will appear during data readout if a new trend does not exist. You should wait until a data trending step given in the dosimeter settings window has passed, and then start data readout.
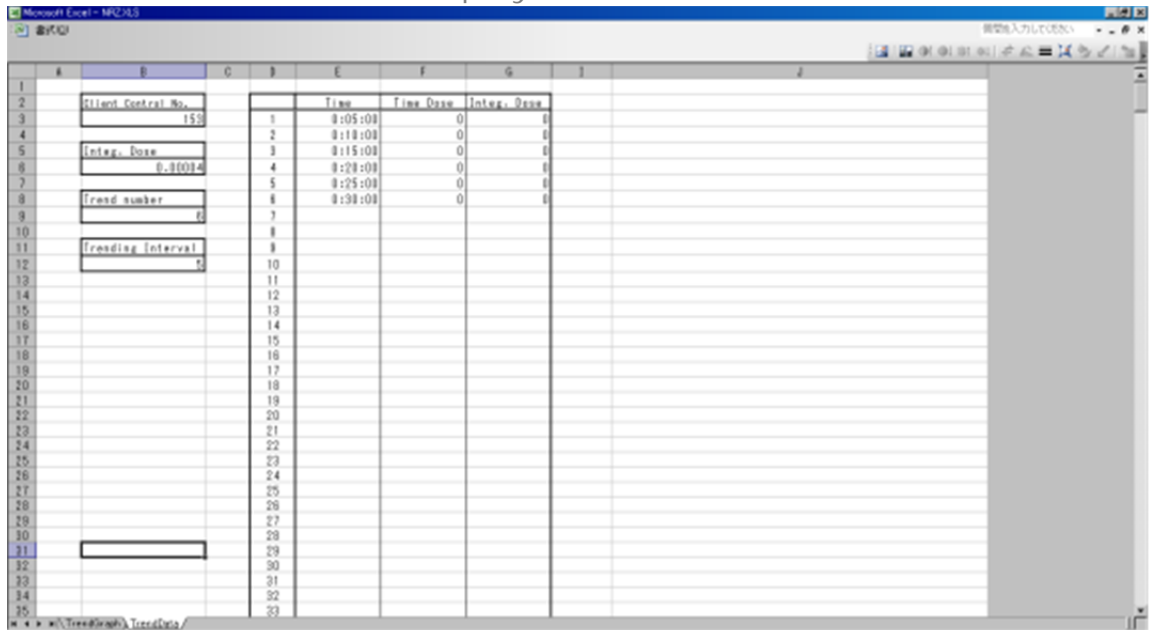
5.6.1 Table Display

Fig. 5-4-4 Table Display Window

You can display the Data Trend read out from a dosimeter in an EXCEL sheet.

<View>

Name	Definition, range and unit of the functions	
Client Control No.	Dosimeter ID	000001 to 999999
Integ. Dose	Integrated dose	0.0 to 9999.999 mSv
Trend number	The total of the variations of a trend	One dose type: 1 to 600 Two dose types: 1 to 300
Trending Interval	Data creating intervals	15 sec/ 30sec/ 1 min/ 5 min/ 10 min/ 30 min/ 60 min/ 90 min
Time	Elapsed time	00:00:00 to 99:99:99
Time Dose	Dose per trend pitch duration	0.0 to 99.99 mSv or 0.000 to 9.999 mSv
Integ. Dose	Integrated value of time dose	0.0 to 9999.999 mSv

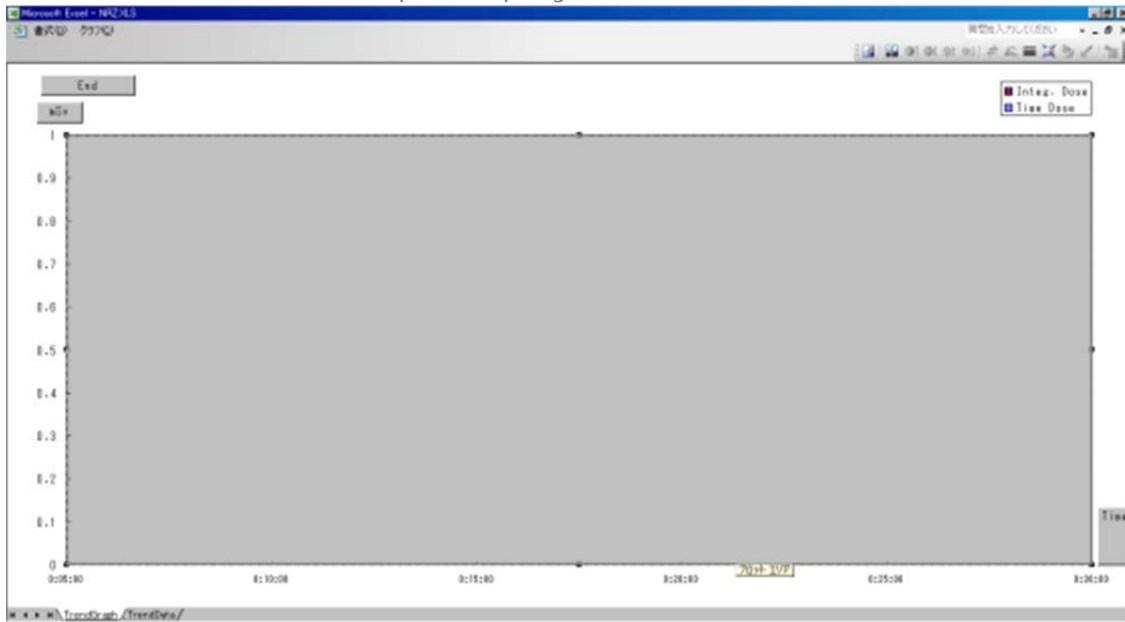### 5.6.2 Graph Display

Fig. 5-4-5 Graph Display Window

The Data Trend readout from a dosimeter can be displayed in an EXCEL spreadsheet.

<Command Button>

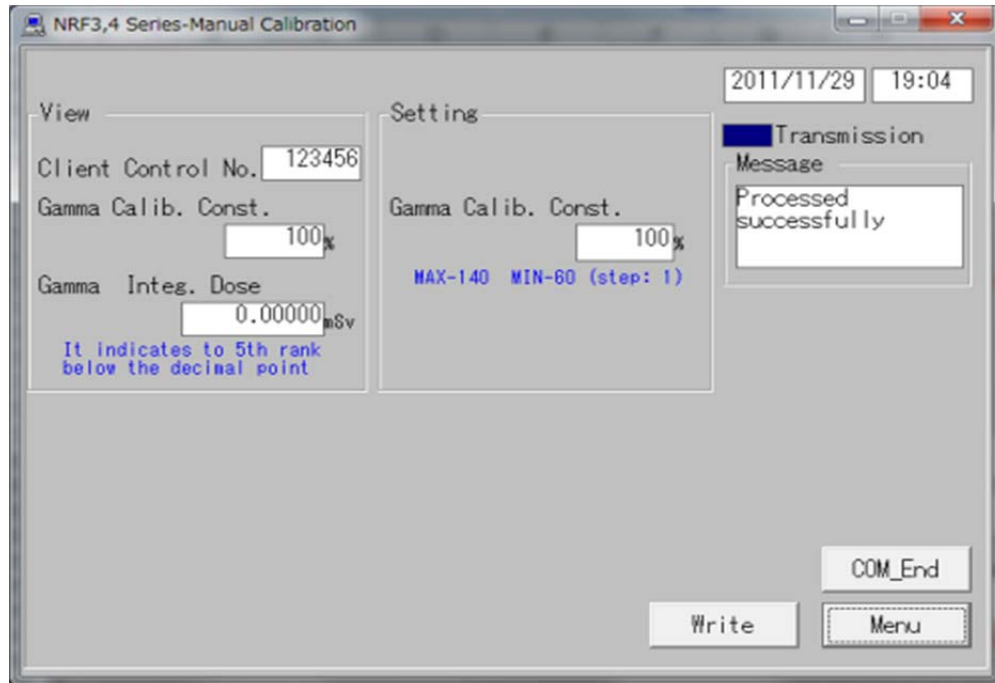| End	Close this Graph Display window.

5.7 Manual Calibration

Fig. 5-5-1 Manual calibration Window (for NRF30, NRF40 or Dose-i)
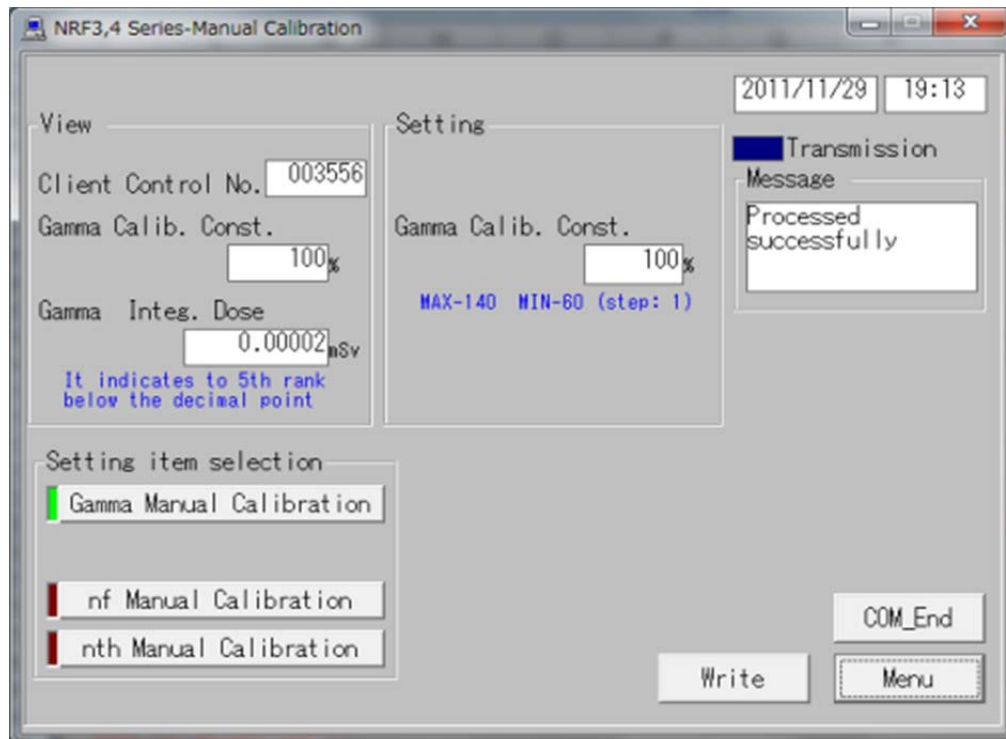

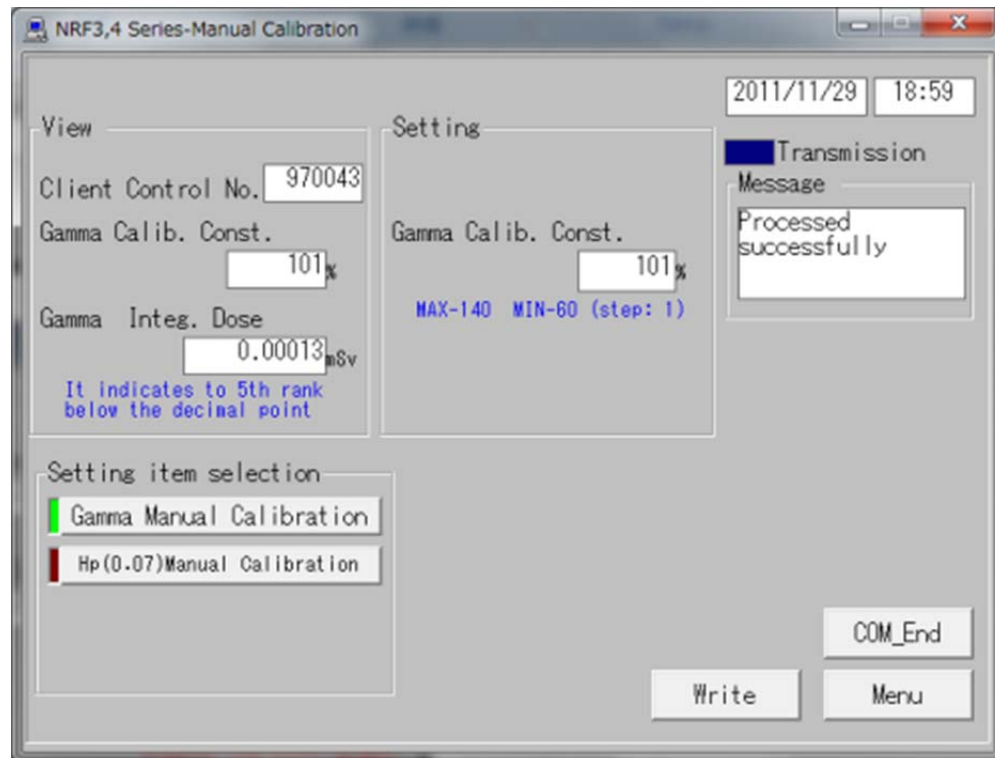**Fig. 5-5-2 Manual calibration Window (for NRF31)**

Fig. 5-5-3 Manual calibration Window (for NRF34)

Here preview integrated dose and calibration constant read out from a dosimeter.
Edit the configuration directly, and then write the values to the dosimeter.

<View>

Name	Definition, range, and unit of the functions	
Client Control No.	Dosimeter ID	000001 to 999999
Calib. Const.	Calibration constant read out from a dosimeter. (for gamma/ nf / nth rays)	Gamma: 60 to 140% nf, nth: 20 to 255% (Unit: 1)
Integ. Dose	Integrated dose (for gamma/ nf / nth rays)	0.0 to 9999.999mSv

<Setting>

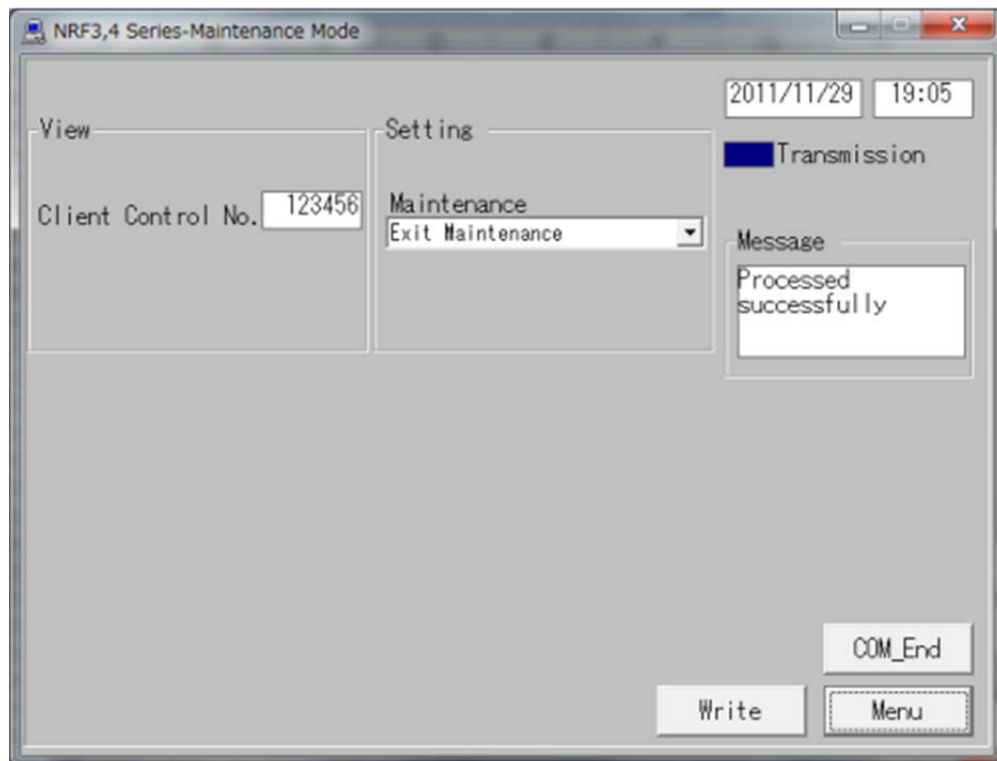| Name	Definition, range, and unit of the functions	
Calib. Const.	Update value of dose to be written to a dosimeter. (for gamma/ nf / nth rays)	Gamma: 60 to 140% nf, nth: 20 to 255% (Unit: 1)

<Command Button>

Gamma Manual Calibration *[1]	Goes to Manual Calibration window for gamma ray.
Hp(0.07)Manual Calibration *[3]	Goes to Manual Calibration window for beta ray.
nf Manual Calibration *[2]	Goes to Manual Calibration window for nf ray.
nth Manual Calibration *[2]	Goes to Manual Calibration window for nth ray.
Com_End	Finishes the communication with a dosimeter.
Write	Updates the dosimeter in communication to the configurations on the screen.
Menu	Goes back to the Menu window: Fig. 5-1

*1) Only displayed on NRF31 and NRF34.
*2) Only displayed on NRF31.
*3) Only displayed on NRF34.

5.8 Maintenance Mode

Fig. 5-6 Maintenance Mode Window

With selection of maintenance mode needed for dosimeter maintenance and checking work, you can write (switching of maintenance mode and normal mode) to a dosimeter.

<View>

Name	Definition, range and unit of the functions	
Client Control No.	Dosimeter ID	000001 to 999999

<Setting>

Name	Definition, range and unit of the functions
LCD Check Mode	Turn on all LCDs.
Count Value Display Mode	Indication of internal counter
Buzzer Volume Check Mode	Activation of continuous buzzer
Exit Maintenance	Cancelation of maintenance mode (switching to normal mode)

<Command Button>

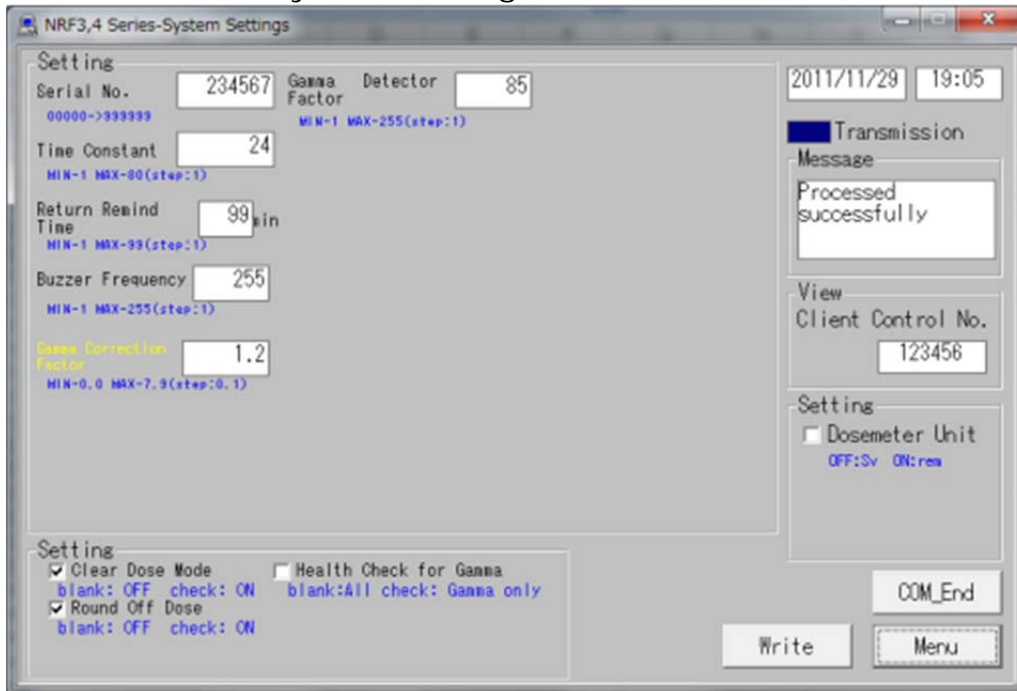|	
Com_End	Finishes the communication with a dosimeter.
Write	Updates the dosimeter in communication to the configurations on the screen.
Menu	Goes back to the Menu window: Fig. 5-1

5.9 System Setting

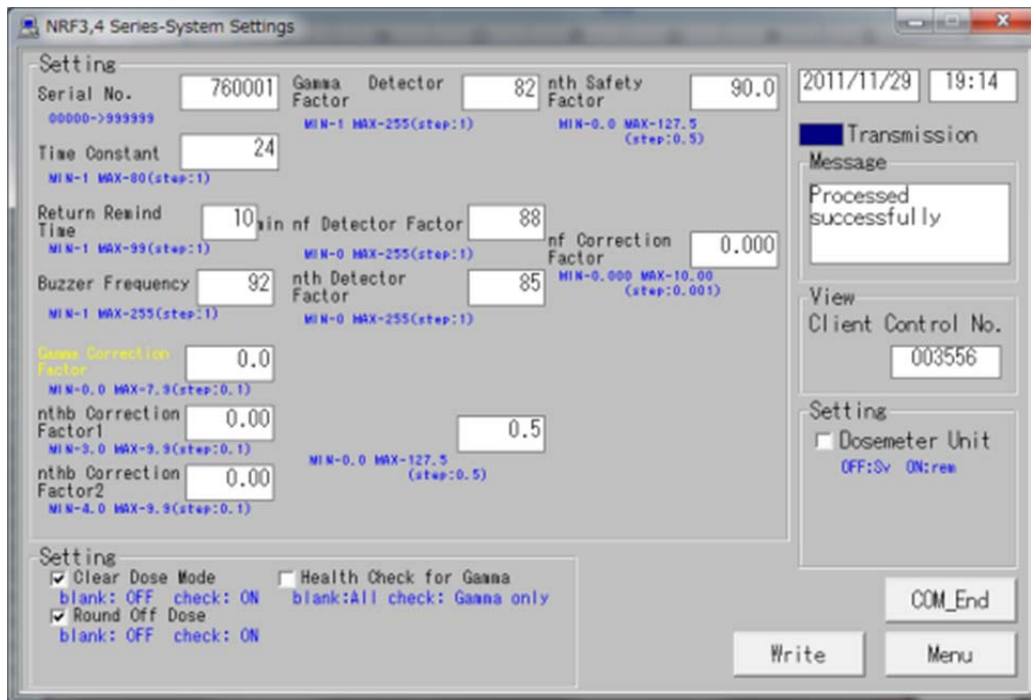**Fig. 5-7-1 System Setting Window (for NRF30, NRF40 or Dose-i)**

Fig. 5-7-2 System Setting Window (for NRF31)

Preview integrated dose and calibration constant read out from a dosimeter.
Edit the configuration directly, and then write the values to the dosimeter.

<View>

Name	Definition, range and unit of the functions	
Client Control No.	Dosimeter ID	000001 to 999999

<Setting>

Name	Definition, range and unit of the functions	
Serial No.	Setting of dosimeter ID	Display only
Time Constant	Setting of gamma constant	1 to 80 (Step: 1)
Return Remind Time	Reminder time not to forget to get the dosimeter back	1 to 99 (Step: 1)
Buzzer Frequency	Setting of the buzzer frequency	1 to 255 (Step: 1)
Gamma Correction Factor1	Setting of Gamma correction factor	0.0 to 7.9 (Step: 0.1)
nthb Correction Factor1*2	Setting of nthb correction factor 1	3.0 to 9.9 (Step: 0.1)

nthb Correction Factor2*2	Setting of nthb correction factor 2	4.0 to 9.9 (Step: 0.1)
Gamma Detector Factor	Setting of gamma Detector factor	Display only
nf Detector Factor *2	Setting of nf detector factor	Display only
nth Detector Factor *2	Setting of nth detector factor	Display only
nf Correction Factor *2	Setting of nf correction factor	0.000 to 10.00 (Step: 0.001)
nth Safety Factor *2	Setting of nf safety factor	0.0 to 127.5 (Step: 0.5)
Hp (0.07) Correction Factor (C) *3	Setting of Hp (0.07) correction factor	0.000 to 50.000 (Step: 0.001)
Hp(0.07) Detector Factor *3	Setting of Hp (0.07) detector factor	Display only
Hp (0.07)Subtract-hold Time *3	Determined time of Hp (0.07)	OFF / ON
Hp (0.07) G-Count Correct Factor2(f) *3	Hp (0.07) gamma correction factor 2(f)	2.0 to 7.0 (Step: 0.1)
Hp (0.07) G-Count Correct Factor2(E) *3	Hp (0.07) gamma correction factor (E)	0.000 to 9.000 (Step: 0.001)
Clear Dose Mode	Enable/disable initialization of integrated dose data with insertion of a reset pin.	OFF / ON
Round Off Dose	ON/OFF of rounding off for integrated dose.	OFF / ON
Health Check for Gamma	Enable/disable soundness check for gamma detector	OFF / ON

*1) Only displayed on NRF31 and NRF34.
*2) Only displayed on NRF31.
*3) Only displayed on NRF34.

<Command Button>

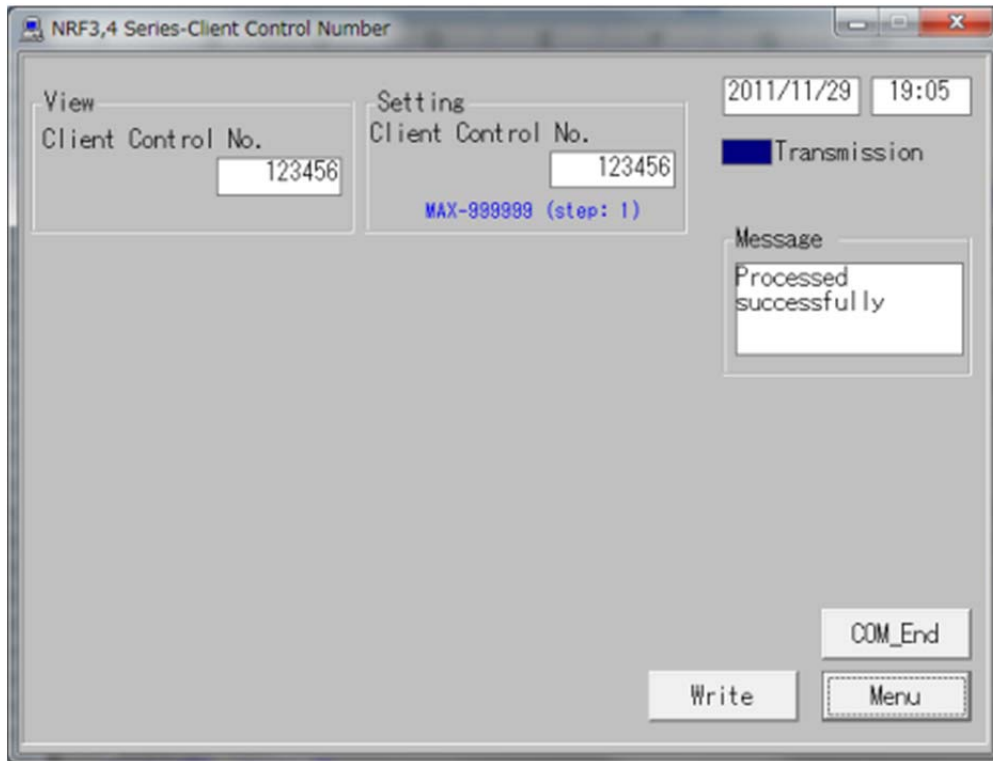| Com_End	Finishes the communication with a dosimeter.
Write	Updates the dosimeter in communication to the configurations on the screen.
Menu	Goes back to the Menu window: Fig. 5-1

5.10 Client Control Number

Fig. 5-8 Client Control Number Window

You can preview the Client Control Number read out from a dosimeter.

<View>

Name	Definition, range and unit of the functions	
Client Control No.	Dosimeter ID	000001 to 999999

<Setting>

Name	Definition, range and unit of the functions	
Client Control No.	Dosimeter ID	000001 to 999999

<Command Button>

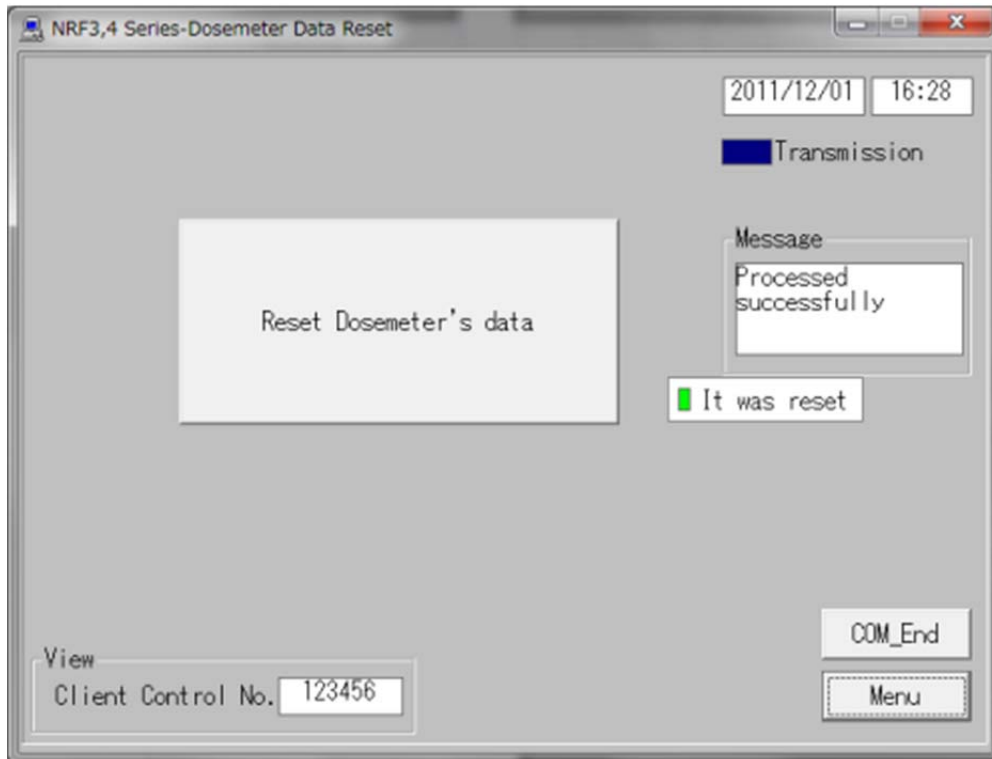| Com_End	Finishes the communication with a dosimeter.
Write	Updates the dosimeter in communication to the configurations on the screen.
Menu	Goes back to the Menu window: Fig. 5-1

5.11 Dosimeter Data Reset

Fig. 5-9 Dosimeter Data Reset Window

<View>

Name	Definition, range, and unit of the functions	
Client Control No.	Dosimeter ID	000001 to 999999

<Command Button>

Com_End	Finishes the communication with a dosimeter.
Reset Dosemeter's data	Resets information on a dosimeter.
Menu	Goes back to the Menu window: Fig. 5-1

Attention: By clicking "Reset Dosimeter's Data," the following data will be deleted. Process it with caution.

- Integrated Dose

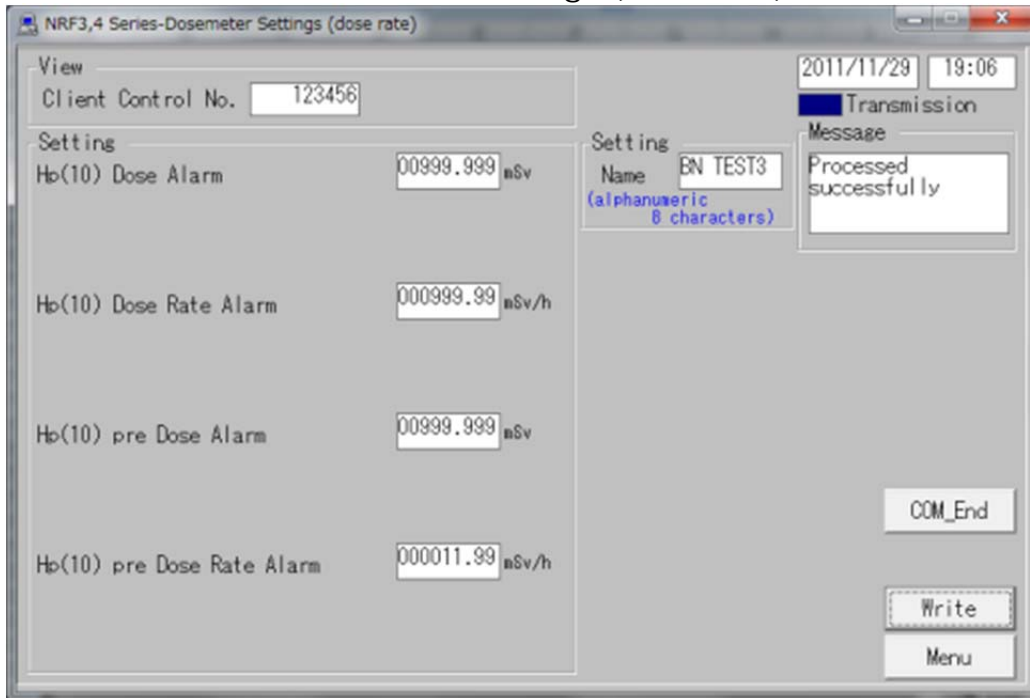- Data Trend

5.12 Dosimeter Settings (dose rate)

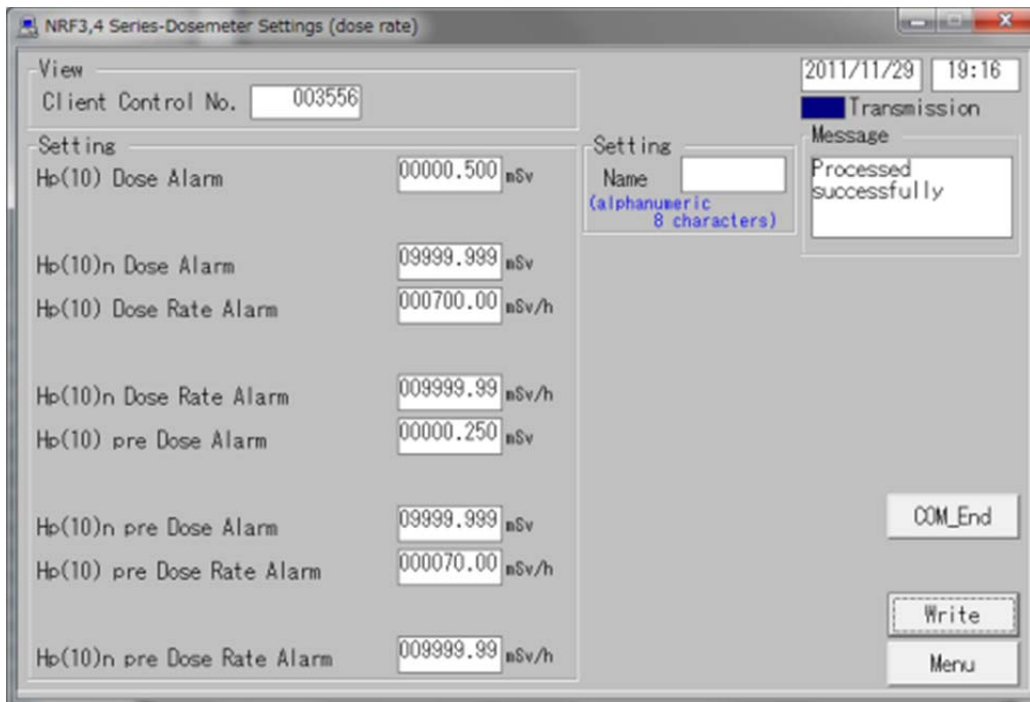**Fig. 5-10-1 Dosimeter settings (dose rate) window (for NRF30, NRF40 or Dose-i)**

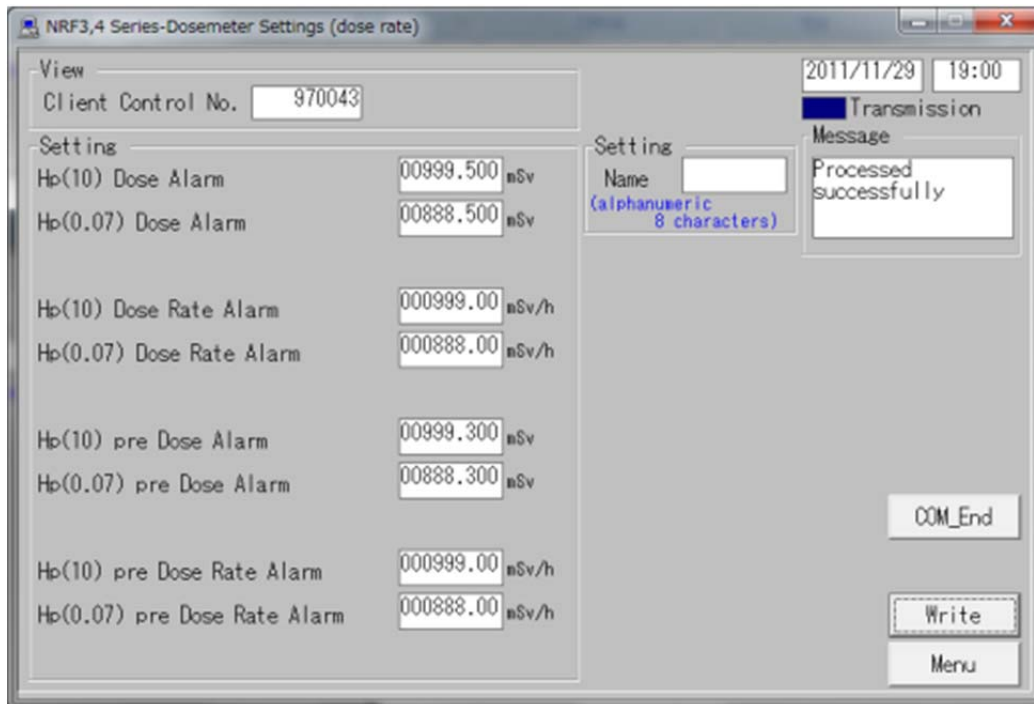**Fig. 5-10-2 Dosimeter settings (dose rate) window (for NRF31)**

Fig. 5-10-3 Dosimeter settings (dose rate) window (for NRF34)

A user can read out required information for dosimeter settings (dose rate) and update them to the dosimeter.

<View>

Name	Definition, range, and unit of the functions	
Client Control No.	Dosimeter ID	000001 to 999999

<Setting>

Name	Definition, range, and unit of the functions	
Hp (10) Dose Alarm	Hp (10) integrated dose alarm threshold	0.001 to 9999.999 mSv
Hp (0.07) Dose Alarm *3	Hp (0.07) integrated dose alarm threshold	0.001 to 9999.999 mSv
Hp (10)n Dose Alarm *2	Hp (10)n integrated dose alarm threshold	0.01 to 9999.99 mSv/ h
Hp (10) Dose Rate Alarm	Hp (10) dose rate alarm threshold	0.01 to 9999.99 mSv/ h
Hp (0.07) Dose Rate Alarm *3	Hp (0.07) dose rate alarm threshold	0.001 to 9999.999 mSv
Hp (10)n Dose Rate Alarm *2	Hp (10)n dose rate alarm threshold	0.001 to 9999.999 mSv

Hp(10) Pre Dose Alarm	Hp (10) integrated dose pre alarm threshold	0.001 to 9999.999 mSv
Hp(0.07) Pre Dose Alarm *[3]	Hp (0.07) integrated dose pre alarm threshold	0.001 to 9999.999 mSv
Hp(10)n Pre Dose Alarm *[2]	Hp (10)n integrated dose pre alarm threshold	0.01 to 9999.99 mSv/ h
Hp(10) Pre Dose Rate Alarm	Hp (10) dose rate pre alarm threshold	0.01 to 9999.99 mSv/ h
Hp(0.07) Pre Dose Rate Alarm *[3]	Hp (0.07) dose rate pre alarm threshold	0.001 to 9999.999 mSv
Hp(10)n Pre Dose Rate Alarm *[2]	Hp (10)n dose rate pre alarm threshold	0.001 to 9999.999 mSv
Name	User name	8 alphanumeric characters (capital) Note) Indicates up to 8 characters on dosimeter's display.

*1) Only displayed on NRF31 and NRF34.
*2) Only displayed on NRF31.
*3) Only displayed on NRF34.

<Command Button>

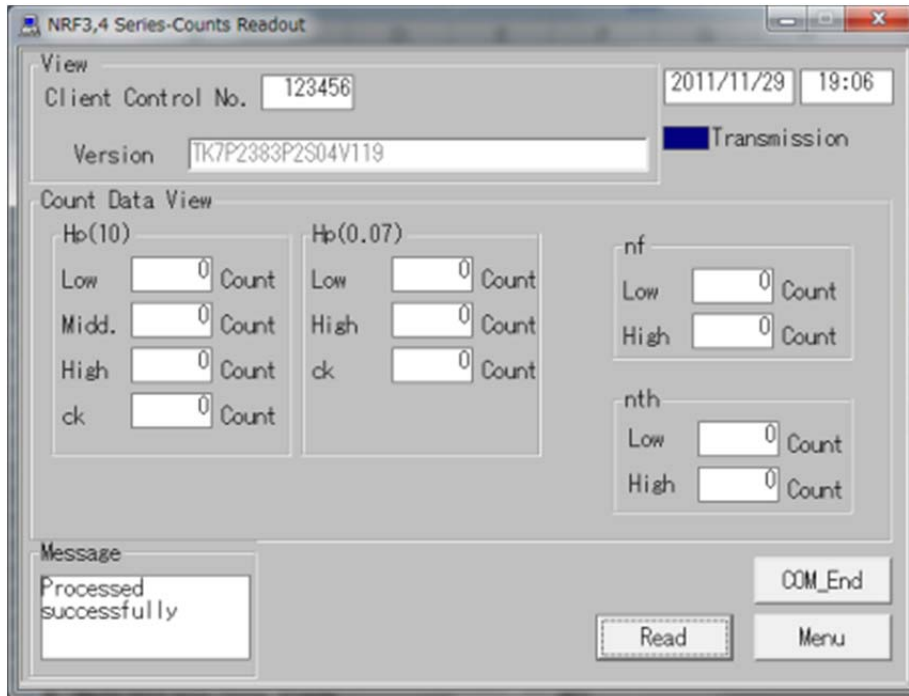| Com_End	Finishes the communication with a dosimeter.
Write	Updates the dosimeter in communication to the configurations on the screen.
Menu	Goes back to the Menu window: Fig. 5-1

5.13 Counts Readout

Fig. 5-11 Counts Readout window

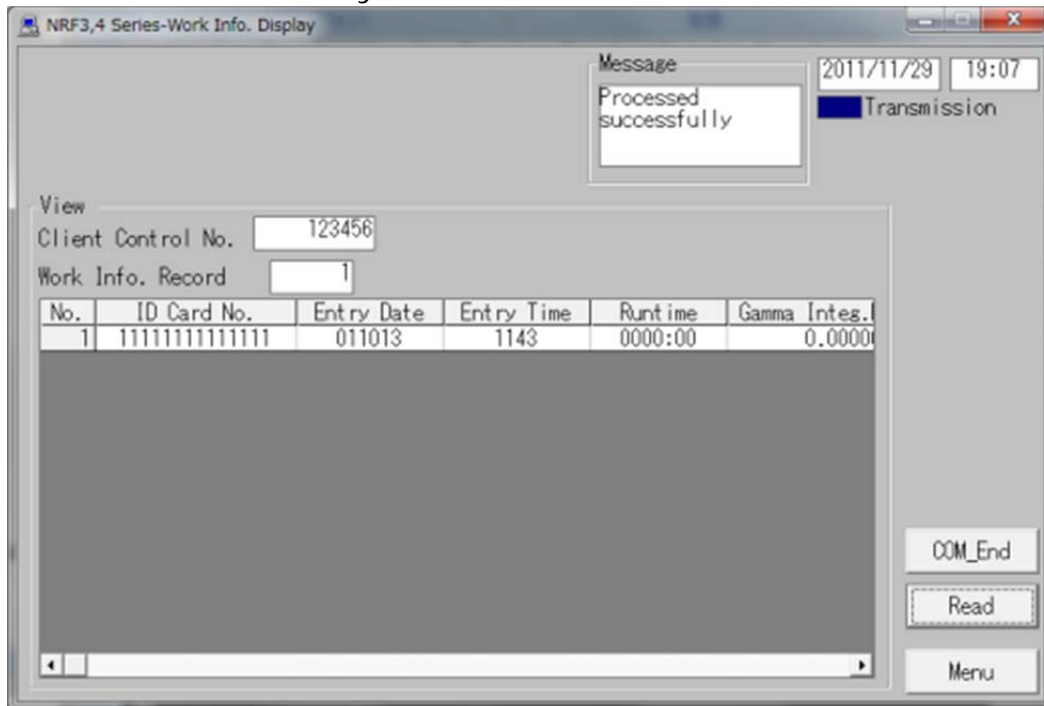You can preview count values read out from a dosimeter.

\<View\>

Name	Definition, range and unit of the functions	
Client Control No.	Dosimeter ID	000001 to 999999
Hp (10) Low	Count of Hp (10)Low	000000 to 999999 count
Hp (10) Mid	Count of Hp (10)Mid	000000 to 999999 count
Hp (10) High	Count of Hp (10)High	000000 to 999999 count
Hp (10) ck	Count of Hp (10)ck	000000 to 999999 count
Hp (0.07) Low	Count of Hp (0.07) Low (reserved)	000000 to 999999 count
Hp (0.07) High	Count of Hp (0.07) High (reserved)	000000 to 999999 count
Hp (0.07) ck	Count of Hp (0.07) High (reserved)	000000 to 999999 count
nf Low	Count of nf Low	000000 to 999999 count
nf High	Count of nf High	000000 to 999999 count

| nth Low | Count of nth Low | 000000 to 999999 count |
| nth High | Count of nth High | 000000 to 999999 count |

<Command Button>

Com_End	Finishes the communication with a dosimeter.
Read	Starts reading out for data display. This will be executed from initializing the already established communication even during transmission.
Menu	Goes back to the Menu window: Fig. 5-1

5.14 Entry/Exit Retention Data

Fig. 5-12 Entry/Exit retention data Window

Displays entry/exit history data in a dosimeter.

<View>

Name	Definition, range and unit of the functions	
Client Control No.	Dosimeter ID	000001 to 999999
Work Info. Record	Number of work info record data	0 to 500 count
ID Card No.	ID card number	000000 to 999999
Entry Date	Entry date	YYMMDD
Entry Time	Entry time	hhmm
Runtime	Operation time length of the dosimeter	hhhh:mm
Gamma Integ. Dose	Gamma-ray integrated dose	0.001 to 9999.999 mSv
Beta Integ. Dose	Beta-ray integrated dose	0.001 to 9999.999 mSv

<Command Button>

Com_End	Finishes the communication with a dosimeter.
Read	Starts reading out for data display. This will be executed from initializing the already established communication even during transmission.
Menu	Goes back to the Menu window: Fig. 5-1

5.15 Information Data
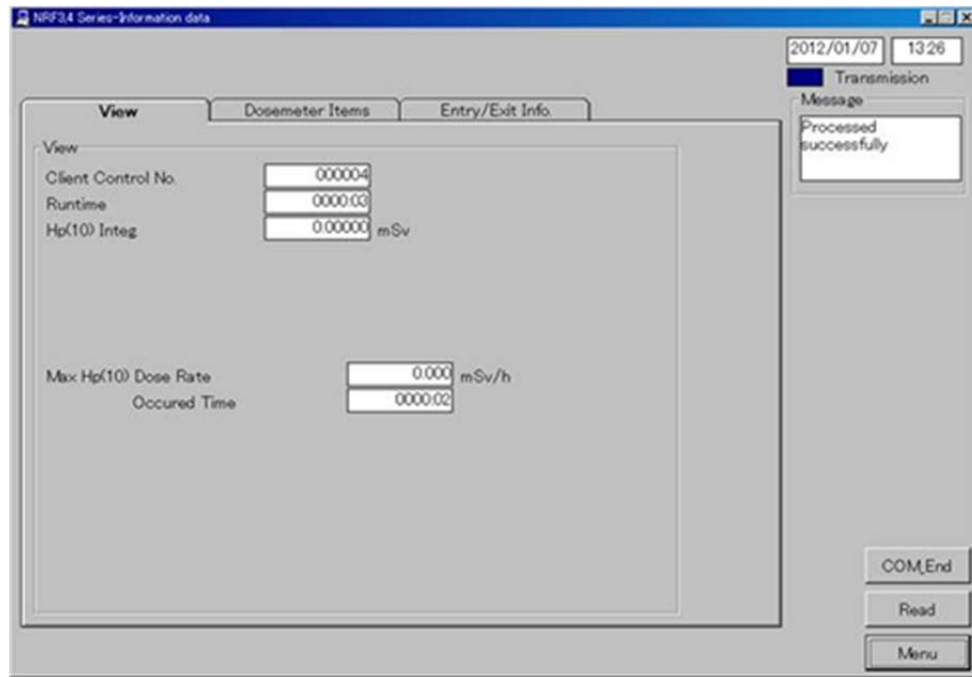
1. Dose Information

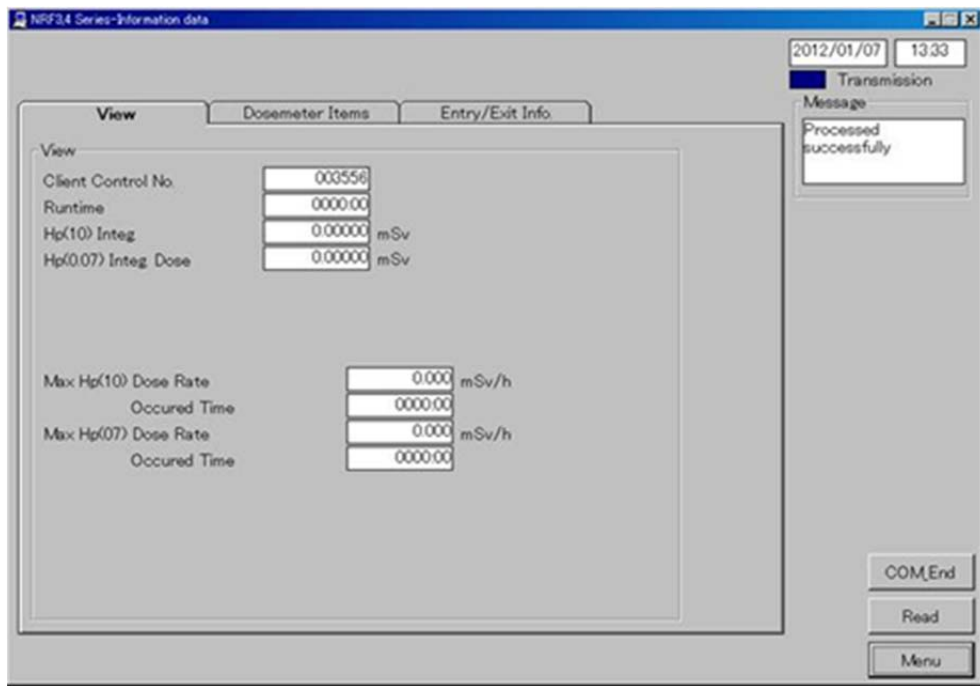**Fig. 5-13-1 Dose Information Window (for NRF30, NRF40 or Dose-i)**

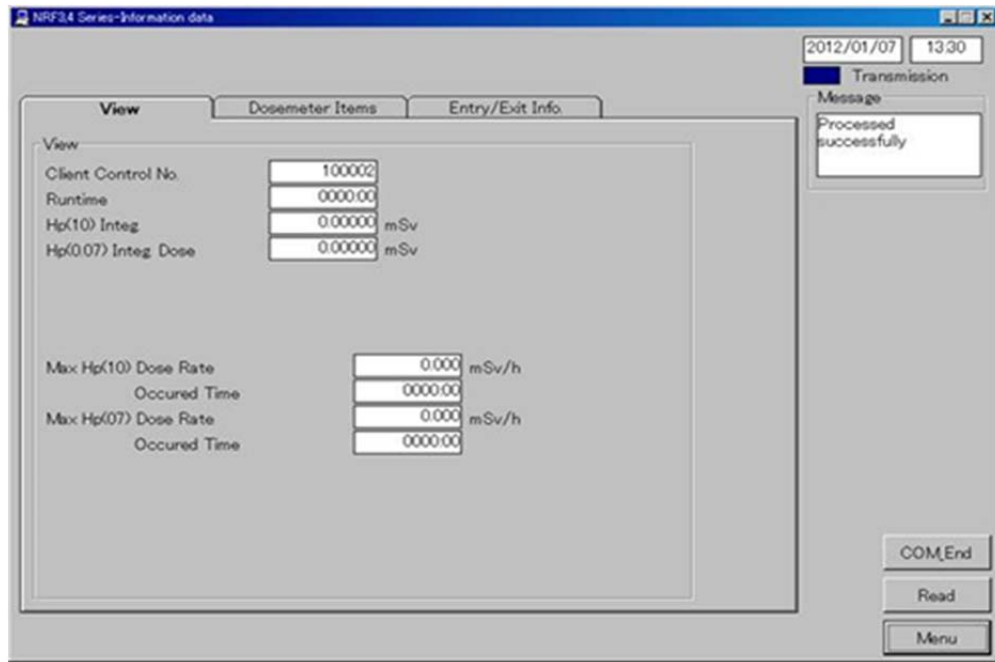**Fig. 5-13-2 Dose Information Window (for NRF31)**

Fig. 5-13-3 Dose Information Window (for NRF34)

Displays dose information by reading data in a dosimeter.

<View>

Name	Definition, range, and unit of the functions	
Client Control No.	Dosimeter ID	000001 to 999999
Runtime	Operation time length of the dosimeter	hh:mm
Hp (10) Integ. Dose	Hp (10) integrated dose	0.000 to 9999.999 mSv
Hp (0.07) Integ. Dose *[3]	Hp (0.07) integrated dose	0.000 to 9999.999 mSv
Max Hp (10) Dose Rate	Maximum Hp (10) dose rate	0.01 to 9999.99 mSv/ h
Max Hp (10) Occurred time *[2]	Maximum Hp (10) dose rate time	hh:mm
Max Hp (10)n Dose Rate	Maximum Hp (10)n dose rate	0.01 to 9999.99 mSv/ h
Max Hp (10)n Occurred time *[2]	Maximum Hp (10)n dose rate time	hh:mm
Max Hp (0.07) Dose Rate *[3]	Maximum Hp (0.07) dose rate	0.01 to 9999.99 mSv/ h
Max Hp (0.07) Occurred time *[3]	Maximum Hp(0.07) dose rate time	hh:mm

*1) Only displayed on NRF31 and NRF34.
*2) Only displayed on NRF31.
*3) Only displayed on NRF34.

<Command Button>

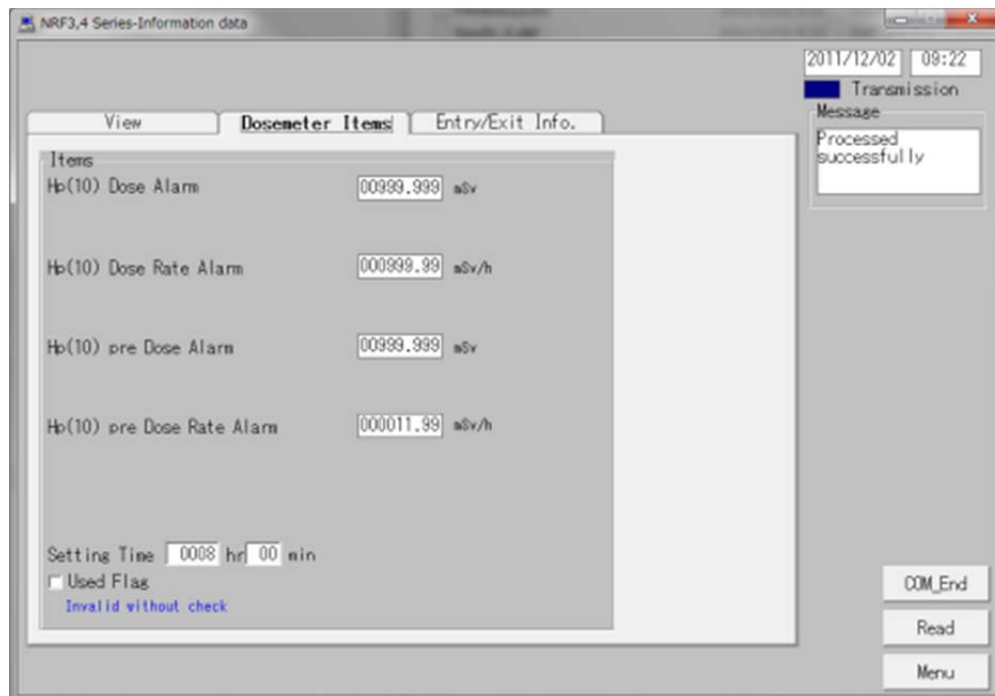| Com_End	Finishes the communication with a dosimeter.
Read	Starts reading out for data display. This will be executed from initializing the already established communication even during transmission.
Menu	Goes back to the Menu window: Fig. 5-1

2. Setting Value Information

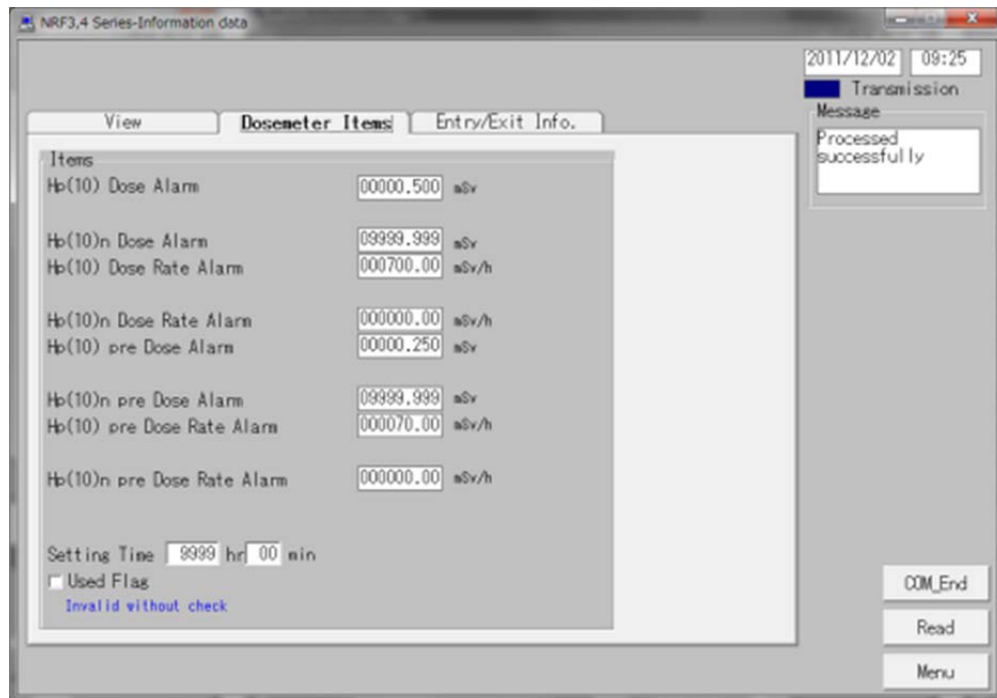**Fig. 5-13-4 Setting value Information Window (for NRF30, NRF40 or Dose-i)**

Fig. 5-13-5 Setting value Information Window (for NRF31)
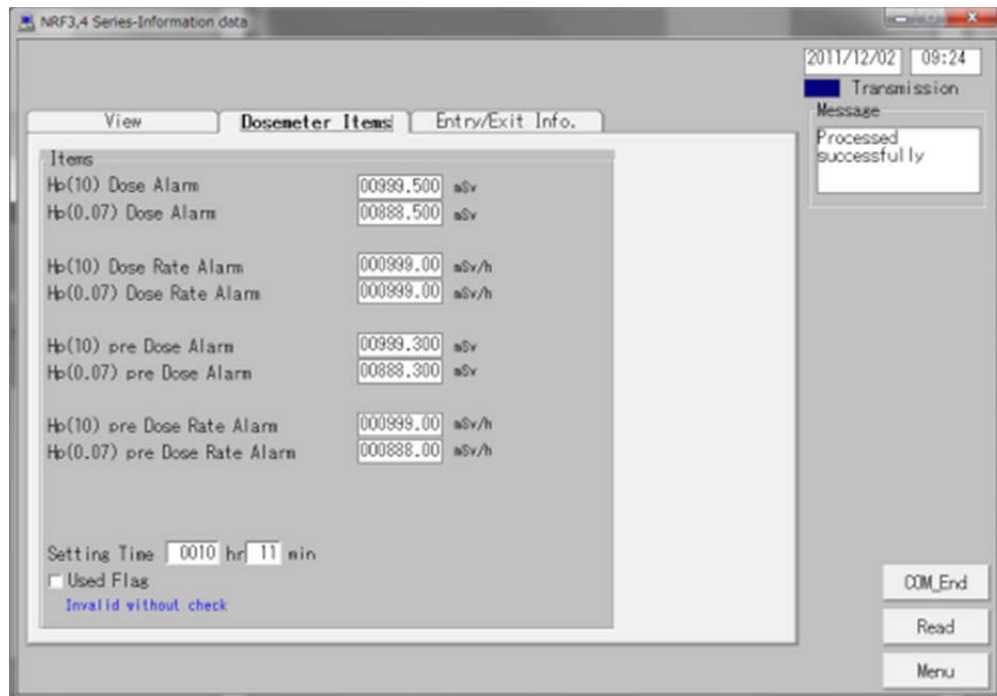

Fig. 5-13-6 Setting value Information Window (for NRF34)

Displays alarm setting value information by reading data in a dosimeter.

<View>

Name	Definition, range, and unit of the functions	
Hp (10) Dose Alarm	Hp (10) integrated dose alarm threshold	0.001 to 9999.999 mSv
Hp (0.07) Dose Alarm *[3]	Hp (0.07) integrated dose alarm threshold	0.001 to 9999.999 mSv
Hp (10)n Dose Alarm *[2]	Hp (10)n integrated dose alarm threshold	0.01 to 9999.99 mSv/ h
Hp (10) Dose Rate Alarm	Hp (10) dose rate alarm threshold	0.01 to 9999.99 mSv/ h
Hp (0.07) Dose Rate Alarm *[3]	Hp (0.07) dose rate alarm threshold	0.001 to 9999.999 mSv
Hp (10)n Dose Rate Alarm *[2]	Hp (10)n dose rate alarm threshold	0.001 to 9999.999 mSv
Hp (10) Pre Dose Alarm	Hp (10) integrated dose pre alarm threshold	0.001 to 9999.999 mSv
Hp (0.07) Pre Dose Alarm *[3]	Hp (0.07) integrated dose pre alarm threshold	0.001 to 9999.999 mSv
Hp (10)n Pre Dose Alarm *[2]	Hp (10)n integrated dose pre alarm threshold	0.01 to 9999.99 mSv/ h
Hp (10) Pre Dose Rate Alarm	Hp (10) dose rate pre alarm threshold	0.01 to 9999.99 mSv/ h
Hp (0.07) Pre Dose Rate Alarm *[3]	Hp (0.07) dose rate pre alarm threshold	0.001 to 9999.999 mSv
Hp (10)n Pre Dose Rate Alarm *[2]	Hp (10)n dose rate pre alarm threshold	0.001 to 9999.999 mSv
Setting time	Alarm setting time	hh:mm

*1) Only displayed on NRF31 and NRF34.
*2) Only displayed on NRF31.
*3) Only displayed on NRF34.

<Command Button>

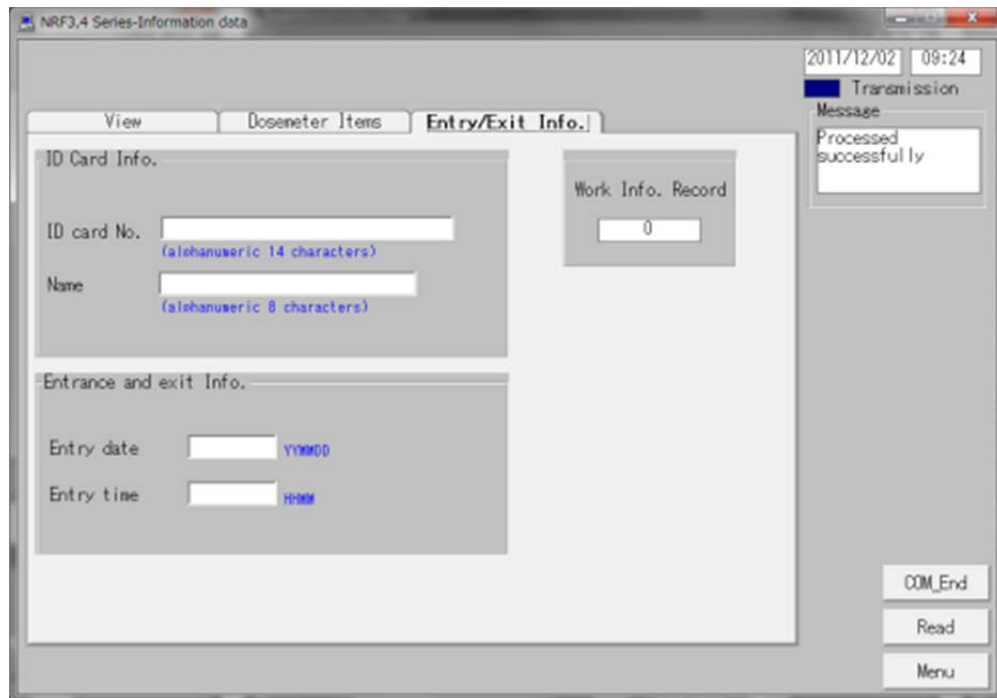| Com_End	Finishes the communication with a dosimeter.
Read	Starts reading out for data display. This will be executed from initializing the already established communication even during transmission.
Menu	Goes back to the Menu window: Fig. 5-1

3. Entry/Exit Information

Fig. 5-13-7 Entry/Exit Information Window

Displays entry/exit information by reading data in a dosimeter.

<View>

Name	Definition, range, and unit of the functions	
ID Card No.	ID card number	000000 to 999999
Name.	User name	8 alphanumeric characters (capital) Note) indicate up to 8 characters on dosimeter's display.
Entry Date	Entry date	YYMMDD
Entry Time	Entry time	hhmm
Work Info. Record	Number of work information record	0 to 10 count

<Command Button>

Name	Definition, range, and unit of the functions
Com_End	Finishes the communication with a dosimeter.

Read	Starts reading out for data display. This will be executed from initializing the already established communication even during transmission.
Menu	Goes back to the Menu window: Fig. 5-1

Section
6

6.0 Troubleshooting

6.1 Errors and Solutions

Transmission Error – communication error between a computer and a Dosimeter Setting Device.

During computer startup, processing, or data communication:

Error	Suggested Solution
<Establishing communication> Reading unit, or cable abnormal	Check the cable connection.
<Status Process> No response	Check the cable connection.

During data readout from a dosimeter.

Error	Suggested Solution
<Reading Process (trend data acquisition)> Dosimeter not communicating	Retry reading out.
<Reading Process (trend data acquisition)> Dosimeter communication error	Retry reading out.
<Reading Process (trend acquisition data acquisition)> No response	Check the dosimeter setting device. Check the connection with USB cable.
<Trend data rending process> Trend data does not exist	No trend data. Create data first, and then read out.

During writing configurations to the dosimeter.

Error	Suggested Solution
<Writing Process> No response	Process reading out, first.
<Writing Process> Dosimeter communication error	Process reading out, first.

| <Writing Process>
No response | Process reading out, first.
Check the cable connection. |

Note: Please restart PC if the errors not listed in this section occurred.

Internal Error - Errors detected by an internal check.

All starting of writing/occurrence of abnormality on configuration range:

Error	Suggested Solution
Input Error of xxxx	Re-enter the value within the valid range.

Error during communication start – Errors detected by a computer internal check when attempted to write or to read out trend data.

When attempting the writing process.

Error	Suggested Solution
Dosimeter not communicating, cannot write.	Start reading process, first.

Error when attempted to reading out trend data:

Error	Suggested Solution
Dosimeter not communicating.	Cancel the trend data readout, and then start regular reading process.

Note: Please restart PC if the errors not listed in this section occurred.

Section	7.0 Abnormalities
7	

Problem	Solution
Cannot establish communication.	Process reading out, first. Check the cable connection. Please contact Ludlum Measurements if experiencing frequent transmission errors.

Section	# 8.0 Maintenance
8	

Check the Dosimeter Setting Device as specified below to ensure its performance.

To be checked:	**Procedure**
External appearance	Visual check for any foreign objects such as dirt or dust balls. Check every six months, or every time a transmission error occurs. Check point; inside of USB port.
Cable connection	Check any looseness on connection of cables. Check every six months, or every tiem a transmission error occurs. Check point; cables.
Infrared communication	Put close dosimeter to the IR head and check the transmission. Check every six months, or every time a transmission error occurs.