



## **SOFTWARE GUIDE**

### **PERSONAL DOSE TRACKER (MYSQL)**

**Software for**  
**X-Ray and Gamma Radiation Personal Dosimeters**  
**PM1610**  
**PM1603/04**  
**PM1621**  
**PM1208M**

---

<b>Documented Hardware</b>	<b>X-Ray and Gamma Radiation Personal Dosimeters series PM1603/04, PM1610, and PM1621</b>
<b>Documented Software</b>	<b>Personal Dose Tracker (MySQL)</b>
<b>Manufacturer</b>	<b>Polimaster</b>

## Copyright

**Polimaster © 2009-2011. All rights reserved.**

According Copyright protection laws and regulations, current Software Guide cannot be copied in any way without the prior approval in writing from the **Polimaster** company.

## Trademarks

**Microsoft, Windows 2000, Windows XP, Windows NT, Windows Vista, MS Access** are registered trademarks of Microsoft Corporation. Current Software Guide may include another trademarks, as well as copyrighted ones.

## Validity

The software guide has passed validity and correctness check.

It contains instructions and descriptions that are considered to be true for the **Personal Dose Tracker (MySQL)** software as of the time of this Software Guide publication.

Documented Software and its settings are subject to change with no substantial effect on its functionality. Polimaster reserves the right to change Software in such a way not mentioning it in Software Guides.

First edition – May, 2009

Second edition – December, 2009

Third edition – February, 2011

Developed by **Polimaster** company.

---

## CONTENTS

<b>INTRODUCTION .....</b>	<b>6</b>
<b>NOTE ABOUT THE GUIDE .....</b>	<b>6</b>
<b>GETTING STARTED .....</b>	<b>6</b>
<b>SYMBOLS USED IN THE GUIDE .....</b>	<b>6</b>
<b>SOFTWARE OVERVIEW .....</b>	<b>7</b>
<b>SOFTWARE APPLICATION .....</b>	<b>8</b>
<b>SOFTWARE FUNCTIONS .....</b>	<b>9</b>
<b>AN EXAMPLE OF THE PERSONNEL EXPOSURE DOSE MONITORING SYSTEM.....</b>	<b>10</b>
<b>SYSTEM REQUIREMENTS.....</b>	<b>11</b>
<b>PC REQUIREMENTS .....</b>	<b>11</b>
<b>PERIPHERY REQUIREMENTS .....</b>	<b>11</b>
<b>SOFTWARE REQUIREMENTS.....</b>	<b>11</b>
<b>ADDITIONAL EQUIPMENT REQUIREMENTS .....</b>	<b>11</b>
<b>RECOMMENDED INITIAL PROCEDURES.....</b>	<b>12</b>
<b>SOFTWARE INSTALLATION .....</b>	<b>13</b>
<b>PROGRAM AUTORUN .....</b>	<b>13</b>
<b>FORCED PROGRAM INSTALLATION .....</b>	<b>13</b>
<b>“MYSQL SERVER” SOFTWARE INSTALLATION .....</b>	<b>17</b>
<b>CONFIGURATION OF “MYSQL SERVER” SOFTWARE.....</b>	<b>23</b>
<b>“PERSONAL DOSE TRACKER (MYSQL)” SOFTWARE INSTALLATION .....</b>	<b>29</b>
<b>FEATURES OF "PERSONAL DOSE TRACKER (MYSQL)" SOFTWARE INSTALLATION UNDER WINDOWS 2000 OS .....</b>	<b>31</b>
<b>CONNECTING/DISCONNECTING INSTRUMENTS TO PC.....</b>	<b>32</b>
<b>CONNECTING/DISCONNECTING PM1610 TO PC .....</b>	<b>32</b>
<b>PM1610 DRIVER INSTALLATION .....</b>	<b>33</b>
<b>CONNECTING/DISCONNECTING OTHER SUPPORTED INSTRUMENT SERIES TO A PC.....</b>	<b>37</b>

<b>SOFTWARE START.....</b>	<b>38</b>
<b>DATABASE INSTALLATION .....</b>	<b>38</b>
<b>“PERSONAL DOSE TRACKER (MYSQL)” PROGRAM ENTRY .....</b>	<b>41</b>
<b>PROGRAM EXIT .....</b>	<b>44</b>
<b>MAIN PROGRAM WINDOW .....</b>	<b>45</b>
<b>PROGRAM MENU .....</b>	<b>47</b>
<b>TOOLBAR.....</b>	<b>48</b>
<b>TOOLBAR SETTINGS .....</b>	<b>49</b>
<b>SYSTEM COMPONENTS FIELD .....</b>	<b>50</b>
<b>ON-LINE INFORMATION FIELD.....</b>	<b>51</b>
<b>"USERS AND GROUPS" CARD .....</b>	<b>51</b>
<b>"USERS GROUP" CARD .....</b>	<b>52</b>
<b>"USER" CARD .....</b>	<b>53</b>
<b>"INSTRUMENTS" CARD .....</b>	<b>54</b>
<b>SOFTWARE INTERFACE LANGUAGE.....</b>	<b>56</b>
<b>SOFTWARE SETTINGS .....</b>	<b>57</b>
<b>SAVING PROGRAM SETTINGS.....</b>	<b>61</b>
<b>USERS, USER GROUPS.....</b>	<b>62</b>
<b>ACCESS RIGHTS .....</b>	<b>63</b>
<b>MAIN ADMINISTRATOR.....</b>	<b>64</b>
<b>MAIN ADMINISTRATOR RIGHTS.....</b>	<b>64</b>
<b>OPERATORS GROUP .....</b>	<b>65</b>
<b>OPERATOR RIGHTS.....</b>	<b>65</b>
<b>USERS GROUP .....</b>	<b>66</b>
<b>USER RIGHTS .....</b>	<b>66</b>
<b>ADD USERS GROUP .....</b>	<b>67</b>
<b>ACCESS RIGHTS OF THE GROUP MEMBERS (USERS) .....</b>	<b>68</b>
<b>GROUP RIGHT TO WORK WITH THE INSTRUMENTS .....</b>	<b>69</b>

<b>EDIT/DELETE USER GROUP.....</b>	<b>71</b>
EDIT GROUP.....	72
DELETE GROUP.....	72
ADD USER .....	74
<b>EDIT/DELETE USER.....</b>	<b>82</b>
EDIT USER INFORMATION.....	82
DELETE USER.....	83
<b>THRESHOLDS LIST.....</b>	<b>84</b>
DANGER ALERTS.....	84
ADD/EDIT/DELETE THRESHOLD .....	86
USER THRESHOLD .....	87
GROUP THRESHOLD .....	90
EXCEEDED THRESHOLDS LIST.....	92
<b>WORKING WITH INSTRUMENT .....</b>	<b>94</b>
ASSIGN/DETACH INSTRUMENT TO/FROM THE USER.....	95
ASSIGN INSTRUMENT .....	95
<b>DATA PROCESSING. INSTRUMENT DETACHMENT/EMERGENCY</b>	
<b>INSTRUMENT DETACHMENT.....</b>	<b>99</b>
<b>EMERGENCY DETACHMENT.....</b>	<b>103</b>
<b>INSTRUMENT OPERATION SETTINGS .....</b>	<b>105</b>
<b>READ/RESET INSTRUMENT DOSE.....</b>	<b>111</b>
<b>READING INSTRUMENT HISTORY .....</b>	<b>115</b>
<b>FORCED READING OF INSTRUMENT HISTORY .....</b>	<b>115</b>
<b>WORKING WITH HISTORY.....</b>	<b>121</b>
<b>FILTER BY DATE.....</b>	<b>121</b>
<b>REPORT GENERATION/PRINTOUT .....</b>	<b>122</b>
<b>WORKING WITH GRAPH .....</b>	<b>124</b>
<b>CONTEXT MENU COMMANDS .....</b>	<b>127</b>

# INTRODUCTION

## NOTE ABOUT THE GUIDE

The Software Guide familiarizes users with technical specifications and functions of the “**Personal Dose Tracker (MySQL)**” software.

Software Guide provides full and detailed information on “**Personal Dose Tracker (MySQL)**” software interface structure, describes all the program functions and software-hardware communication.

## GETTING STARTED

Carefully study this Software Guide before installation and first software run. It is recommended to avoid wrong actions and to enhance software operational reliability.

Upon reading retain this Software Guide for future references.

## SYMBOLS USED IN THE GUIDE

The following symbols are used in the Software Guide to accentuate some important information. Symbols are given as follows:



### Attention!

This mark is used in the guide to warn of something important, that may lead to data loss or hardware malfunction if ignored.



### Note!

A hand mark is used in the guide to denote some advice or recommendations for improvement in software use effectiveness.

For easier navigation within the guide, it is thematically divided by chapters and sections.

Step-by-step instructions go with screen captures for reference.

## SOFTWARE OVERVIEW

**“Personal Dose Tracker (MySQL)”** software (further – Software), developed by **Polimaster** company, enables serial connection from 1 to 100 **X-Ray** and **Gamma Radiation Personal Dosimeters series PM1603/04, PM1610, and PM1621**. Software enables information transfer to a personal computer to analyze, process, and generate corresponding databases in a control center or an expertise center.

Software is installed on a personal computer (further – PC) and is intended to be used with the **X-Ray** and **Gamma Radiation Personal Dosimeters series PM1603/04, PM1610, and PM1621** (further – Instrument) manufactured by Polimaster.



### **Note!**

**Personal Dose Tracker (MySQL)** software should be used by qualified and properly trained personnel.



### **Attention!**

Any attempt to communicate with other devices using this software may have unpredictable results.

**“Personal Dose Tracker (MySQL)”** software communicates with **PM1610** series instruments via **USB-interface** using USB cable (mini USB cable type).

**“Personal Dose Tracker (MySQL)”** software communicates with **PM1603/04, PM1208 and PM1621** series instruments via **IR interface, using IrDA protocol**.



User must have at least initial experience in working with PCs under Windows family system to operate **“Personal Dose Tracker (MySQL)”** software.

## SOFTWARE APPLICATION

Software allows creating a strict interworking architecture consisting of the users with various responsibility levels and instruments.

Software application range is defined by the customers and their requirements to:

- Structuring;
- Parameters of assignment/detachment of **instrument** to each person;
- Personal monitoring of the dose equivalent rate (further - DER);
- Personal dose equivalent (further - DE);
- Monitoring of instruments' assignment/detachment history.

### Software is intended for:

- Improvement of effectiveness and operational safety of:
  - Border police and customs;
  - Security services and Emergence response services;
  - Medical institutions;
  - Carriers;
  - Atomic plants personnel;
  - Radiologic and isotope (tracing) laboratories;
  - Emergency services;
  - Civil protection;
  - Fire-fighting service;
  - Police.
- Providing personal safety while working with radionuclides and ionizing radiation sources when carrying out researches;
- Providing personal safety of personnel by means of constant dose and dose rate control, and instant alarm if there is personal radiation hazard;
- Early warning of possible radiation contamination or terrorist attack.

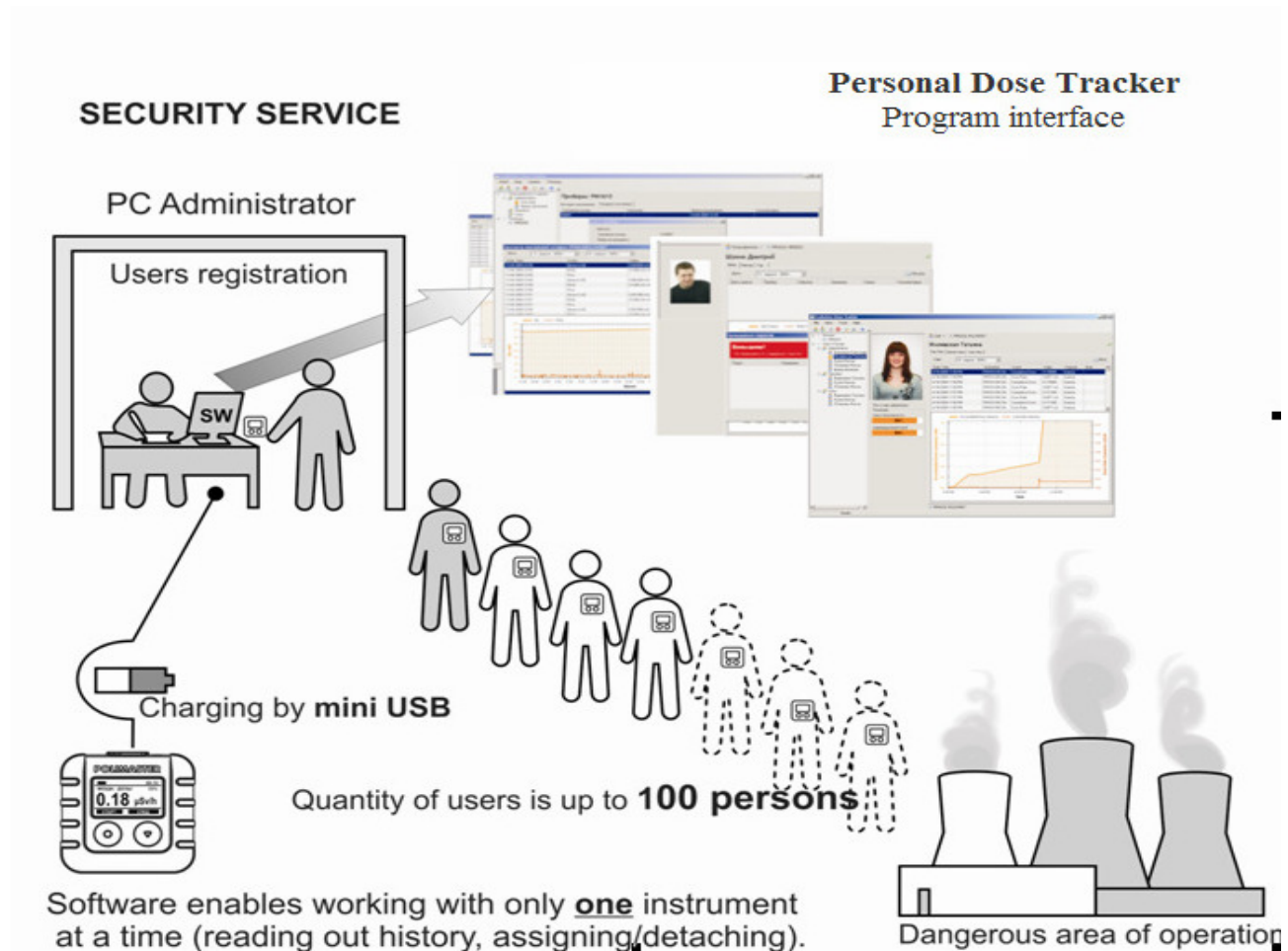


## SOFTWARE FUNCTIONS

- ◆ USB-interfacing the instrument;
- ◆ IR-interfacing the instrument;
- ◆ Creation of instruments database (up to 100 instruments);
- ◆ Creation of users database (up to 100 user cards – a list of the users who possess right to work with instruments);
- ◆ Every user can be assigned one instrument only at a time (creation of user-instrument linked pair);
- ◆ Grouping all the users into:
  - Administrators;
  - Operators;
  - Users.
- ◆ Adjustment of group access rights that are valid for all the members of the group:
  - Allow/deny to add new groups and/or users;
  - Allow/deny to instrument assignment;
  - Allow/deny to configure instrument settings;
  - Allow/deny to configure program settings.
- ◆ Adjustment of group settings (setting of threshold values) valid for all the group members;
- ◆ Adjustment of individual users access rights;
- ◆ Adjustment of user settings (setting of threshold values for every user individually);
- ◆ Control over groups and users (transferring and editing them);
- ◆ Reading events information (further – instrument history), stored in the each instrument memory;
- ◆ Recording of the read instrument history into the program database if the instrument is already assigned to a user;
- ◆ Creation of common information system of radiation control on the basis of events received from the connected instruments;
- ◆ Reading/writing operation parameters of the connected instrument:
  - Instrument's interface language;
  - Enabling/disabling different alarm types;
  - History recording interval;
  - Measurement units;
  - Setting DER (1, 2) and DE (1, 2) threshold values.
- ◆ Generation of reports and graphs on the basis of the information from the database on selected user or group and printing them.
- ◆ Blocking of common user ability to work with some instrument's functions (available for PM1610 only).

# AN EXAMPLE OF THE PERSONNEL EXPOSURE DOSE MONITORING SYSTEM

Based on PM1610 personal dosimeter



## SYSTEM REQUIREMENTS

Hardware and software requirements for proper “**Personal Dose Tracker (MySQL)**” software operation:

### PC REQUIREMENTS

- IBM PC – compatible PC, Pentium III or higher;
- Color display 19”;
- 1 GB free HDD space;
- CD-ROM (for software installation);
- Any of the following operating system:
  - Microsoft Windows Vista;
  - Microsoft Windows XP;
  - Microsoft Windows 2000 Professional.
- Standard USB port 7x1mm.

### PERIPHERY REQUIREMENTS

- Color printer.

### SOFTWARE REQUIREMENTS

Special and application software required for proper **Personal Dose Tracker (MySQL)** operation:

- Microsoft .NET Framework version 2.0 or higher.

### ADDITIONAL EQUIPMENT REQUIREMENTS

- miniUSB - USB – cable to communicate with **PM1610** series instruments
- IR adapter to communicate with **PM1603/04**, **PM1208** and **PM1621** series instruments.

## RECOMMENDED INITIAL PROCEDURES

**1**

Install “MySQL Server” software and adjust it.

Chapters: **Software Installation, “Personal Dose Tracker (MySQL)” Software Installation, “MySQL Server” Software Installation**

**2**

Install “Personal Dose Tracker (MySQL)” software to PC but don’t start software.

Chapters: **Software Installation, “Personal Dose Tracker (MySQL)” Software Installation**

**3**

If you are using PM1610 instrument connect it to PC by miniUSB-USB cable (included in the instrument delivery kit). Follow the driver installation procedure, outlined below.

If you are using instrument series PM1603/04, PM1208 and/or PM1621, skip this step.

**4**

Start “Personal Dose Tracker (MySQL)” software.

Chapter: **Software Start**

**5**

Install and adjust MySQL database.

Chapter: **Database Installation**

**6**

Enter “Personal Dose Tracker (MySQL)” software for its proper use.

Chapter: **“Personal Dose Tracker (MySQL)” Program Entry**

## SOFTWARE INSTALLATION



Close all working Windows applications before **MySQL Server**, “**Personal Dose Tracker (MySQL)**” software installation.

Follow the below described procedure to install “**MySQL Server**” software, “**Personal Dose Tracker (MySQL)**” software and corresponding documentation.

Insert the supplied installation CD into the computer’s CD drive and do the following.

### PROGRAM AUTORUN

If autorun function is set to enabled on the PC, Disk Browser will be started automatically. At that the Disk Browser window suggesting selecting interface language will be displayed (see below).


### FORCED PROGRAM INSTALLATION

If autorun function is set to disabled on PC, then no Disk Browser opens. So, do the following to open it.

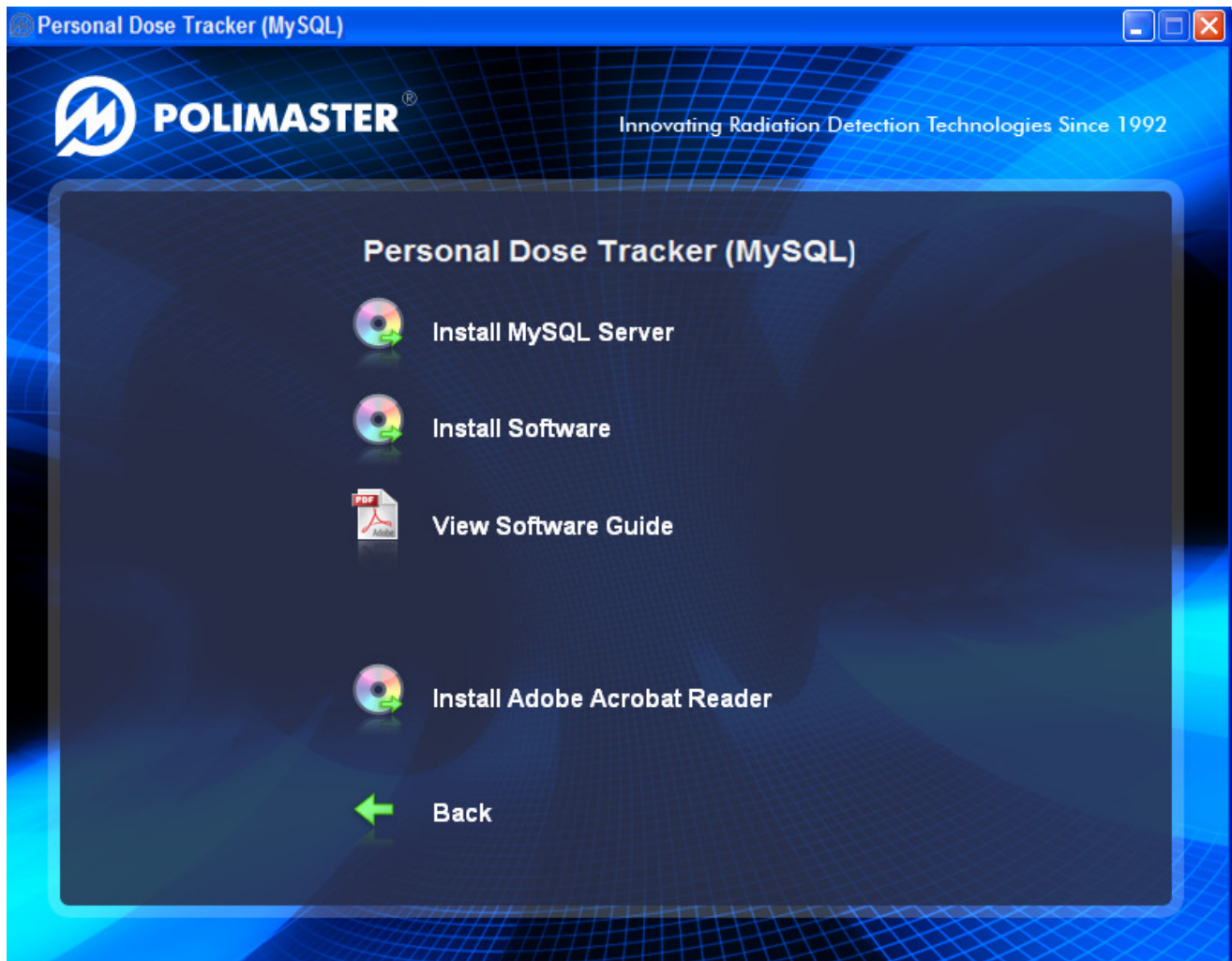
1. Use any Disk Browser to open contents of supplied installation CD;
2. Run **autorun.exe** file from the root folder;

Disk Browser opens.



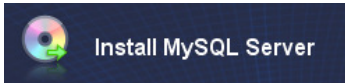
Select required interface language by clicking corresponding option. Then the very Disk Browser window opens. Press  **Exit** to exit autorun function if required.





- **Install MySQL Server<sup>1</sup>** – press to start installation of “MySQL Server” software. MySQL Server allows multi-users quick access to data under permissions granted;
- **Install Software** – press to start installation of “Personal Dose Tracker (MySQL)” software;
- **View Software Guide** – press to view documentation on installation, setting and operation of software as well as its communication with hardware;
- **Install Adobe Acrobat Reader** – end user documentation is saved as a \*.pdf file. Acrobat Reader must be installed on PC in order to open or view it. User, having chosen this option, initiates installation of Adobe Acrobat Reader 9.0 onto his/her PC;
- **Back** – press to return to the previous window of Disk Browser.


<sup>1</sup> Must be installed prior to installation of basic “Personal Dose Tracker (MySQL)” software.



Select option to start installation of “MySQL Server” software (see “**MySQL Server**” **Software Installation** and **Configuration Of “MySQL Server” Software** chapters).



When “MySQL Server” software is installed, select option to start installation of “**Personal Dose Tracker (MySQL)**” software (see “**Personal Dose Tracker (MySQL)**” **Software Installation** chapter).

When installation is completed, press  button to close Disk Browser window.

The step-by-step installation process is outlined below.



## “MYSQL SERVER” SOFTWARE INSTALLATION

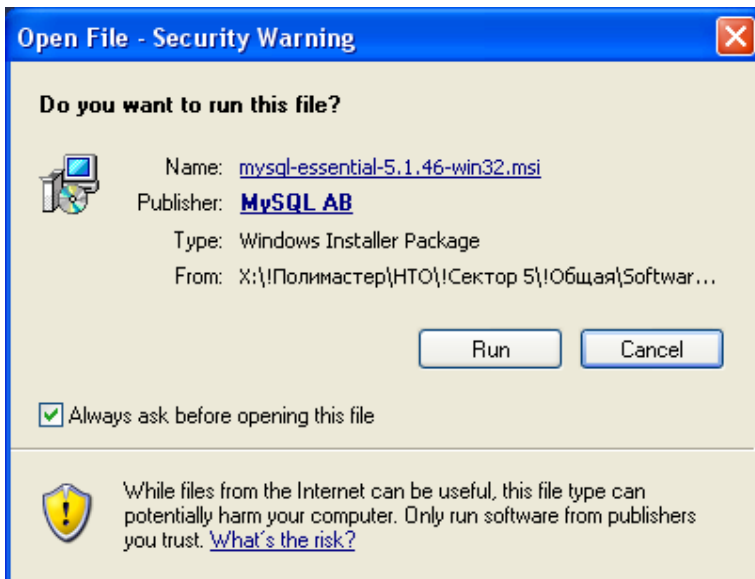
Installation process is described step by step with screen-shots of every step.



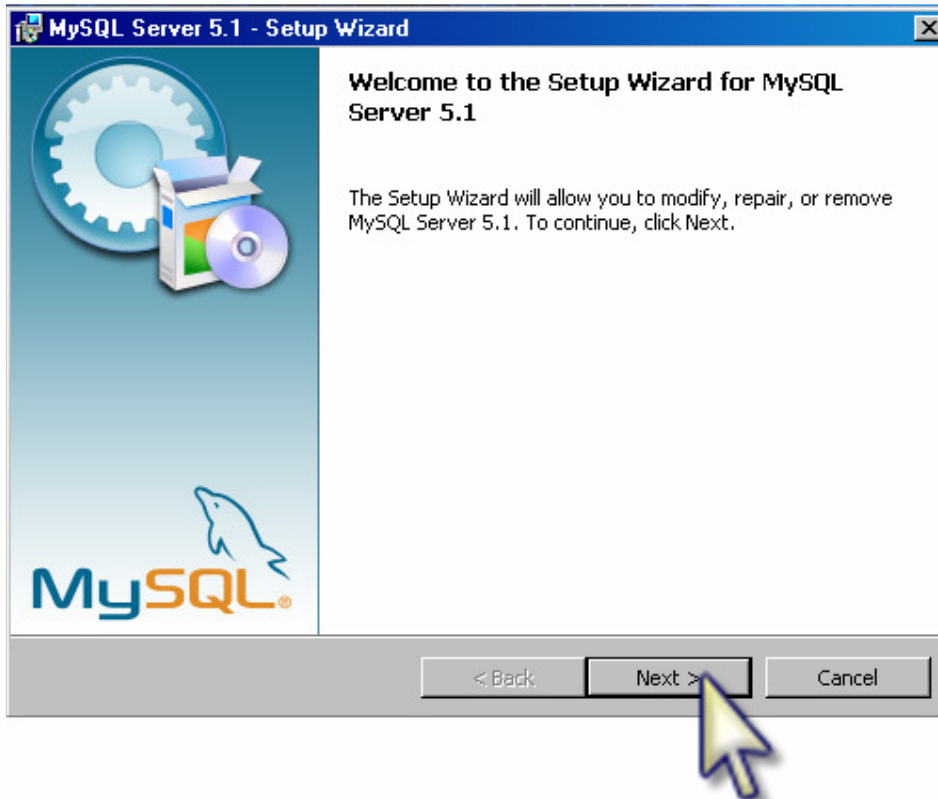
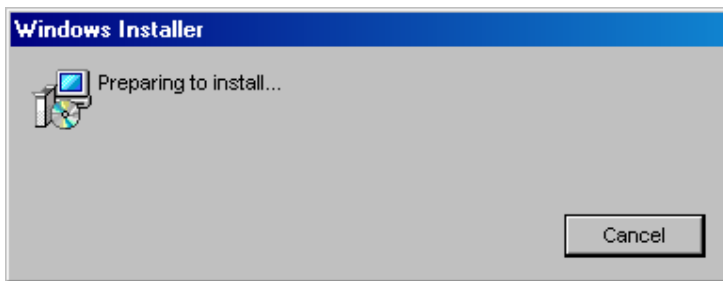
- "MySQL Server" software is installed prior to installation of "Personal Dose Tracker (MySQL)" software.
- "MySQL Server" software represents database control system. "MySQL Server" software functions as a server for communication with local and distant clients.
- "MySQL Server" software enables several users quick access to work with software database simultaneously.
- "MySQL Server" software prohibits unauthorized access to database.



Select **Install MySQL Server** option (see **Software Installation** chapter). **Security Warning** window opens. Initiate installation by pressing **Run**.

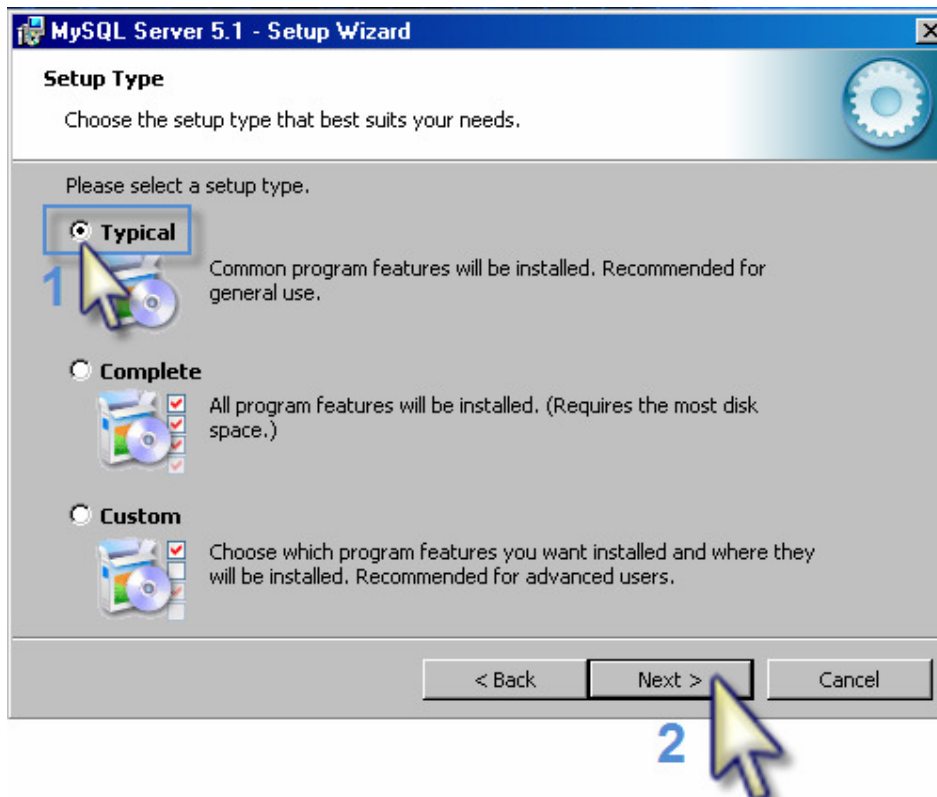


Installer is started.



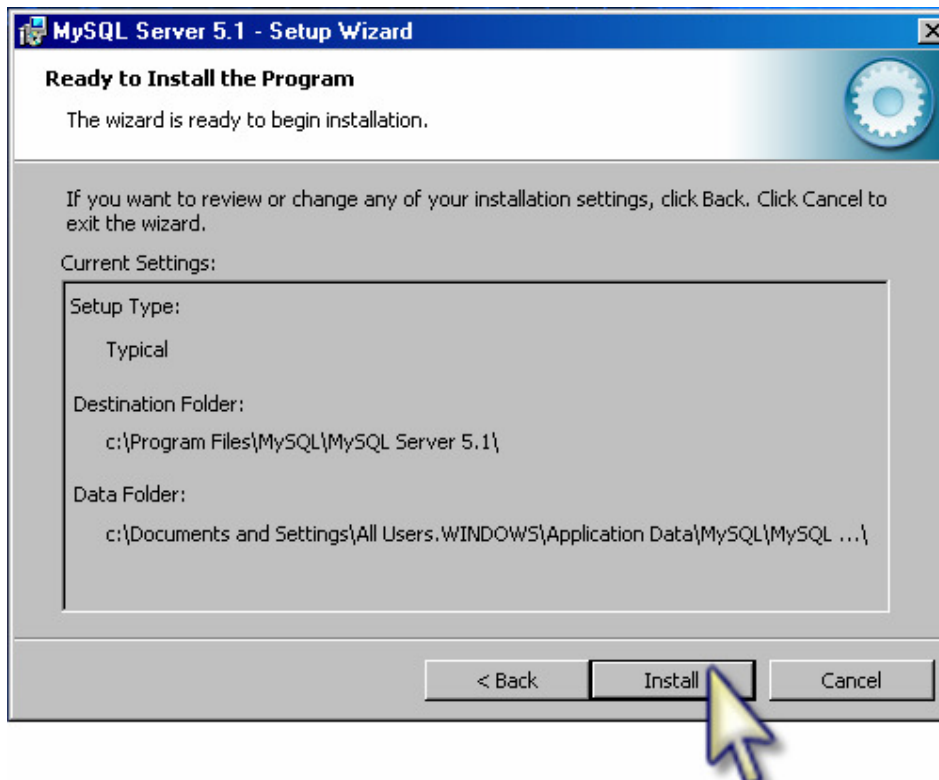
Press *Next* to continue.

Installer opens window suggesting to select setup type.

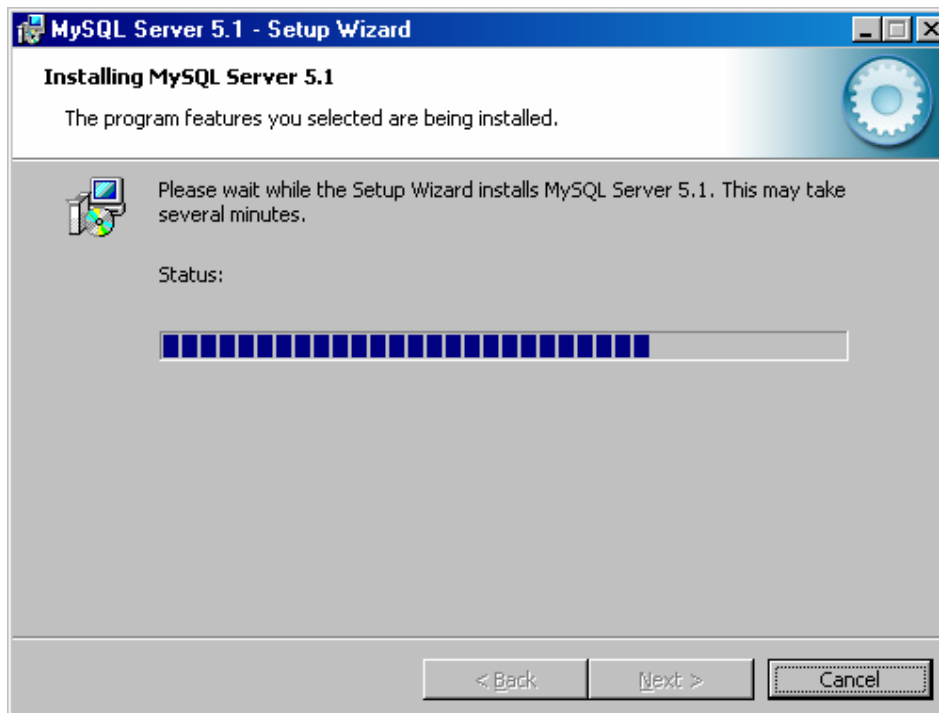


Select *Typical* and press *Next* to continue.

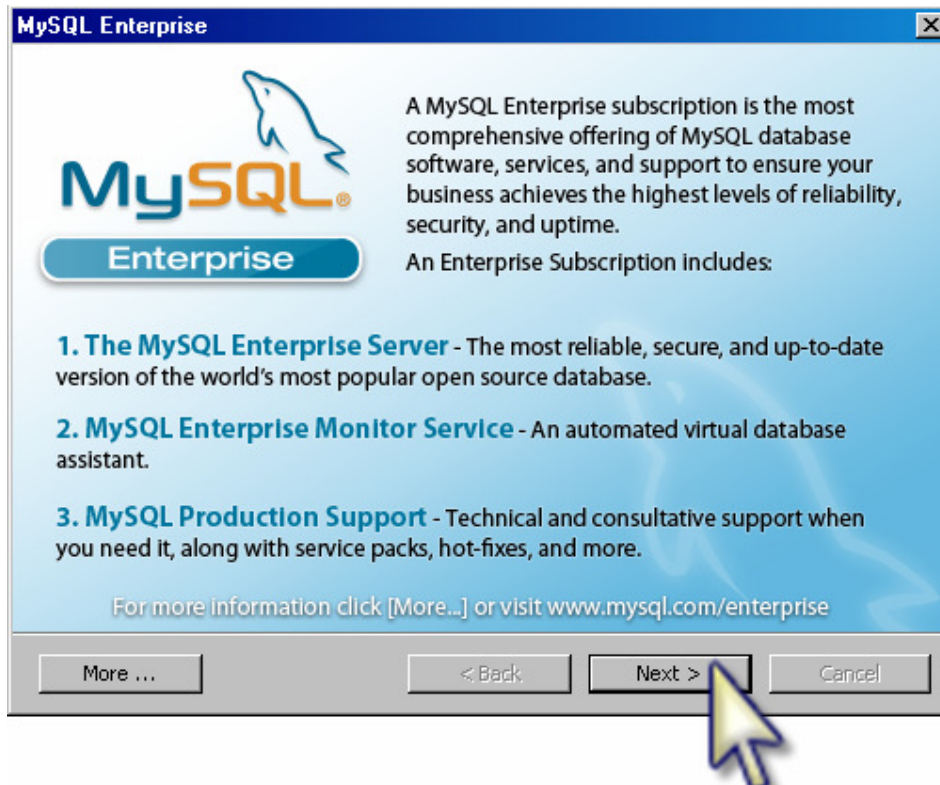
Now installer is ready to start installation of “MySQL Server” software into your PC according to selected setup type.

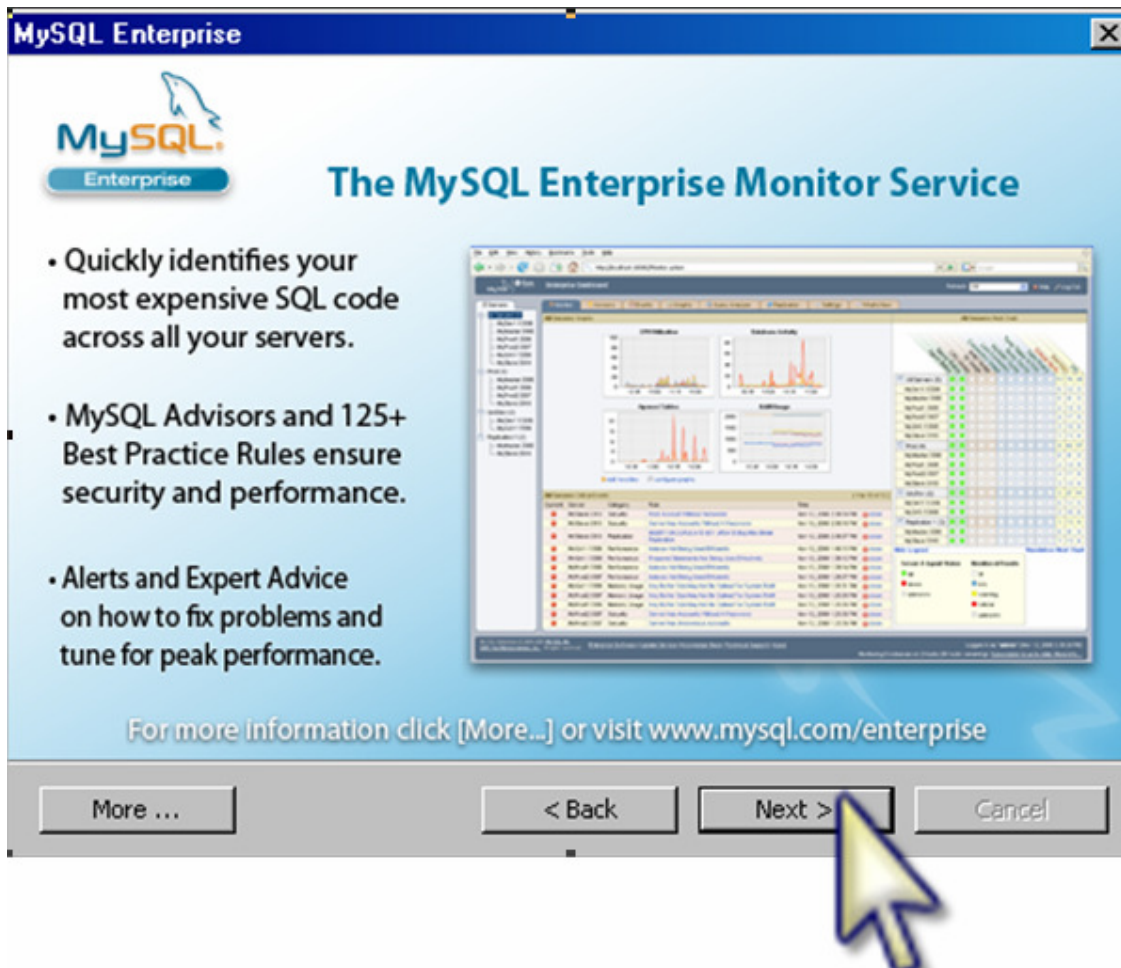


Press ***Install*** to start installation of “MySQL Server” software. Process can take several minutes.



Further press **Next** in every opening *MySQL Enterprise* windows to continue the process.

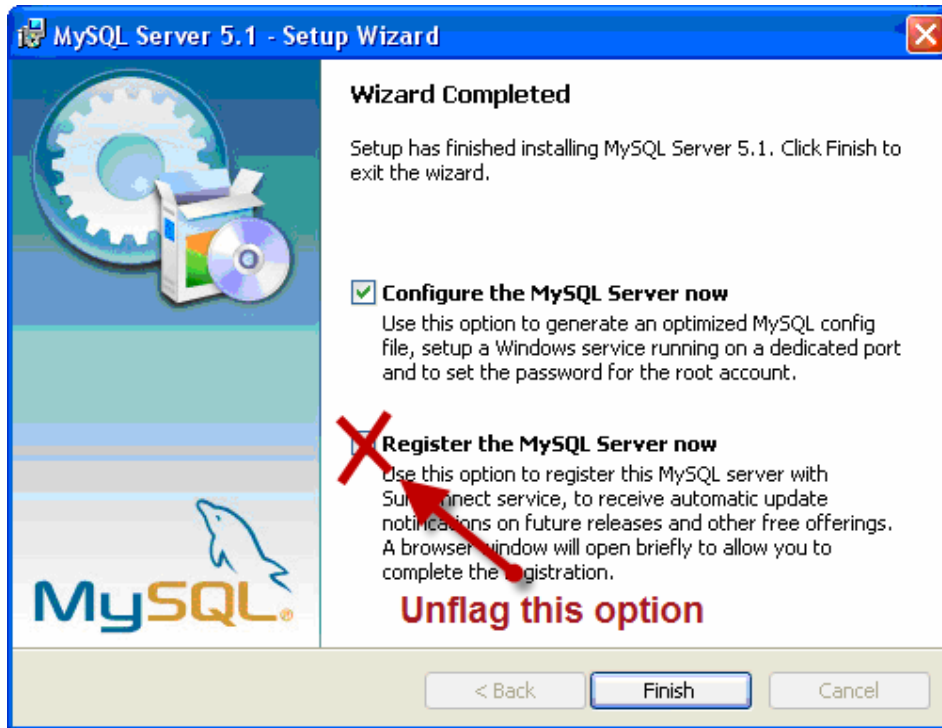




Now “MySQL Server” software is installed and needs configuring.

## ***CONFIGURATION OF “MYSQL SERVER” SOFTWARE***

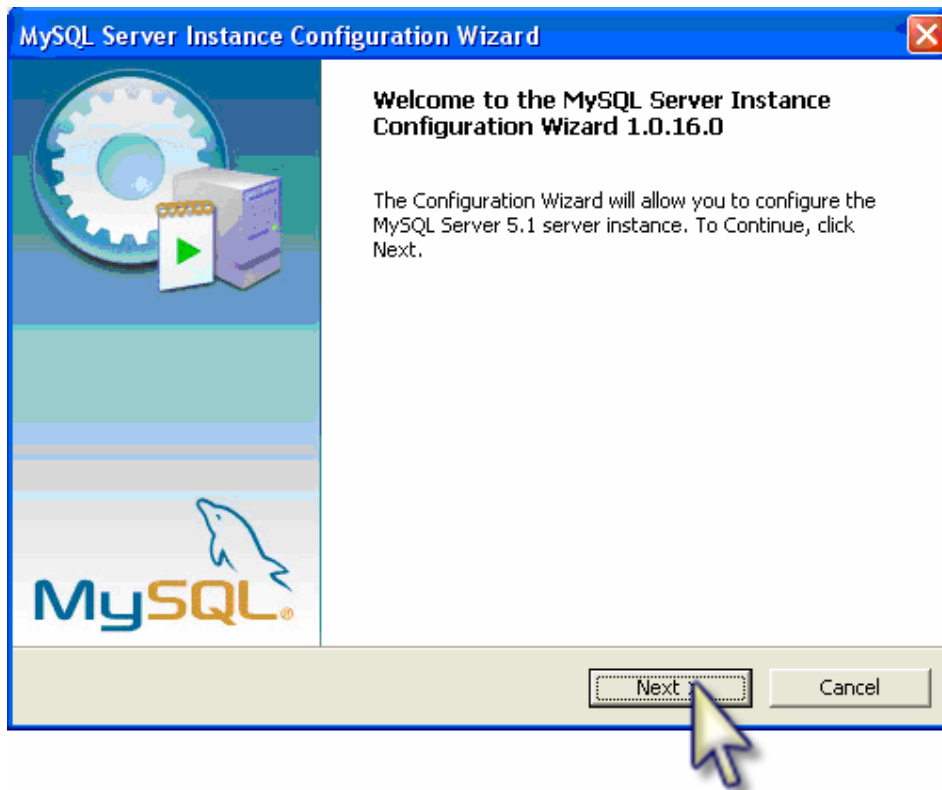
**Strictly observe configuration guide.**



By default both check-boxes - *Configure the MySQL Server now* and *Register the MySQL Server now* are flagged.

Unflag *Register the MySQL Server now* check-box since registration with SunConnect service has no connection to *MySQL Server* software functions. Press *Finish* to start configuring of *MySQL Server*.

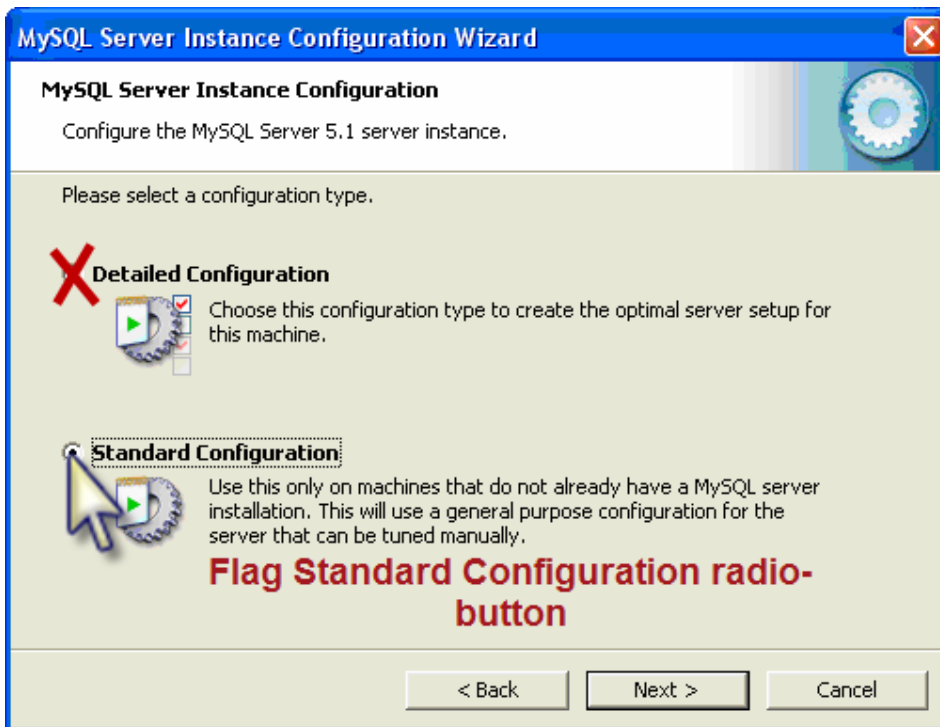
*MySQL Server* configuration wizard opens.



Press *Next* to continue.

Wizard suggests two configuration types.

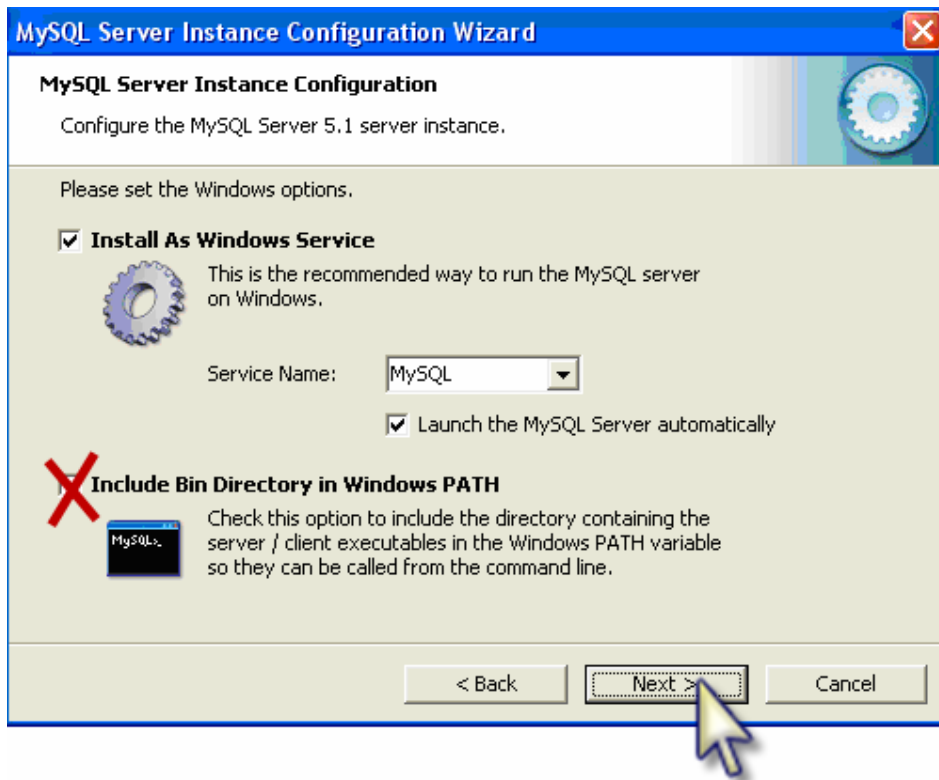




By default **Detailed Configuration** radio-button is flagged, but you have to flag **Standard Configuration** radio-button.

Press **Next** to start **MySQL Server** configuration.

The next step is to set **MySQL Server** as Windows service.



All required options are flagged by default. Press *Next*.

- ◆ *Install As Windows Service* check-box must be flagged. It enables Server be run as service.
- ◆ *Service Name* field is populated with service name. Do not change it.
- ◆ *Launch the MySQL Server automatically* check-box. It enables automatic server start-up.

Now set **MySQL Server** security options.



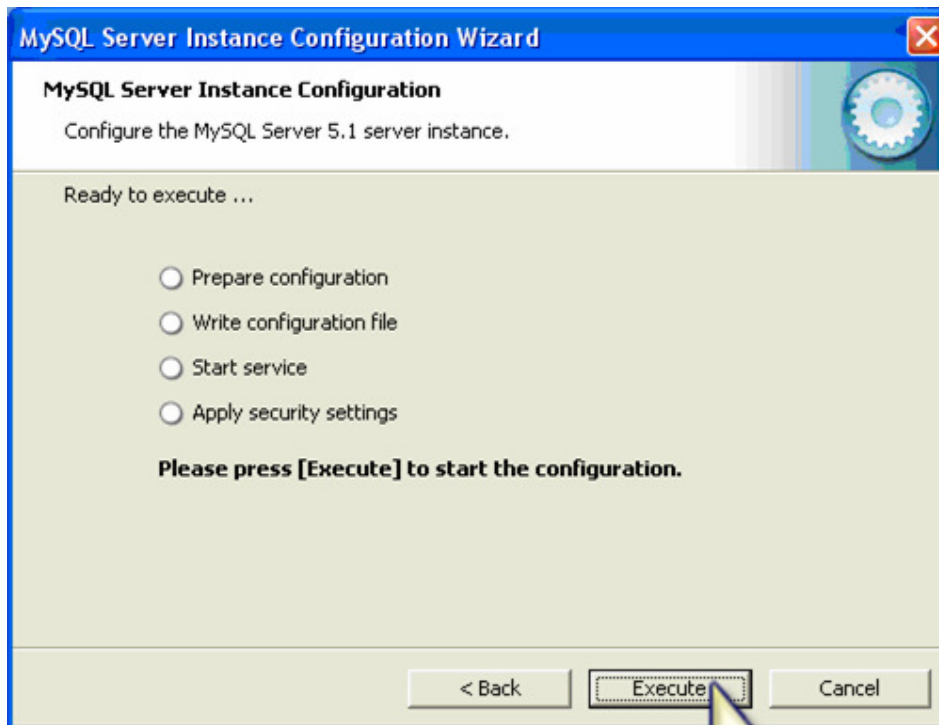
- **Modify Security Settings** check-box is flagged by default.
- **New root password** field – type here new arbitrary password for *root*-user (this will be password of Database Administrator to confirm his/her access to server and database). Password is case-sensitive and can consist of letters, digits and other characters;
- **Confirm** field – retype here **New root password** to confirm;
- **Enable root access from remote machines** field– this check-box must be flagged to enable multi-PC access to a single database;



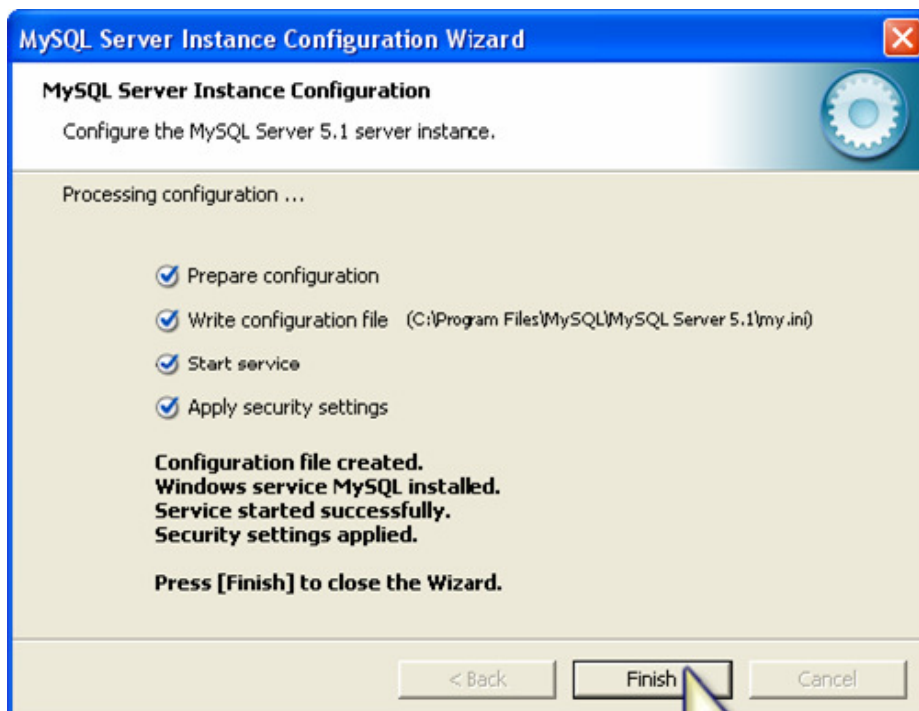
#### Attention!

- System will save entered *root*-user password as an access password for Database Main Administrator of "Personal Dose Tracker (MySQL)" software;
- Remember this password (Database Administrator password) since it is required to authorize Main Administrator to communicate with remote PC databases.

MySQL Server wizard is ready to complete configuration according to selected criteria.



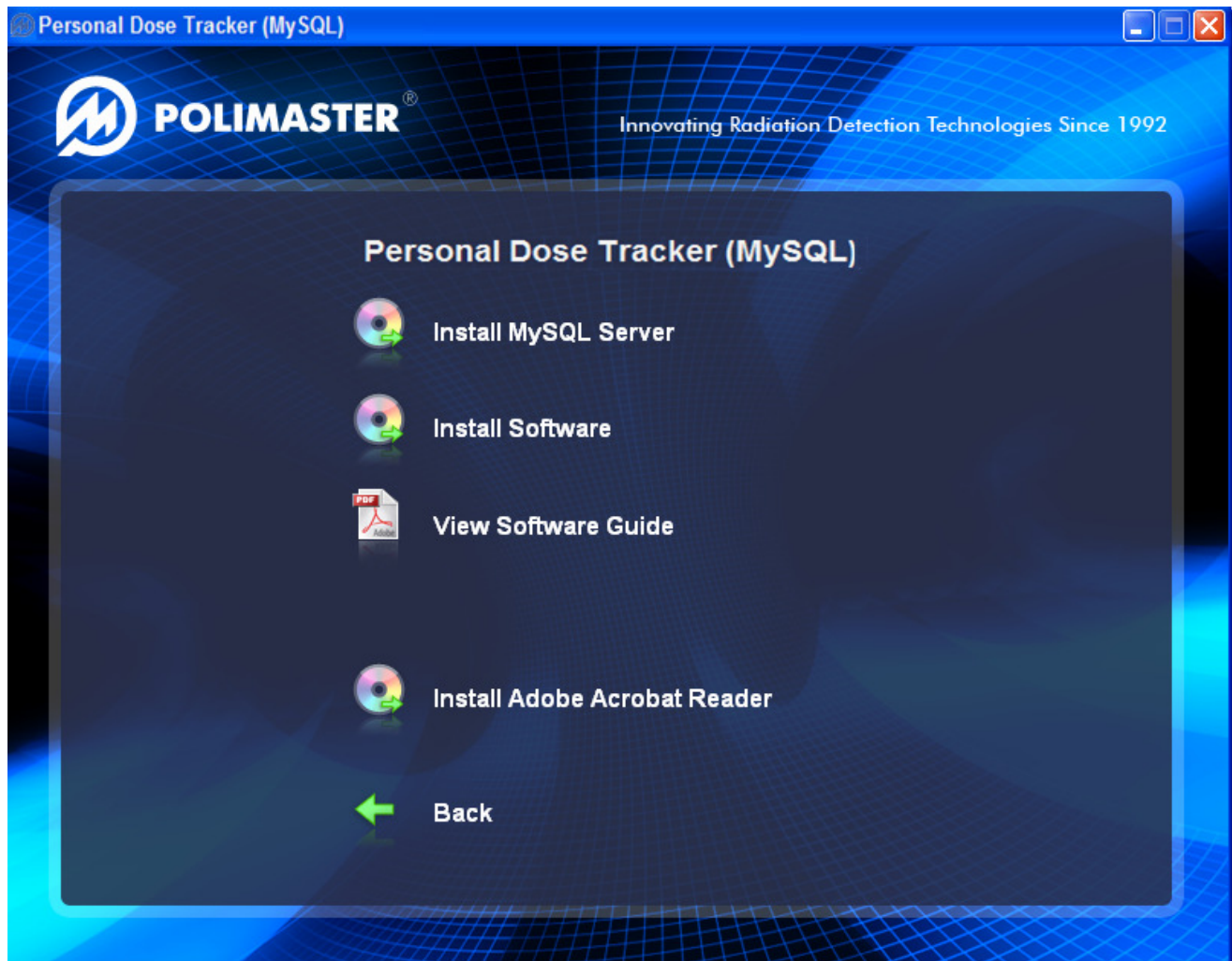
Press **Execute** to complete. The process can take a couple of minutes.




Press **Finish** to close the window. **MySQL Server** configuration is completed.

## “PERSONAL DOSE TRACKER (MYSQL)” SOFTWARE INSTALLATION

When "MySQL Server" software is installed and configured, go back to Disk Browser window (see **Software Installation** chapter).



Select  **Install Software** option to initiate “Personal Dose Tracker (MySQL)” software installation.



“Personal Dose Tracker (MySQL)” software is based on the **Microsoft.NET Framework** platform, version 2.0. The software will automatically check if the special OS Microsoft.NET Framework (version 2.0 or higher) is installed on the PC.

➤ If installer diagnoses lacking of Microsoft.NET platform, it will suggest the user to install the platform first. Installation of the **Personal Dose Tracker (MySQL)** software will continue afterwards.

## Installer

"**Personal Dose Tracker (MySQL)**" installer is a *master* – a program that divides the installation process into several simple steps. *Master* lets the user going any steps back if required. Every step is accompanied by a dialog window displaying comments to the suggested actions.

When all the required steps are done, press *Next* button. Press *Back* button if going back to the previous step is required. Installation process can be aborted any time by pressing *Cancel* button.



During the installation the user is recommended to fulfill all requirements of the master program.  
By default the software is installed into *Program Files/Polimaster* folder of the system disk.

When installation is over, start software. Press *Start* button and then click *Programs > Polimaster > Personal Dose Tracker > Personal Dose Tracker (MySQL)*.



A corresponding short-cut desktop icon is created during installation process.



### Attention!

➤ If you are working with PM1610 instrument, install drivers, prior to first software start, (see **PM1610 Driver Installation** chapter).

## Features of "Personal Dose Tracker (MySQL)" Software Installation Under Windows 2000 OS



If user experiences problems trying to install the "Personal Dose Tracker (MySQL)" software to PC under Windows 2000 OS, install components separately as follows:

1. Use any file manager to open CD contents, and then enter *Software\WindowsInstaller3\_1* folder. Execute ***WindowsInstaller-KB893803-v2-x86.exe*** file to install Windows Installer.
2. System requires **PC restart** when software is installed.
3. Upon PC restart: open *Software\DotNetFX* folder and execute Microsoft.NET Framework installation file - ***dotnetfx.exe***.

Install the "Personal Dose Tracker (MySQL)" software by executing ***PersonalDoseTracker.msi*** installation file from the root of the *Software* folder on CD.

## CONNECTING/DISCONNECTING INSTRUMENTS TO PC

### CONNECTING/DISCONNECTING PM1610 TO PC



If you are using PM1603/04 and/or PM1621 series instrument, skip this step, start “Personal Dose Tracker (MySQL)” software, and install MySQL Database.



Refer to the instrument’s Operation Manual on specifics instructions on connecting it to a PC.

#### PM1610 to a PC hardware connection

1. Remove the protection lid from the instrument’s miniUSB port;
2. Connect one plug of miniUSB-USB cable (supplied with the instrument) to miniUSB port of the instrument, and another plug – to USB port of the networked PC.



##### When connecting to PC:

- Instrument switches on automatically;
- Instrument automatically connects to the PC (USB mode);
- PC takes control over the instrument;
- When instrument is in the USB mode, its light indicator blinks;
- When instrument is in the USB mode, its internal battery charges.

#### PM1610 to a PC hardware disconnection

1. Unplug cable from the instrument’s miniUSB port;
2. Place protection lid back (onto the instrument’s miniUSB port);
3. Instrument enters offline operation mode automatically.



## PM1610 DRIVER INSTALLATION




**Driver can be installed only when “Personal Dose Tracker (MySQL)” software is already installed.**

At initial PC-instrument connection software detects new hardware and informs user by displaying a corresponding pop-up message in the right bottom corner of Windows system tray.

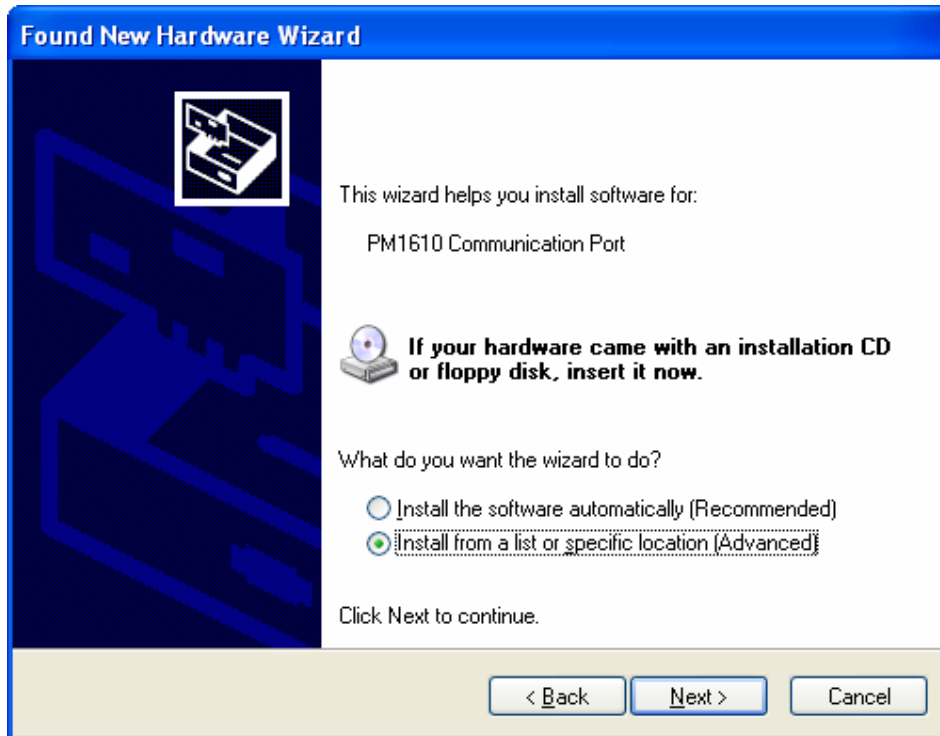


Then **Found New Hardware Wizard** (or **Hardware Upgrade Wizard**) is activated automatically.



Wizard suggests Internet-searching for required driver. Flag  **No, not this time** radio-button and press *Next* button.

In the opened window select *Install from a list or specific location (Advanced)* and press *Next* button.



Set search criteria: flag *Include this location in the search* check box, and use *View* button to select driver folder.

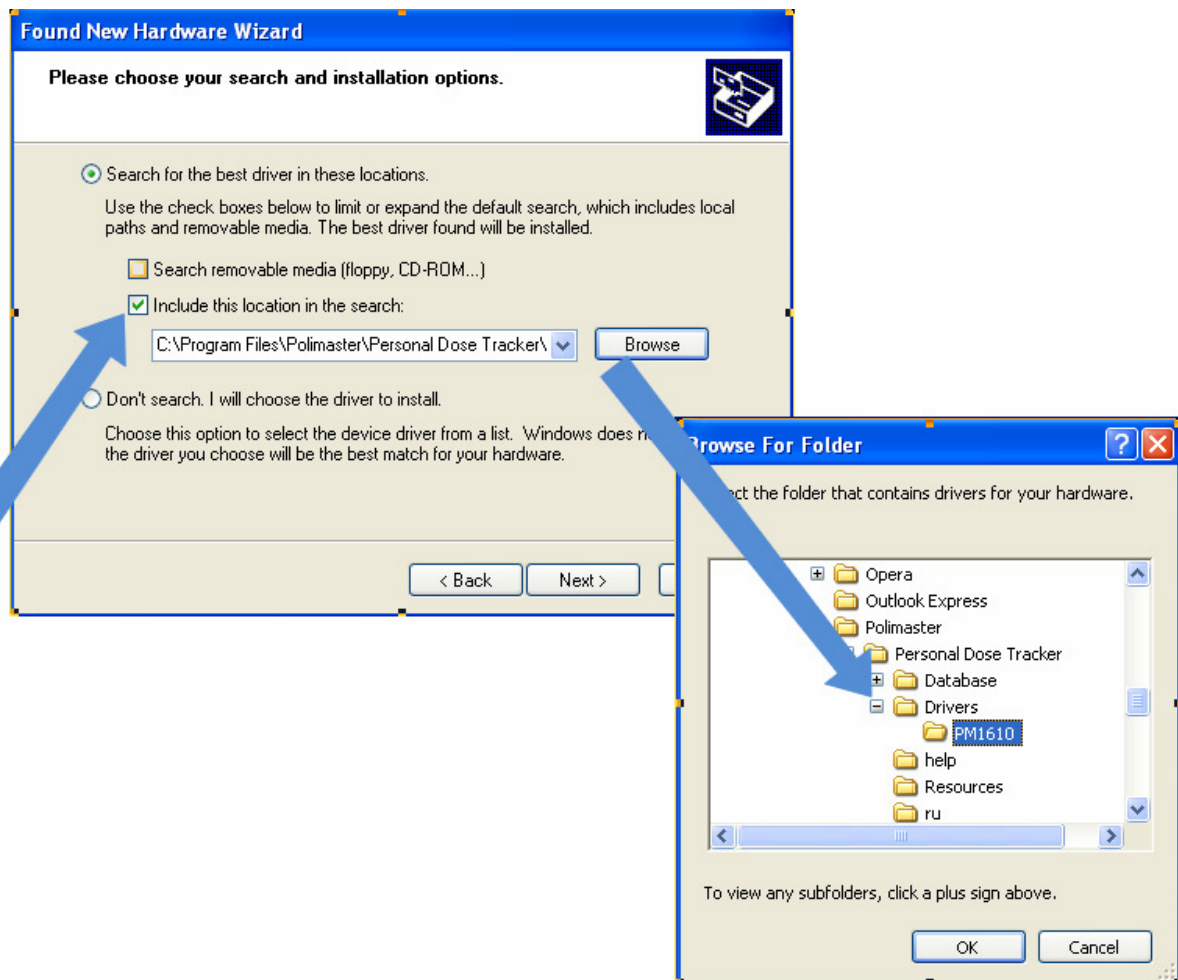
Driver folder for PM1610 instruments is created upon installation of **Personal Dose Tracker (MySQL)** software only. Its pathname is as follows:

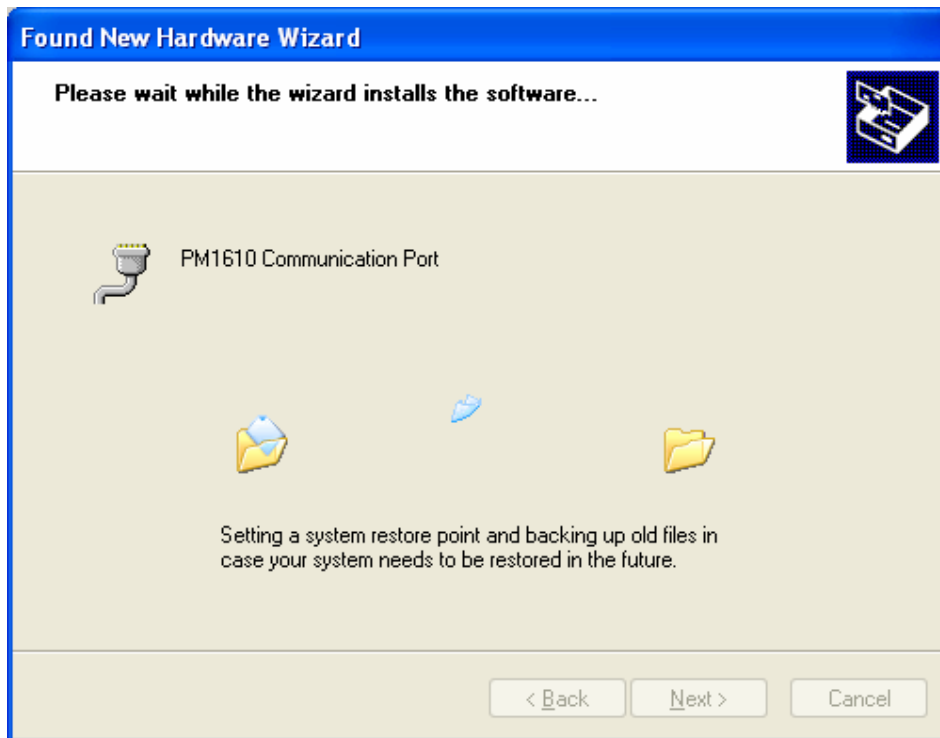
**C<sup>1</sup>:\Program Files\Polimaster\Personal Dose Tracker (MySQL)\Drivers\PM1610.**

Press *Next* to finish driver installation.

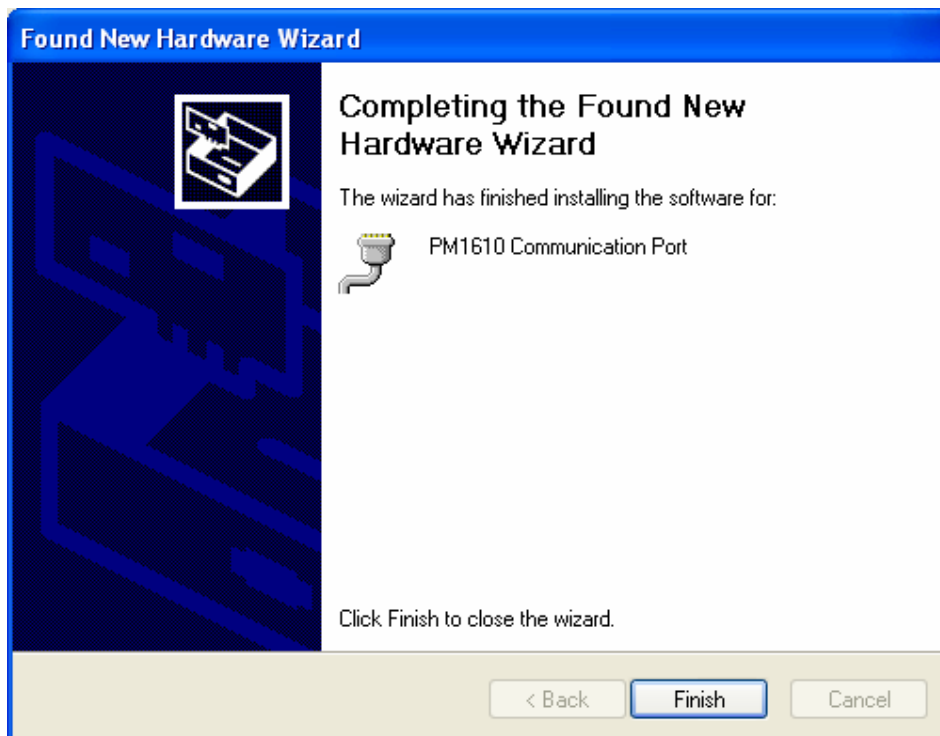
---

<sup>1</sup> Or any other system drive with “Personal Dose Tracker (MySQL)” software installed



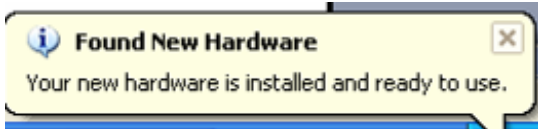


Please wait...



Press **Finish** when installation is completed.

Upon successful installation a corresponding pop-up message will be displayed in the Windows system tray.



If you still have problems installing the driver, please, contact your system administrator.


## **CONNECTING/DISCONNECTING OTHER SUPPORTED INSTRUMENT SERIES TO A PC**



**Connect IR adapter to serial PC communication port to enable communication with PM1603/04, PM1208 and PM1621 series instruments (internal PC IR adapter can be used as well).**

**Refer to the instrument's Operation Manual on specifics instructions to enable Connect to PC mode.**

### **PM1603/04, PM1208 and PM1621 to a PC hardware connection**

- Switch instrument into PC communication mode. To do so, press instrument left button on its front panel to display **Off/Ir** on instrument LCD;
- Press instrument right button on its front panel to display **On/Ir** on instrument LCD;
- Place instrument IR port window facing IrDA adapter at the distance of 10-20 cm or closer;
- Instrument automatically connects to the PC;
- When instrument and PC communicate, the  sign on Windows taskbar appears;

### **PM1603/04, PM1208 and PM1621 to a PC hardware disconnection**

- Move instrument away from IrDA adapter window to break the connection link. Instrument enters offline operation mode automatically;
- Press instrument right button on its front panel to display **Off/Ir** on instrument LCD;



**PM1603/04 instruments while in PC communication mode can independently disconnect from software after some time period passes. Refer to the instrument's Operation Manual on more detailed information on this topic.**

## SOFTWARE START

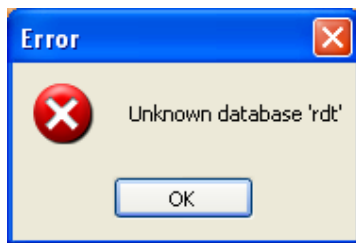


Installer creates all the necessary **Personal Dose Tracker (MySQL)** shortcut icons in the PC desktop and in the **Main Windows Menu**.

**Program start** from the **Main Windows Menu**: *Start > Programs > Polimaster > Personal Dose Tracker (MySQL) > Personal Dose Tracker (MySQL)*.

## DATABASE INSTALLATION

At initial start of **Personal Dose Tracker (MySQL)** a warning window is displayed. This window informs of unknown “**rdt**” database. So you need to install it.

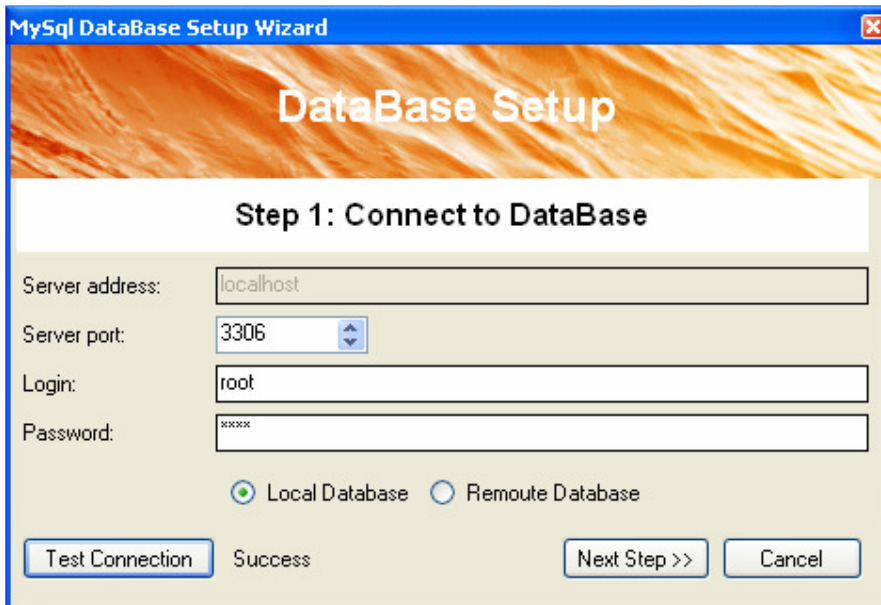


Press **OK**.

**MySQL Database Setup Wizard** window opens. The wizard will help to create the database and adjust communication settings.

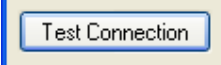
Setup process consists of two simple steps.

## Step 1 Connect to Database



- **Server address** – server address is set by default;
- **Server port** – server port is set by default;
- **Login** – a "root" (root-user) name is set by default. Don't change it. **Main Administrator** will be root-user of software;
- **Password** – type root-user (**Main Administrator** of databases) password in this field. Remember, that this password was set when configuring **MySQL Server** security settings (see **Configuration of "MySQL Server" Software** chapter). Password is case-sensitive;
- **Local Database** – this radio-button is flagged by default.

Press **Test Connection** button to be sure that the communication settings are correct.

Successful testing displays "Success" word near  button.



### Attention!

If there is "Error" word displayed, check accuracy of root-user password entered.

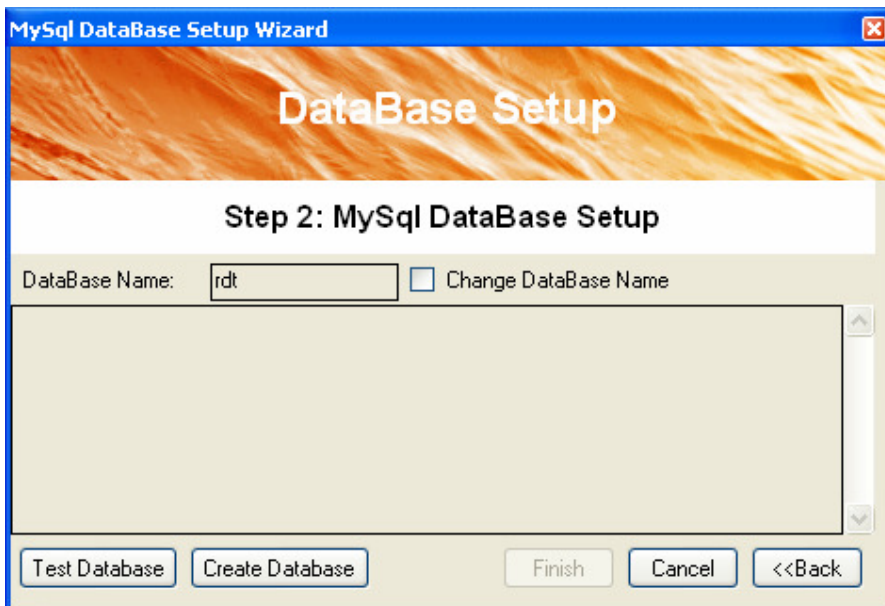
Press **Next Step** button if test is a success to go to the next step.

Window informing that there is no such a database appears.



Press **OK** to create this database.

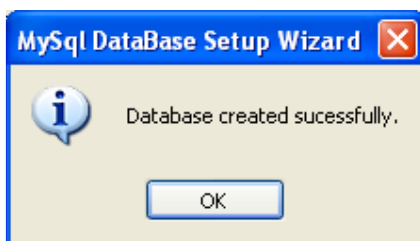
## Step 2 MySQL Database Setup



**DataBase Name** window is populated with default database name. If you want to change it, flag **Change DataBase Name** check-box and type new name.

Press **Create Database** button.

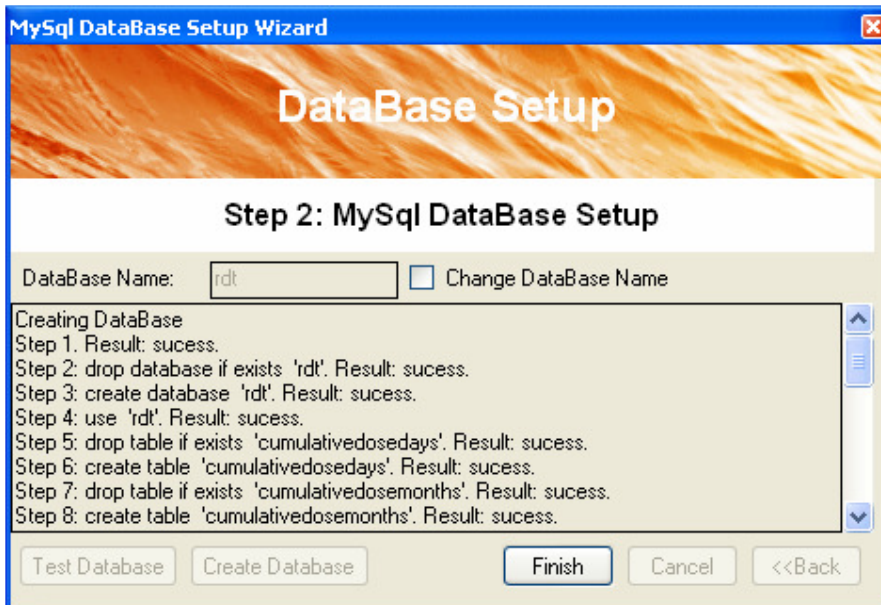
Upon successful creation the corresponding window is displayed.



Press **OK** to confirm.



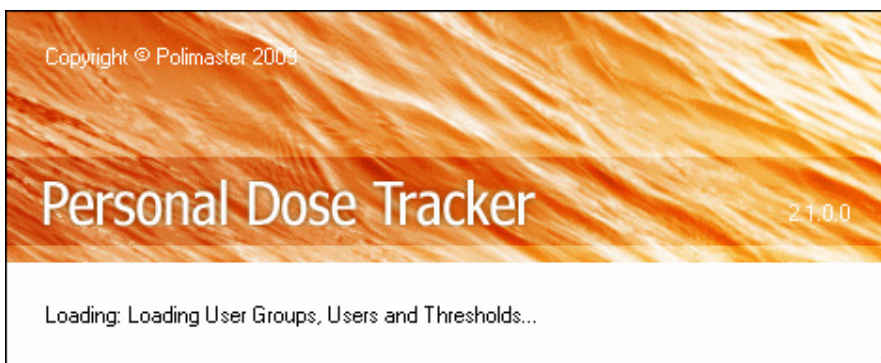
As a result the following window is displayed.



Press **Finish** to close the window.

## **“PERSONAL DOSE TRACKER (MYSQL)” PROGRAM ENTRY**

When database setup wizard is finished, the “**Personal Dose Tracker (MySQL)**” software login window is opened.



Access to “**Personal Dose Tracker (MySQL)**” software is password-protected.



**Personal Dose Tracker (MySQL)** supports multi-user operation mode with access rights distinction for every user or group.

Up to 100 users (user accounts) and 100 instruments can be registered in the system.



**Attention!**

After initial program load there will be three default users groups:

- ◆ Administrators;
- ◆ Operators;
- ◆ Users.

The **Administrators** group consists of one system user only - **MAIN ADMINISTRATOR**.

So, at first run, login as a **Main Administrator**:

Enter “**admin**” in the *Login* field;  
Enter “**admin**” in the *Password* field.


Login and password are case-sensitive.

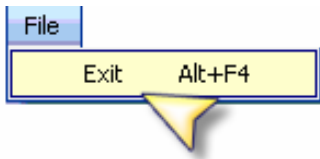


- User is recommended to change default MAIN ADMINISTRATOR access password upon the software installation so as to prevent unauthorized access to software and to secure the settings.
- To change MAIN ADMINISTRATOR access password, open his/her card, select *Add/Edit User* dialog window and make all alterations in the *Access Rights* tab (see **Add User** chapter).

When the installation is completed, the **main program window of Personal Dose Tracker (MySQL)** opens.

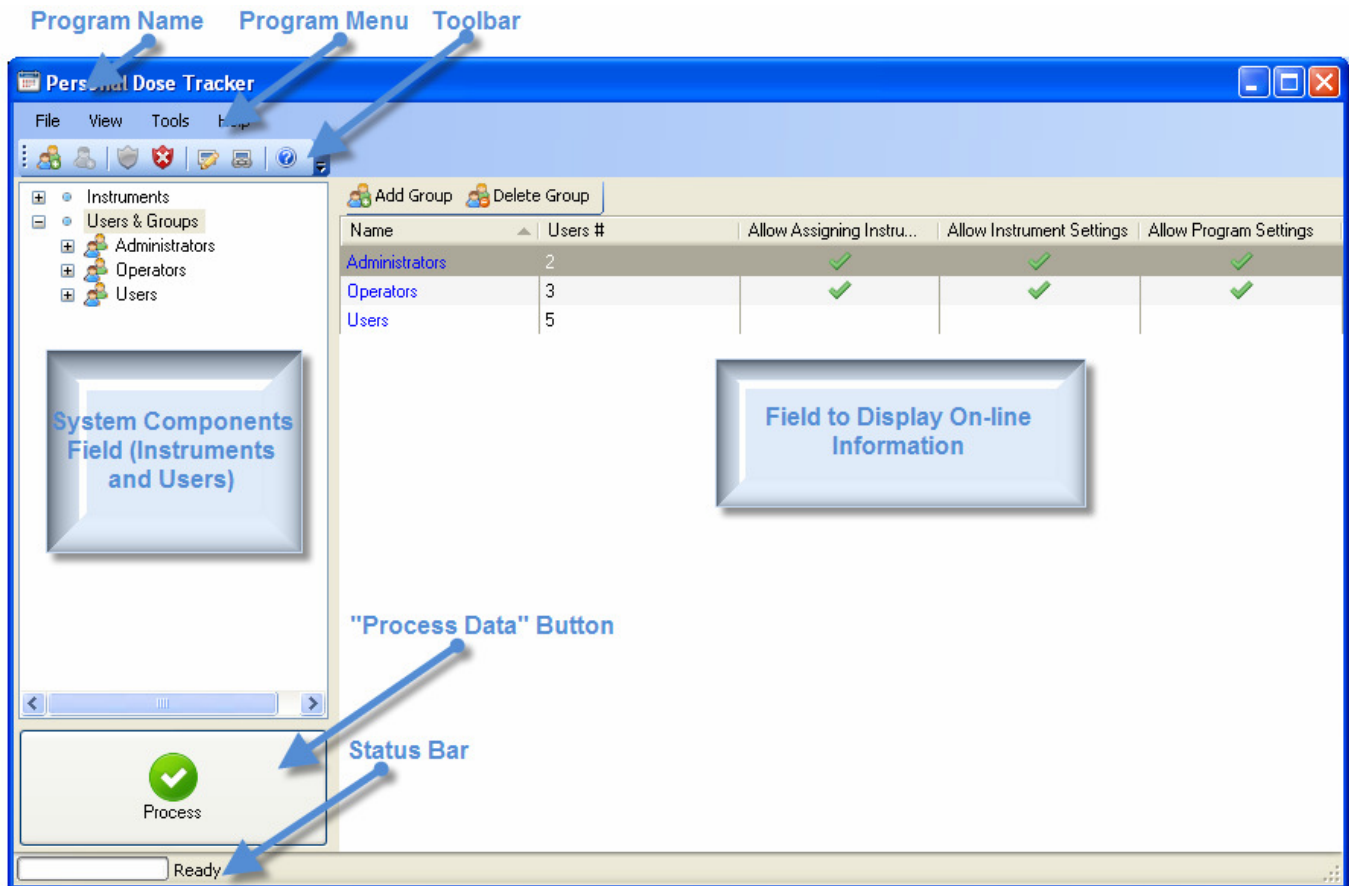
## PROGRAM EXIT

For proper program exit select **File** menu and click **Exit** command, or use  close button on toolbar.



## MAIN PROGRAM WINDOW

Simple graphical interface of the main program window represents set of tools and commands. With their help user can control operation of all the program system components (connected instrument, users and database).



### Main Program Window Structure:

#### ➔ Menu

Main program window **Menu** (File, View, Tools, Help).

#### ➔ Toolbar

Toolbar is located right under the main program window menu. Toolbar buttons correspond to most frequently used menu commands. Move mouse pointer on the button (not clicking it) to see a pop-up prompt of the corresponding command name.

### ➡ **System components field**

Field displaying multilevel hierarchy of the program system components: **Instruments** and **Users & Groups** (similarly to Windows Explorer).

System classifies the users into the groups.

### ➡ **On-line information field**

By default the main program window displays *Instruments* panel. The panel represents list of instruments and information on:

- Instruments assignment history;
- Instruments serial numbers;
- Instruments registration date (date when they were registered in the database);
- Notes.

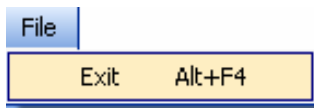
➡ **“Process Data” Button** – button to process instrument’s data and to detach the instrument. It is located in the lower part of the main program window and used for easy detachment of the instrument from the user with/without clearing instrument’s history.

➡ **Status bar** is located in the lower part of the main program window. It displays information on current software status. Process graphic bar informs the user of the current command progress.

Detailed description of all the commands and functions of the main program window and toolbar is given further in the Guide.

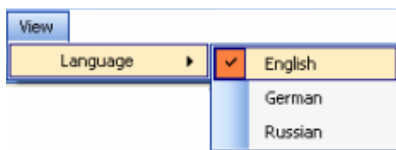
## PROGRAM MENU

### File menu commands:



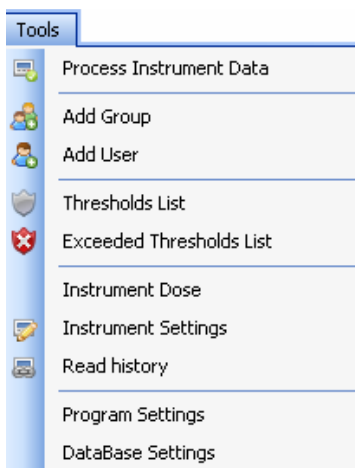
Close-down and program exit;

### View menu commands:



Switch between software interface languages;

### Tools menu commands:

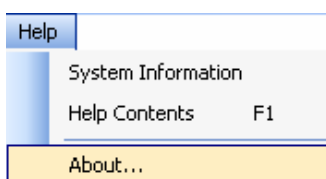


- Detach instrument with/without clearing instrument's history;
- Add new group of users;
- Add new user (Create new user account (card));
- Enter/edit threshold values for users and/or users groups;
- View the list of current set thresholds;
- View the list of current exceeded thresholds;
- View/reset current accumulated DE in the instrument;
- Read/write **instrument operation settings**;
- Start instrument history reading;
- Program settings window entry point.



Tools menu commands with icons near them are duplicated on the main window toolbar.

### Help menu commands:



- Program information window entry point;
- Call **Software guide** as a PDF-file;
- Information on Software version/End user license agreement (EULA);

## TOOLBAR

Toolbar buttons duplicate basic commands of the main program window.



**Add Group** button

**Function:** open add/edit user group window button.



**Add User** button

**Function:** open add/edit user window button.



**Thresholds List** button

**Function:** open threshold values for users and/or user groups window button.



**Exceeded Thresholds List** button

**Function:** open exceeded threshold values window button.



**Instrument Settings** button

**Function:** open instrument operation settings access window button.



**Read History** button

**Function:** open instrument history reading window.




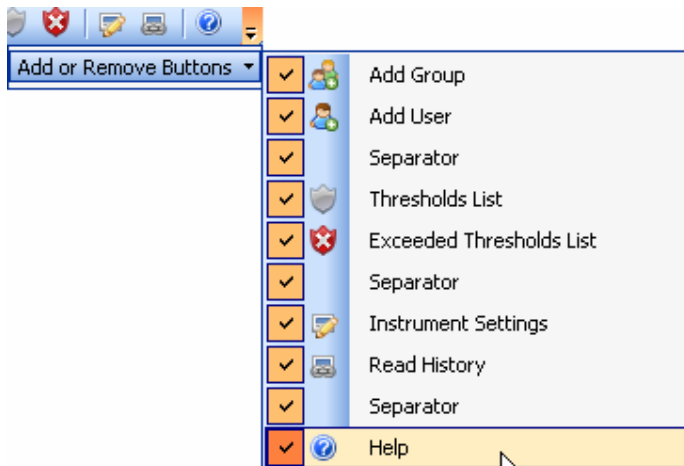
**Help** button

**Function:** open software guide help file.



## Toolbar Settings

Software by default flags all the toolbar options but user can select buttons to be displayed. Select  button located at the end of the toolbar, and flag/unflag desired options.



# SYSTEM COMPONENTS FIELD

System components field – a field hierarchically displaying program system components: Instruments, and Users & Groups in the fashion, similar to Windows Explorer.

The instruments are sorted in the system by type or series number. Current software version supports communication with **PM1603/04**, **PM1208**, **PM1610** and **PM1621** series instruments.



**PM1603 and PM1604 series instruments differ in DER measurement range only, thus, being almost identical. Software will identify both instruments as a single type - PM1603.**

**If you have PM1604 series instrument, use PM1603 selection options to communicate with Personal Dose Tracker (MySQL) Software.**

The screenshot shows the 'Personal Dose Tracker' application window. On the left is a tree view of system components. Annotations with blue arrows point to specific parts: 'Instrument types' points to the 'Instruments' folder; 'User Group' points to the 'Users & Groups' folder; and 'User' points to a specific user entry under the 'Users' group. On the right is a table showing the details of the selected group.

Name	Users #	Allow Assigning In...	Allow Instrument S...	Allow Program Sett...
Administrators	2	✓	✓	✓
Operators	3	✓	✓	✓
Users	5			

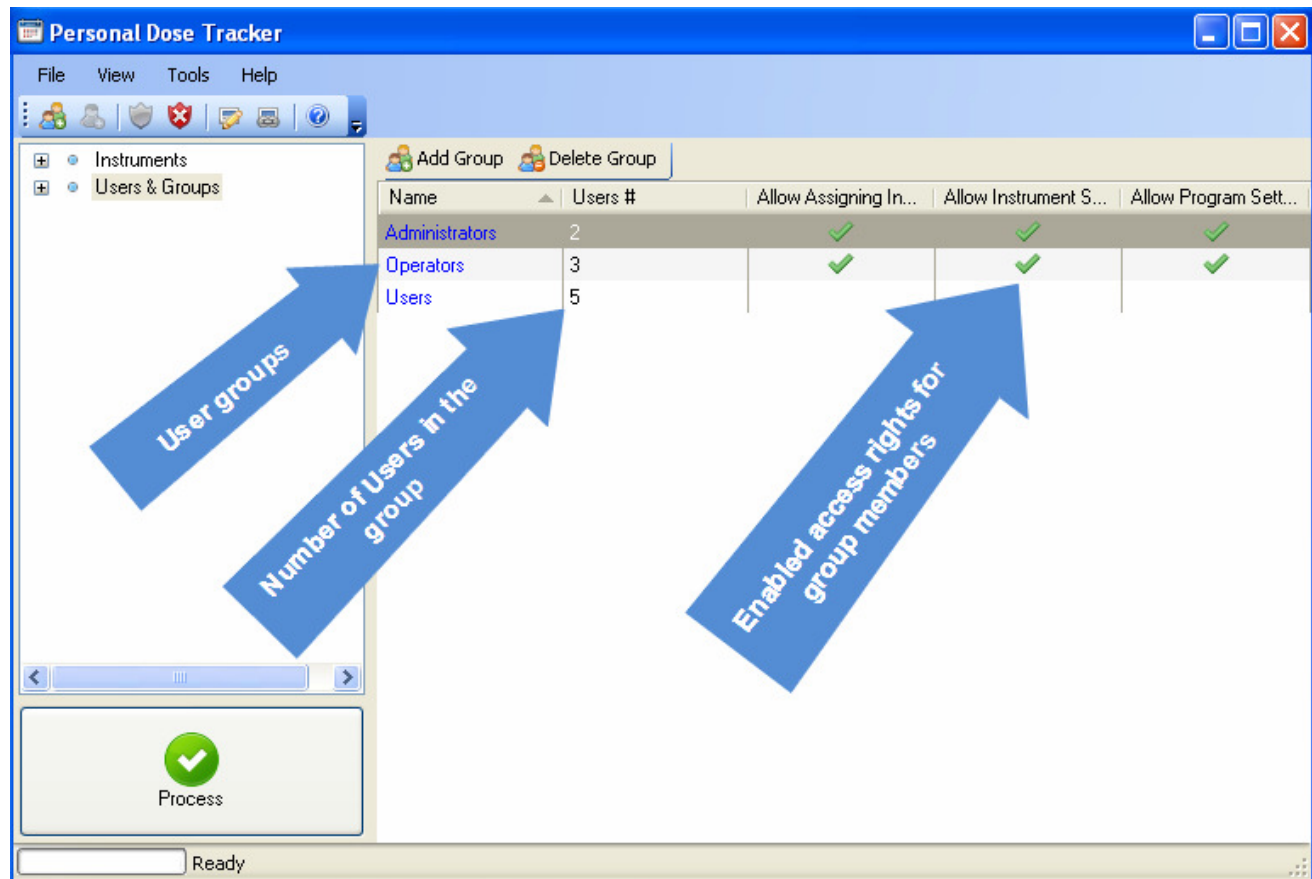
System components field:  
1. Instruments  
2. User groups  
3. Users

## ON-LINE INFORMATION FIELD

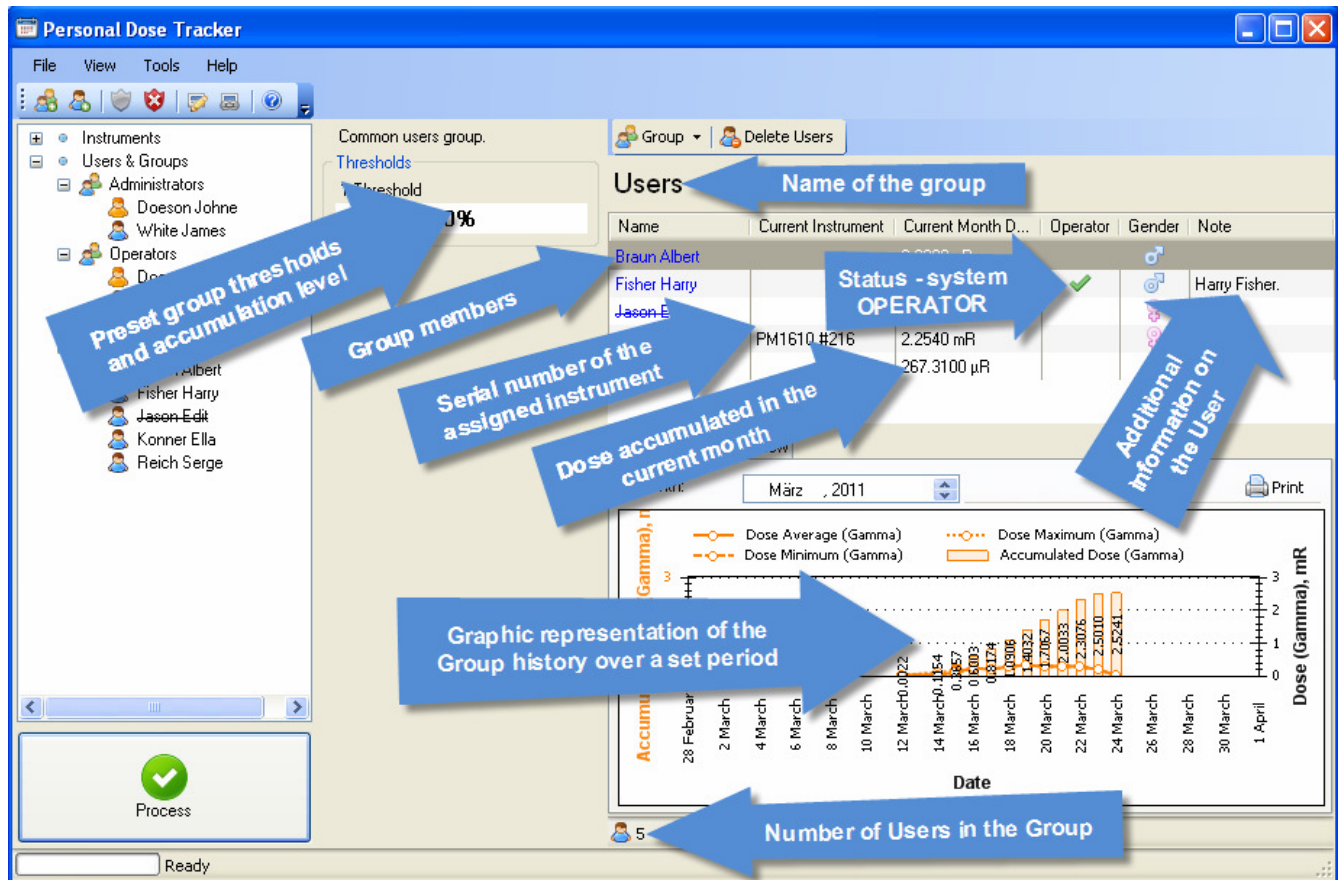
Dynamic field displays information on the selected system components of the left field. The following is displayed in the field depending on the selected component:

- ◆ "Users and Groups" card;
- ◆ "Users Group" card;
- ◆ "User" card;
- ◆ "Instruments" card.

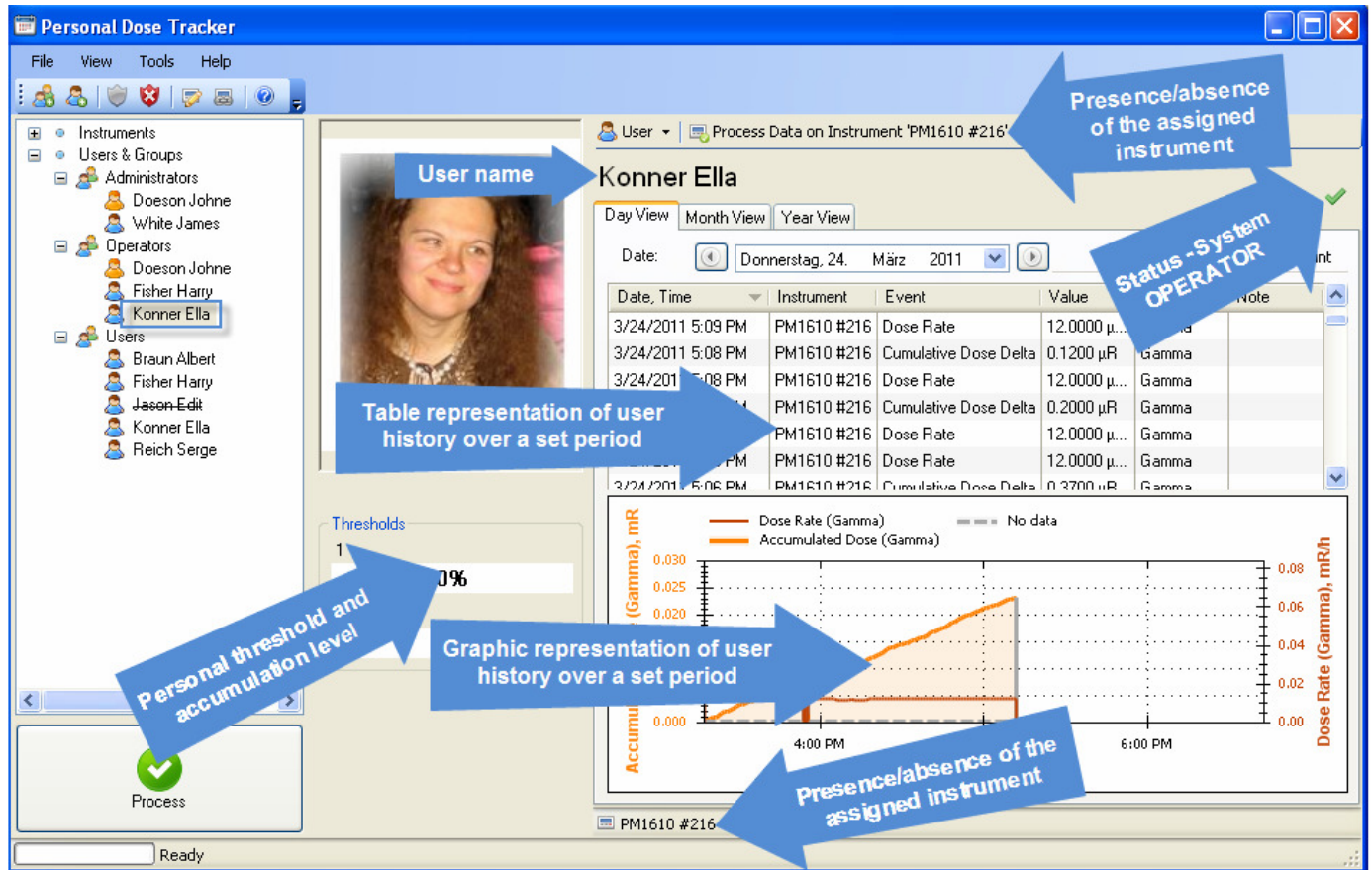
### "USERS AND GROUPS" CARD



## "USERS GROUP" CARD

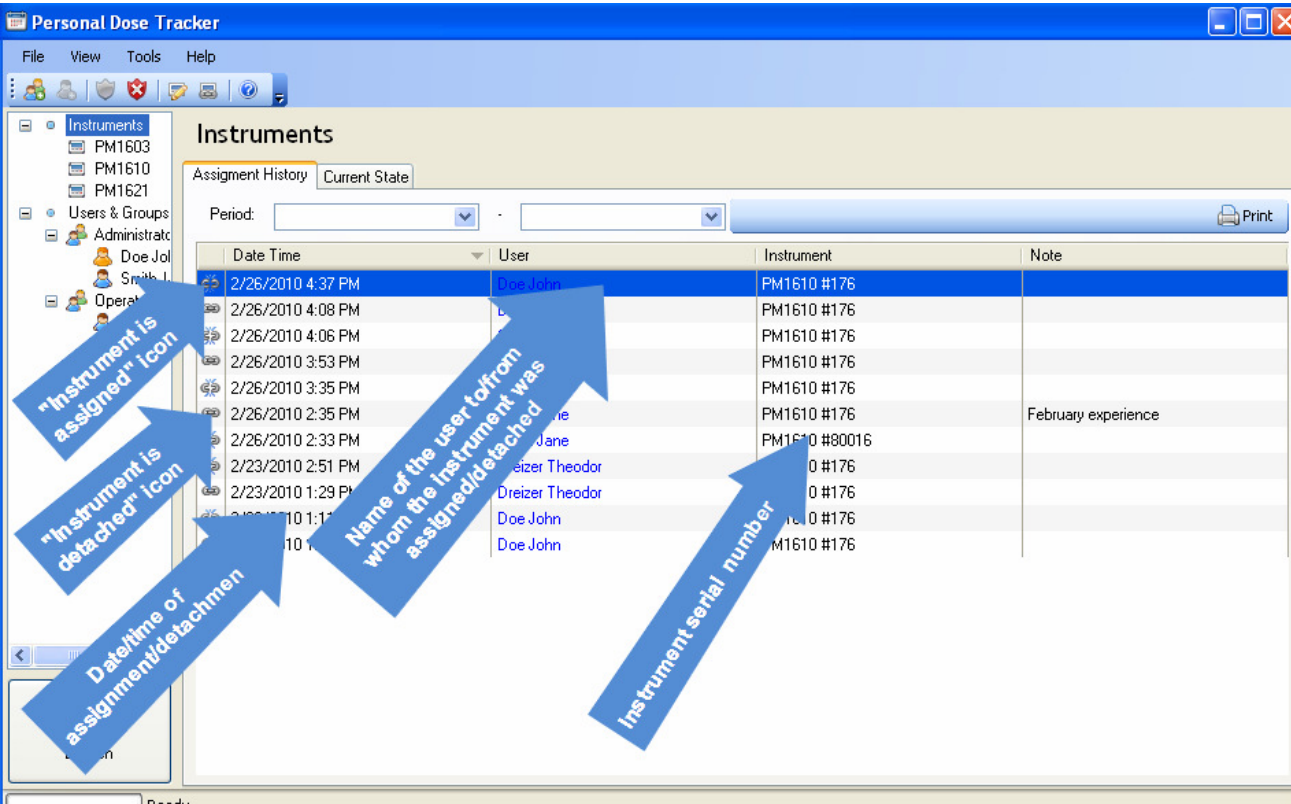


## "USER" CARD



## "INSTRUMENTS" CARD

### *Assignment History Tab*



**Personal Dose Tracker**

File View Tools Help

**Instruments**

Assignment History Current State

Period: [ ] - [ ] [Print]

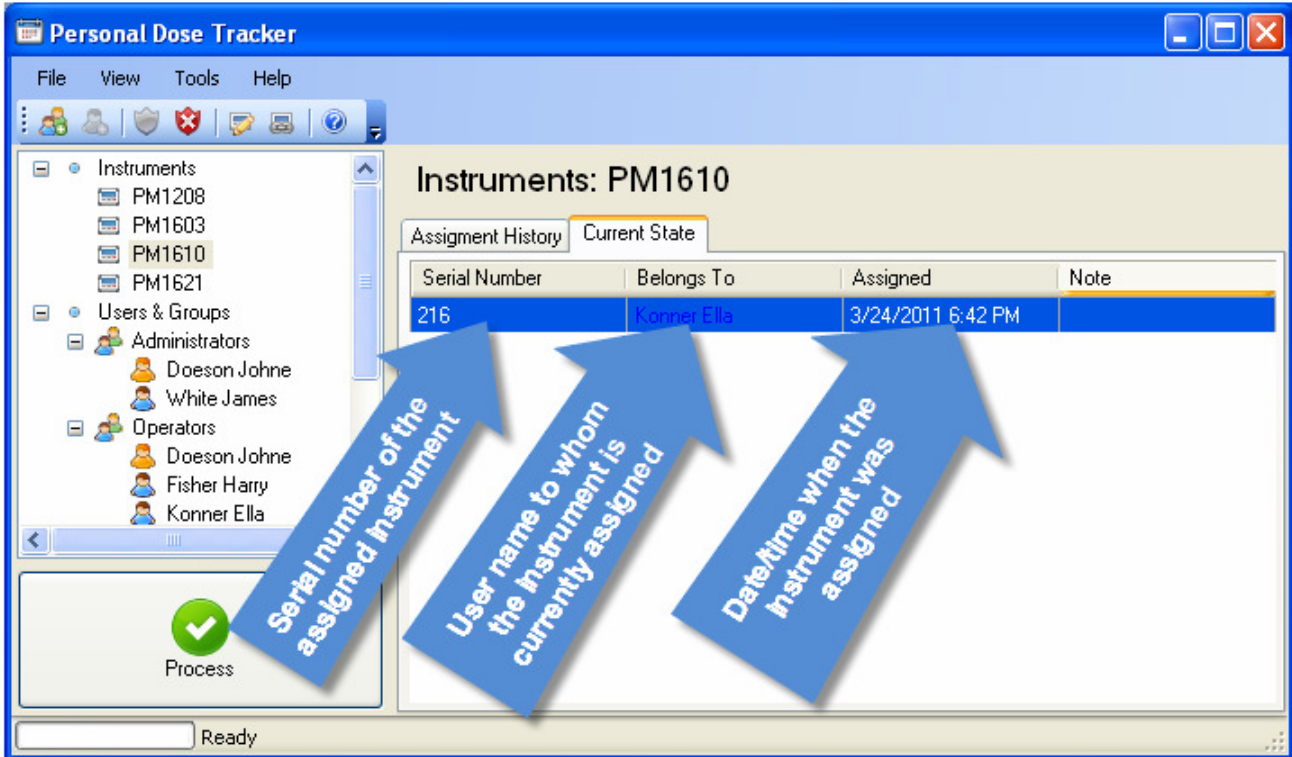
Date Time	User	Instrument	Note
2/26/2010 4:37 PM	Doe John	PM1610 #176	
2/26/2010 4:08 PM		PM1610 #176	
2/26/2010 4:06 PM		PM1610 #176	
2/26/2010 3:53 PM		PM1610 #176	
2/26/2010 3:35 PM		PM1610 #176	
2/26/2010 2:35 PM		PM1610 #176	February experience
2/26/2010 2:33 PM	Jane	PM1610 #80016	
2/23/2010 2:51 PM	Dreizer Theodor	0 #176	
2/23/2010 1:29 PM	Dreizer Theodor	0 #176	
2/23/2010 1:11 PM	Doe John	0 #176	
2/23/2010 1:10 PM	Doe John	PM1610 #176	

Ready

**Annotations:**

- "Instrument is assigned" icon (points to the assigned icon in the first row)
- "Instrument is detached" icon (points to the detached icon in the second row)
- Datetime of assignment/detachment (points to the Date Time column)
- Name of the user to/from whom the instrument was assigned/detached (points to the User column)
- Instrument serial number (points to the Instrument column)

## Current State Tab



**Personal Dose Tracker**

File View Tools Help

**Instruments: PM1610**

Assignment History **Current State**

Serial Number	Belongs To	Assigned	Note
216	Konner Ella	3/24/2011 6:42 PM	

Serial number of the assigned instrument

User name to whom the instrument is currently assigned

Date/time when the instrument was assigned

Process

Ready



## SOFTWARE INTERFACE LANGUAGE

When in the main program window, select *View* menu and click *Language* command.



Current software version provides English, Russian and German interface languages. By default software uses English interface language.



**Note!**  
**Restart software for changes to take effect.**



**Users and Groups names and comments to them are displayed in English by default even when software interface language is changed. Software user can edit them manually in corresponding fields.**

**If any names of commands/Users and Groups/options remain in the same language though software interface language is changed and software is restarted, then these names correspond to PC system settings, or software interface language settings (English by default).**

**When user enters/edits any names of the Users and Groups, or comments, then they will be displayed in input language though user can switch after that between different software interface languages.**



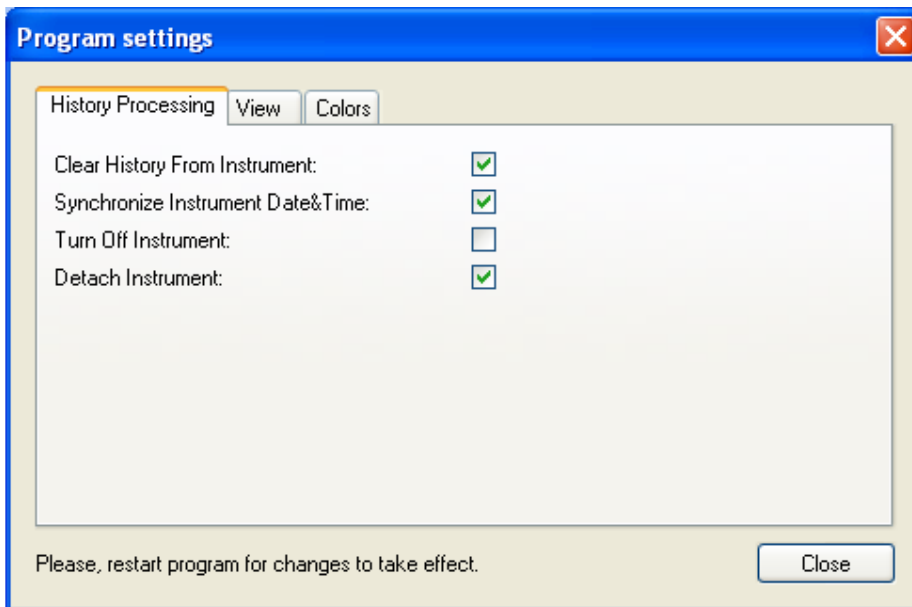
## SOFTWARE SETTINGS

Make all required software settings before working with the program.


Select **Tools** menu and click **Program Settings** command to enter the **Program Settings** window.

Select corresponding tab of the **Program Settings** window and make all required settings.

### **History Processing Tab**



Software processes these settings along with reading history of the connected instrument when it is being assigned/detached.

 **Clear History From Instrument** — flag this checkbox to enable automatic history deleting from the instrument's memory **when it is being detached** from the user. Hence, read instrument history is recorded into the user card (local program database). This function is determined by limitation of internal instrument's memory volume (8 000 events). If this function is flagged, only little information volume will be stored in the instrument's memory at a time (for one work-shift). It results in faster reading out history into the database;

- **Synchronize Instrument Date & Time** — flag this checkbox to enable synchronization of internal data and time of the instrument and PC when the instrument is being assigned to the user;
- **Turn Off Instrument** (available for PM1610 only) – flag this check-box to enable automatic turn off of the instrument when history was cleared and instrument was detached from the user. Instrument switches off automatically when it is disconnected from PC (miniUSB-USB cable unplugged).
- **Detach Instrument** – flag this check-box to enable detachment of the instrument from the user when was read into user card.



### **Attention!**

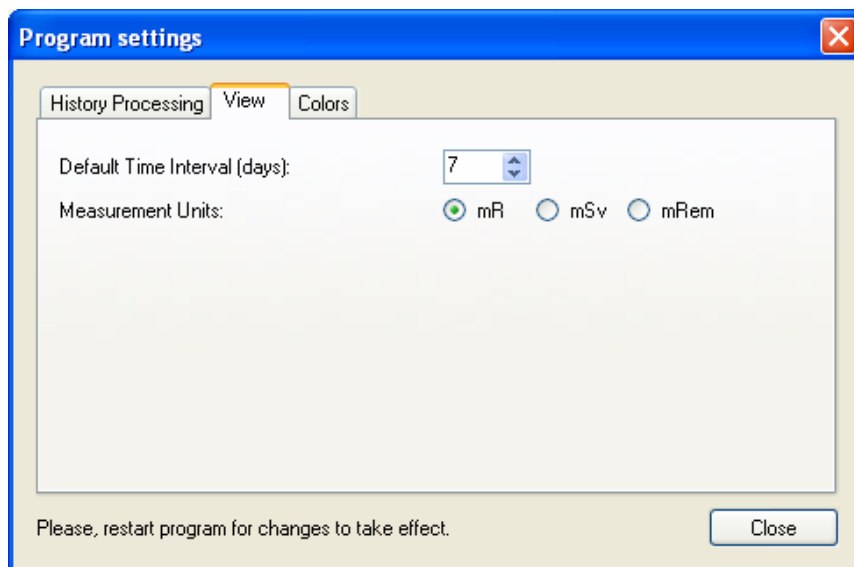
History processing parameters for all users are set in the *Program Settings* window, *History Processing* Tab.

History processing parameters can be changed (flagged/unflagged) for every individual case before the very instrument history reading. Use options of *Read History* window to do it.

When any setting is edited in the Read History window, the same setting is automatically changed in the *Program Settings* window, *History Processing* Tab and becomes automatically preset for all database instruments.

### **View Tab**

Set information display settings.



- **Default Time Interval (days)** — over the last N days – use up/down arrow buttons to specify time interval for the program to display the report in the

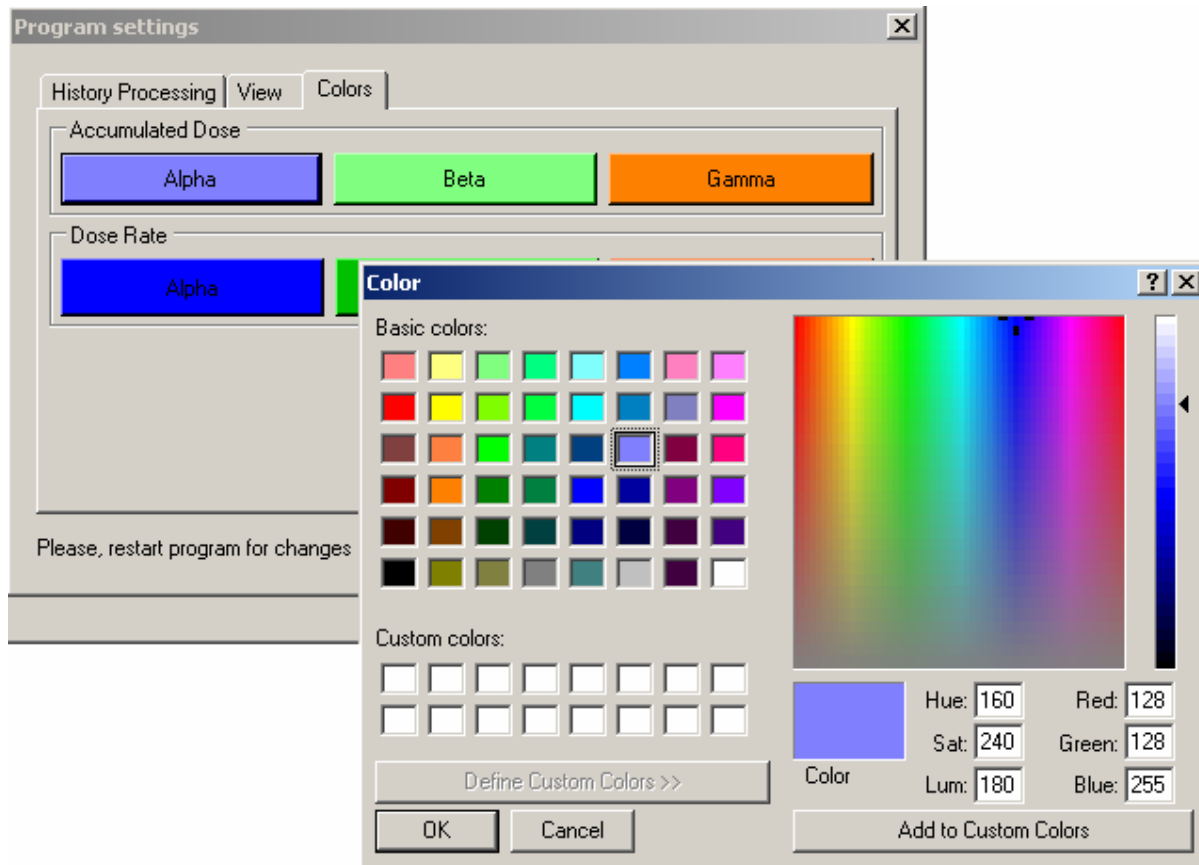
---

*Assignment History* card, as well as to display read instrument history in the *History Viewer* window;

◆ **Measurement Units** – flag corresponding radio-button to select the software displayed type of the measurement units. Measurement units of different instruments can vary. Nevertheless, software transforms measurement units into one type while saving history into the database.

## Colors Tab

Configuration of the report color scheme.



◆ **DE (Accumulated Dose)** – Specify colors of graphical representation of gamma-radiation DE (dose equivalent).

◆ **DER (Dose Rate)** – Specify colors of graphical representation of gamma-radiation DER (dose equivalent rate).

Software enables configuration of graphical representation of alpha- and beta-measurements history. Nevertheless, current software version works with gamma-dosimeters only.

Color schemes are configured in a traditional Windows way since the process includes configuration of the profile (color, hue, saturation and luminosity).

## SAVING PROGRAM SETTINGS



### **Attention!**

Press *Close* button on the lower window panel when the software settings configuration was done or any user parameter was changed.

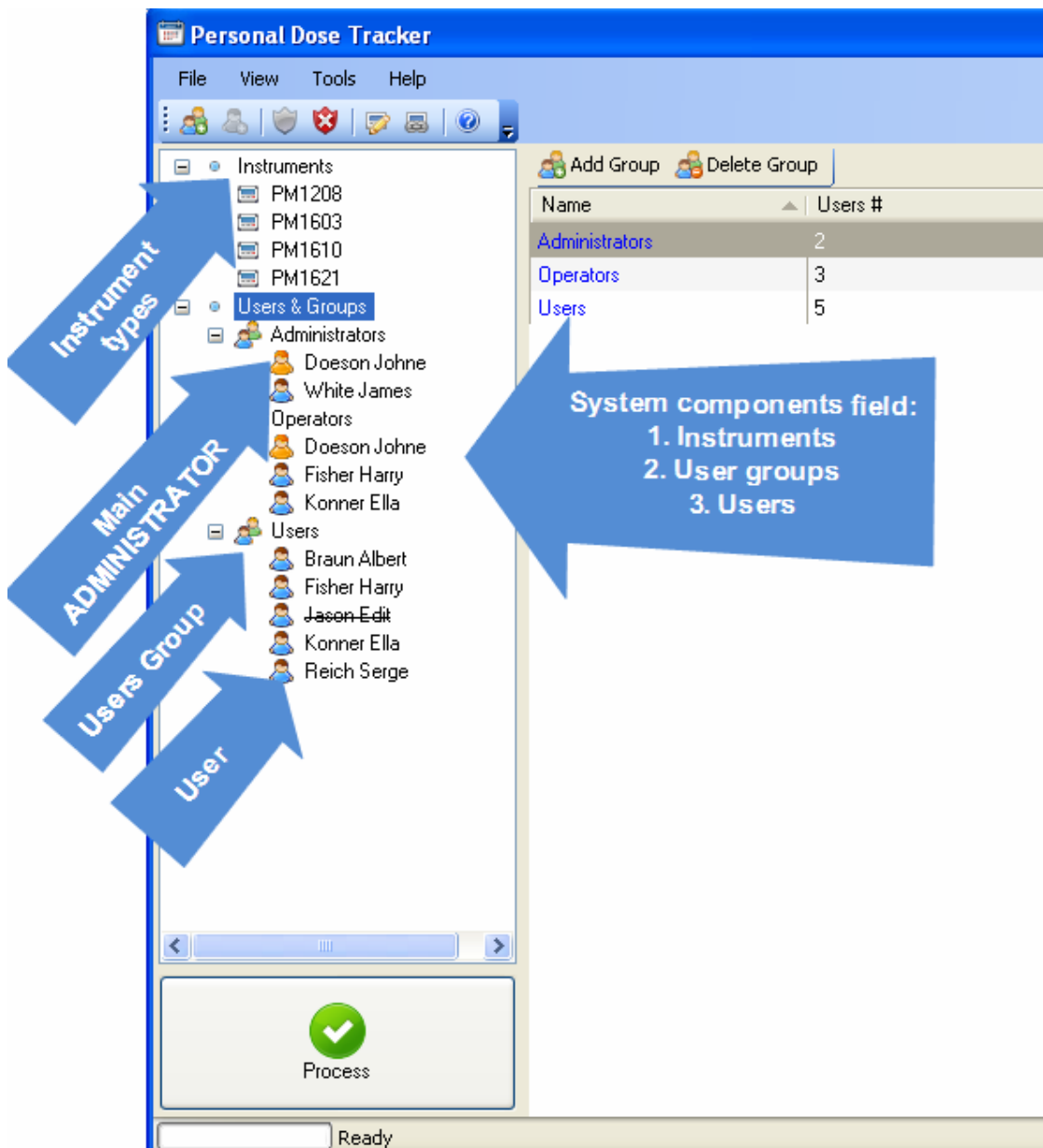


### **Note!**

Restart software for changes to take effect.

## USERS, USER GROUPS

Users and users groups are system program components located in the corresponding field in the main program window left part.



Software enables multi-user mode and can keep up to 100 user accounts. All user accounts are divided into groups with access right restriction (for each user or group). User accounts structure can have two levels the most:


1. Users group;
2. Users.

**Attention!**

- 1. After initial program load there will be three default users groups:**

- ◆ Administrators;
- ◆ Operators;
- ◆ Users.

- 2. By default in the *Administrators* group there is only one user – MAIN ADMINISTRATOR.**

- 3. Even though several users can be added to the *Administrators* group, the MAIN ADMINISTRATOR is always marked with  icon. ;**

- 4. It is recommended that only one MAIN ADMINISTRATOR is in the system;**

- 5. User can add his/her own or edit existing users groups.**

## ACCESS RIGHTS




Access rights can be assigned for every user individually as well as for a whole user group.

Only MAIN ADMINISTRATOR can assign user access rights when creating/editing user account in the database (see **Add/Edit User** chapter).

Only MAIN ADMINISTRATOR can assign user group access rights when creating/editing user group in the database (see **Add/Edit User Group** chapter).

One user can belong to several user groups. If user belongs to different groups with concurrent rights, his/her permissive right prevails over prohibitive rights.

## MAIN ADMINISTRATOR





	<ul style="list-style-type: none"> <li>➤ <b>MAIN ADMINISTRATOR</b>  possesses higher level access to all software settings and resources.</li> <li>➤ <b>MAIN ADMINISTRATOR</b>  is a primary software user. User cannot delete MAIN ADMINISTRATOR from the user list.</li> <li>➤ Change default MAIN ADMINISTRATOR name and access password upon software installation to prevent unauthorized access to software and to secure the settings.</li> <li>➤ To change MAIN ADMINISTRATOR access password:             <ul style="list-style-type: none"> <li>• Login as Main Administrator;</li> <li>• Open <i>Add/Edit User</i> dialogue window;</li> <li>• Click <i>Access Rights</i> tab (see <b>Add User</b> chapter) to change the password.</li> </ul> </li> </ul>
---	---

## MAIN ADMINISTRATOR rights


<i>Users/User groups</i>	<i>Available software functions</i>
<ul style="list-style-type: none"> <li>➤ <b>MAIN ADMINISTRATOR</b></li> </ul>	<p>Administrator has permanent access to all software functions:</p> <ul style="list-style-type: none"> <li>• Add/delete users/user groups (operators/users);</li> <li>• Edit users' and groups' specific data (operators/users);</li> <li>• Set access rights for users/user groups;</li> <li>• Software configuration:             <ul style="list-style-type: none"> <li>▪ History processing software settings;</li> <li>▪ Measurement units software settings;</li> <li>▪ Setting of report representation time;</li> <li>▪ Setting of color report scheme.</li> </ul> </li> <li>• Software assignment/detachment of the instrument;</li> <li>• Access to the connected instrument settings;</li> <li>• Set threshold values for each user/user groups;</li> <li>• Reading instrument operation history;</li> <li>• Database access;</li> <li>• All required operations with database (reports generation and data selection, database export).</li> </ul>



## OPERATORS GROUP



	<p>  <b>OPERATOR'S</b> access rights to software settings and resources are defined by the <b>ADMINISTRATOR</b> when adding new or editing existing operator group.         </p> <p>  <b>OPERATOR</b> - user account with unique Login/Password. Operator can independently enter the system using his/her Login/Password and get access to permitted software functions.         </p> <p>  <b>To change OPERATOR access password:</b> <ul style="list-style-type: none"> <li>• Open <i>Add/Edit User</i> dialogue window;</li> <li>• Click <i>Access Rights</i> tab (see <b>Add User</b> chapter) to change the password.</li> </ul> </p>
---	---

### OPERATOR rights

<i>Users/ User groups</i>	<i>Available software functions</i>
 <b>OPERATORS</b>	<ul style="list-style-type: none"> <li>• <sup>1</sup> Software configuration;             <ul style="list-style-type: none"> <li>▪ History processing software settings;</li> <li>▪ Measurement units software settings;</li> <li>▪ Setting of report representation time;</li> <li>▪ Setting of color report scheme.</li> </ul> </li> <li>• <sup>1</sup> Software assignment/detachment of the instrument;</li> <li>• <sup>1</sup> Access to connected instrument settings;</li> <li>• Set threshold values for every user/users group;</li> <li>• Database access;</li> <li>• All required operations with database (reports generation and data selection, database export).</li> </ul>
<b>Note:</b>	
<sup>1</sup> MAIN ADMINISTRATOR assigns every OPERATOR access rights to these functions individually.	

## USERS GROUP



- **USER**  **DOES NOT HAVE** access rights to software settings and resources.
- **USER**  **CANNOT** work with the current software at all.
- **USER** account is created by **MAIN ADMINISTRATOR**.
- **ADMINISTRATOR** or **OPERATOR** (if permitted) can assign/detach the instrument to/from any user. Accumulated history of the connected instrument is recorded into the database.

## USER rights

<i>Users/ User groups</i>	<i>Available software functions</i>
➤ <b>USERS</b>	No access right to software.

# ADD USERS GROUP



**Only MAIN ADMINISTRATOR can add/edit USERS GROUPS and set their access rights.**



**Attention!**  
**After initial program load there will be three default users groups:**

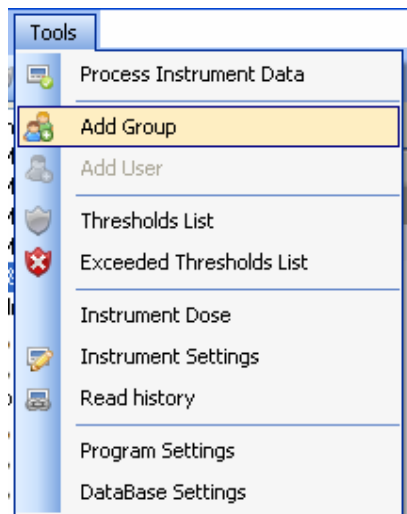
- ◆ Administrators;
- ◆ Operators;
- ◆ Users.

**User can add his/her own and edit existing users groups in the system.**

Use one of the following ways\* to add new users group to the system:

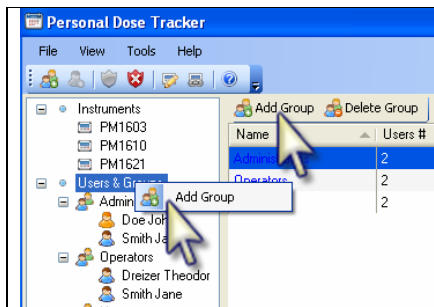


\*Press this toolbar button;



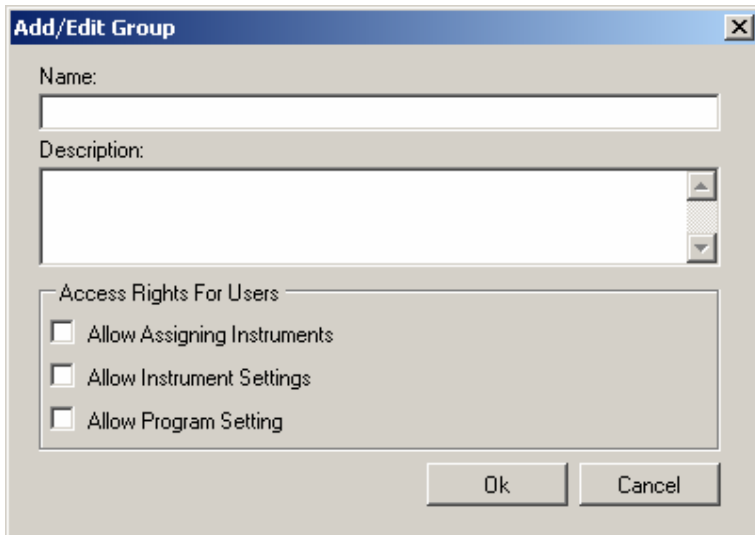
\*Select the *Tools* menu and click *Add Group* command;


\*Right-click on the *Users & Groups* line in the system components field. Select *Add Group* command from the context menu;



\*Select **Add Group** command in the **Users & Groups** card.


**Add/Edit Group** dialogue window opens. MAIN ADMINISTRATOR can enter (or edit) here information on the user group, as well as set (or edit) access level for all the group members (users).




 **Name** – users group name. Group name will be displayed in the main program window system components field.



Software checks uniqueness of the group name in the system.

 **Description** – additional descriptive information on the users group being added.

## ACCESS RIGHTS OF THE GROUP MEMBERS (USERS)

 **Allow Assigning Instruments** – flag this check box to allow group members to assign/detach instruments to/from the selected user.

➤ **Allow Instrument Settings** – flag this check box to allow reading of set (or write changed) operation settings of the connected instrument.

➤ **Allow Program Setting** – flag this check box to allow group members to configure software settings.

Press **OK** button to confirm and save information on new group.

## GROUP RIGHT TO WORK WITH THE INSTRUMENTS

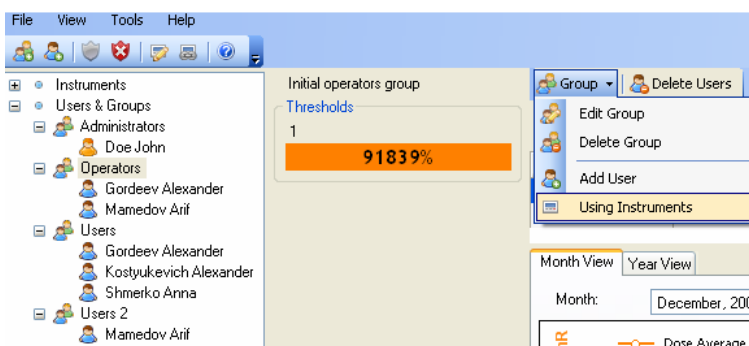


➤ All users of newly added group are allowed to work with the instruments by default.

➤ Group users can be allowed/denied by MAIN ADMINISTRATOR to work with the instruments when the group was added completely.

Highlight required users group that will be allowed/denied to work with the instruments. In the right field of the main program window (in the field of operation information display) a card of the selected users group will be displayed.

Select **Using Instruments** dialogue window (see below).

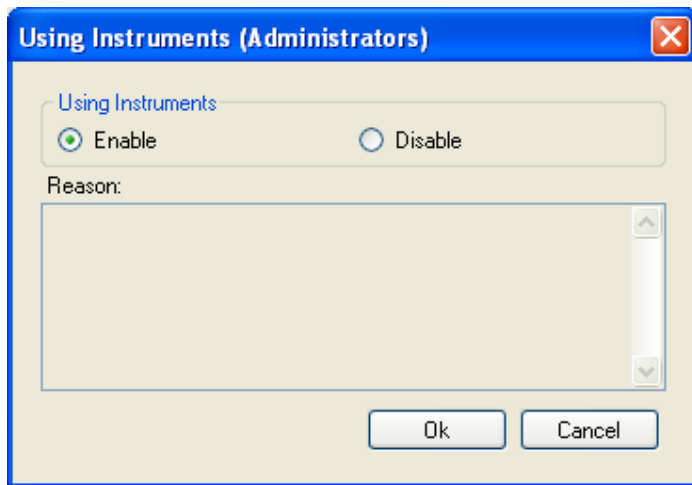



Open group card. Select **Group** menu and click **Using Instruments** command.




### Note!

**Using Instruments** menu command and dialog window will be visible only for ADMINISTRATORS to allow/deny (enable/disable) users to work with instruments. Window header contains name of the involved group (within brackets).

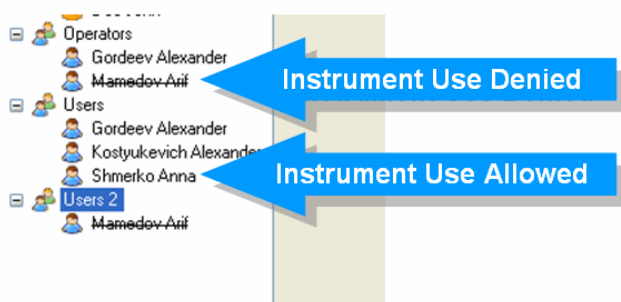


➤ **Enable** – flagged radio-button (  ) enables group members to work with the instruments, i.e., members of this group can be assigned instruments.

➤ **Disable** – flagged radio-button (  ) prohibits members of the group to work with the instruments, i.e. members of this group cannot be assigned instruments.

➤ **Reason** – flagged **Disable** radio-button activates an entry field for the prohibition (denial) reason. Explanatory message will be displayed by software at every attempt to assign the instrument to any member of this group.

Press **OK** button to confirm and save changes.



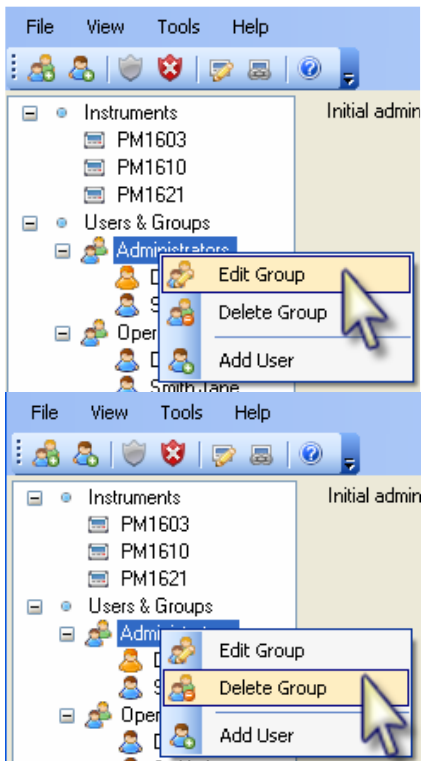
Name of the user denied to use instruments will be displayed strikethrough.

## EDIT/DELETE USER GROUP



Only MAIN ADMINISTRATOR can edit information on the users group or delete the group from the system.

Use one of the following ways\* to edit/delete users group:

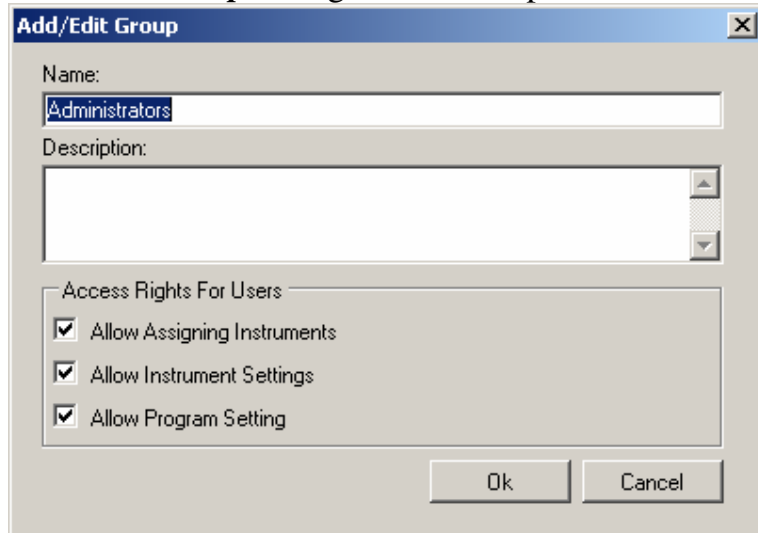


\*Right-click on the selected group name line in the system components field. Select **Edit Group** command in the context menu.

\*In the **Group** card select **Edit/Delete Group** command.

## EDIT GROUP

*Add/Edit Group* dialogue window opens after user selected *Edit Group* command.



In the opened dialogue window MAIN ADMINISTRATOR can view or change information on the users group, as well as change access level for users of the group being edited (see **Add Users Group** chapter).

Press **OK** button to confirm and save changes.

## DELETE GROUP

*Delete Group* dialogue window opens after user clicked *Delete Group* command. Here MAIN ADMINISTRATOR can transfer users of the group being deleted to another users group.



### Attention!

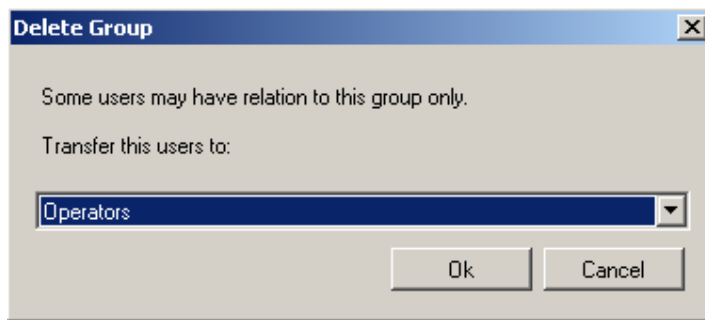
**No user if he/she has history can be deleted!**

**MAIN ADMINISTRATOR  is a primary software user and cannot be deleted from the database.**

**If user has history, he/she can be transferred to another group only.**

**Users without history are deleted from the database IRREVERSIBLY!**





Open drop-down list and choose required group. Users of the group being deleted will be transferred to the selected group. Press **OK** to start transfer.

As a result the group will be deleted from the system database, and all its members (users) with/without history will be transferred to the selected group.

## ADD USER



**Only MAIN ADMINISTRATOR can add USER.**



**Attention!**

**After initial program load there will be three default users groups:**

- ↕ Administrators;
- ↕ Operators;
- ↕ Users.

**It is recommended that Administrators group shall have one user only – MAIN ADMINISTRATOR (👤). If another ADMINSTRATOR is created he/she will not have rights to add/edit/delete Users and/or Users Groups.**

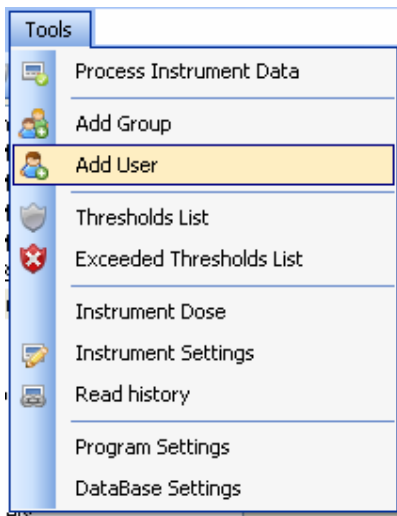


***Add User* command is available only if any group in Users&Groups system component is highlighted by cursor.**

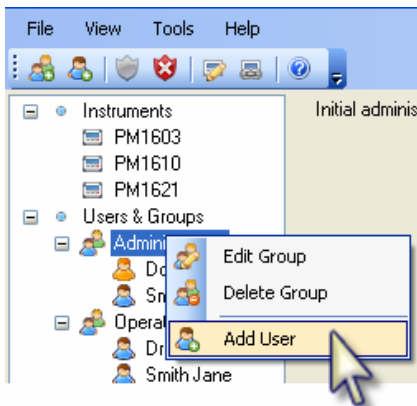
Use one of the following ways\* to add new user to the system:



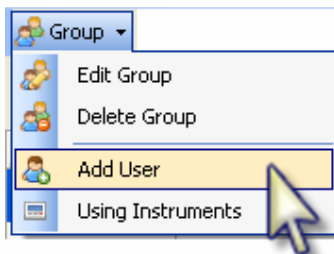
**\*Press this toolbar button;**



\* Select **Tools** menu and click **Add User** command;



\* Right-click on the name of the highlighted group to which a new user will be added, or right-click name of the existing user. Click **Add User** command from the context menu.

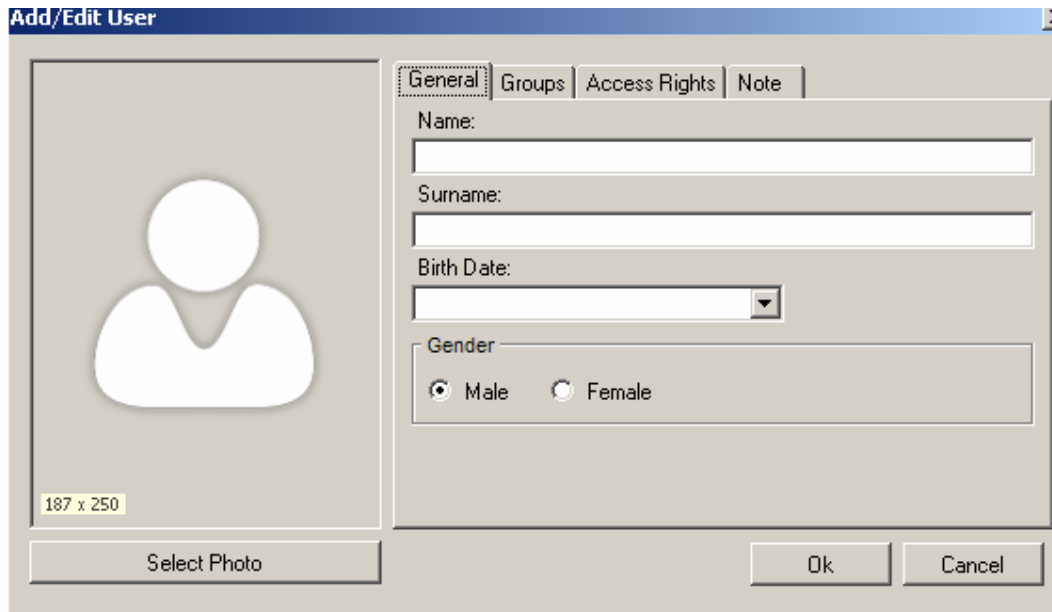


\*In the **Group** card select **Add Group** command.

**Add/Edit User** dialogue window opens for MAIN ADMINISTRATOR to enter (or edit) user information, classify the user (add to new group or change current group membership), change system access level, as well as enter some notes.

Select corresponding tab of the **Add/Edit User** window and enter required information.

## General Tab



- ◆ **Name** – user name;
- ◆ **Surname** – user family name;
- ◆ **Birth Date** – user birth date.

**Name** and **Surname** of the user are displayed in the main program window system components field.

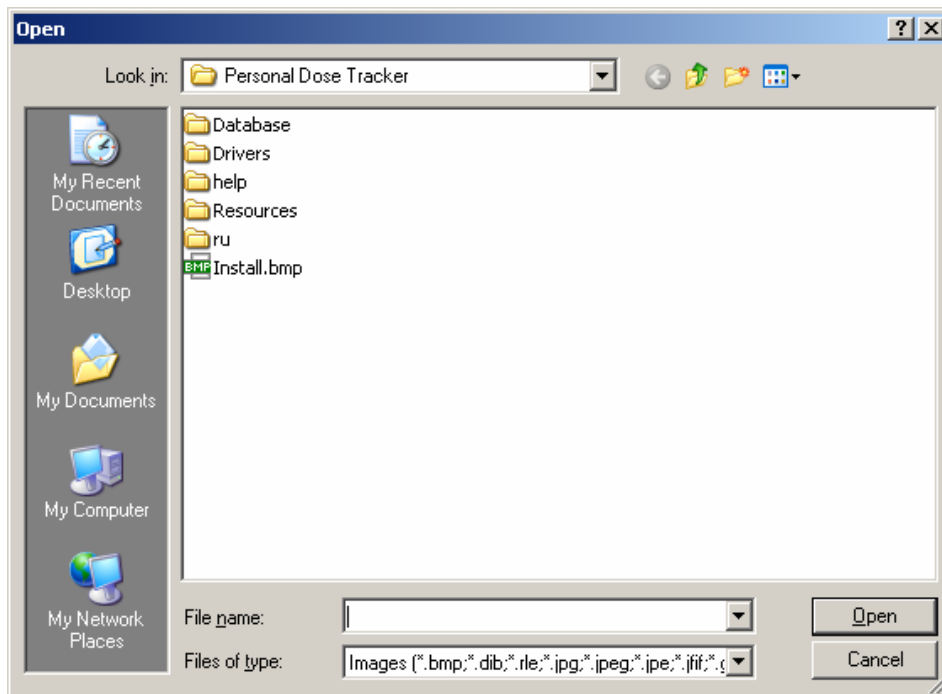


- ◆ **Name, Surname and Birth Date** – characteristic system parameters of the user account.

- ◆ **Software checks uniqueness of the user account data in the system.**

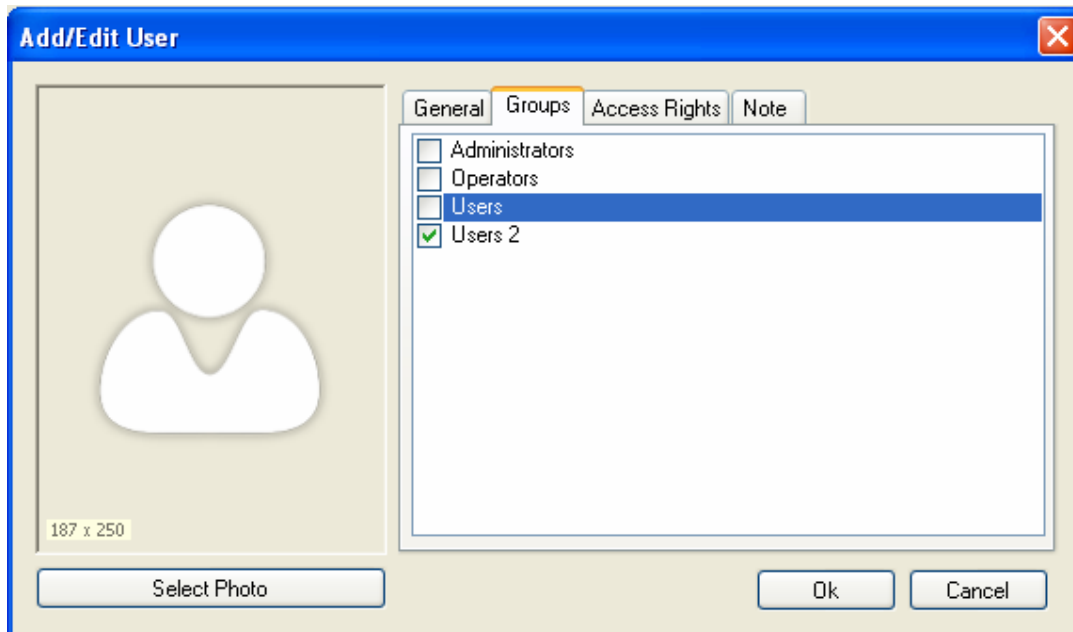
- ◆ **Gender** – flag required *Male/Female* radio-button (  ).

◆ **Select photo** – press this button to activate *Open* window. Here MAIN ADMINISTRATOR can choose required photo stored in PC memory. Software automatically resizes photo to the 187x250 pixel size.



Press **OK** button to confirm and save changes.

## Groups Tab



### Attention!

After initial program load there will be three default users groups:



- ◆ Administrators;
- ◆ Operators;
- ◆ Users.

User can create his/her own users groups in the system and edit existing ones.

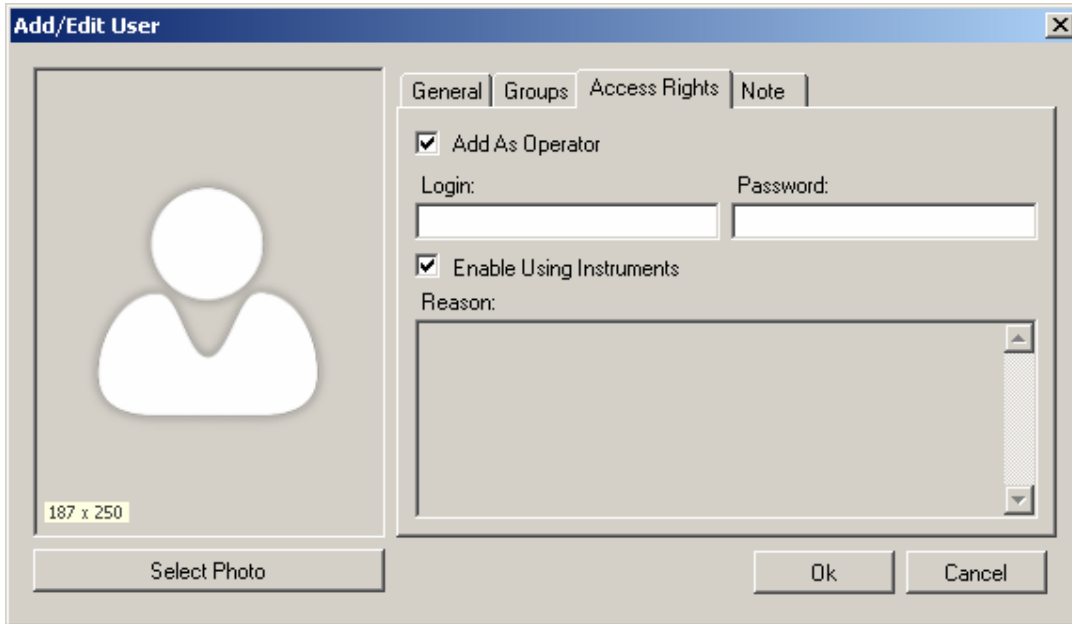
(see **Add Users Group** chapter).

Each user can be a member of several system groups at the same time.

If any users group is highlighted when **Add User** command was selected in the system components field, the check box of this group will be flagged by default. Otherwise all check boxes will be unflagged.

Press **OK** button to confirm and save changes.

## Access Rights Tab





➤ **Add As Operator** – flag this check box to assign the user status and rights of OPERATOR (see **Operators Group** chapter).

When the user is assigned status and rights of Operator, program opens entry fields for unique Operator Login/Password.

➤ **Login** – Operator system account.

➤ **Password** – set of characters that Operator enters for identification in the system. Password enables Operator access to software resources. Password can contain numbers, letters and other characters. Password is case-sensitive.



- **OPERATOR**  access level to software settings and resources is defined by MAIN ADMINISTRATOR during adding/editing the Group of this Operator.
- **OPERATOR**  - user account with unique Login/Password.
- Operator can independently enter the system using his/her own Login/Password and, hence, get access to all allowed software functions.

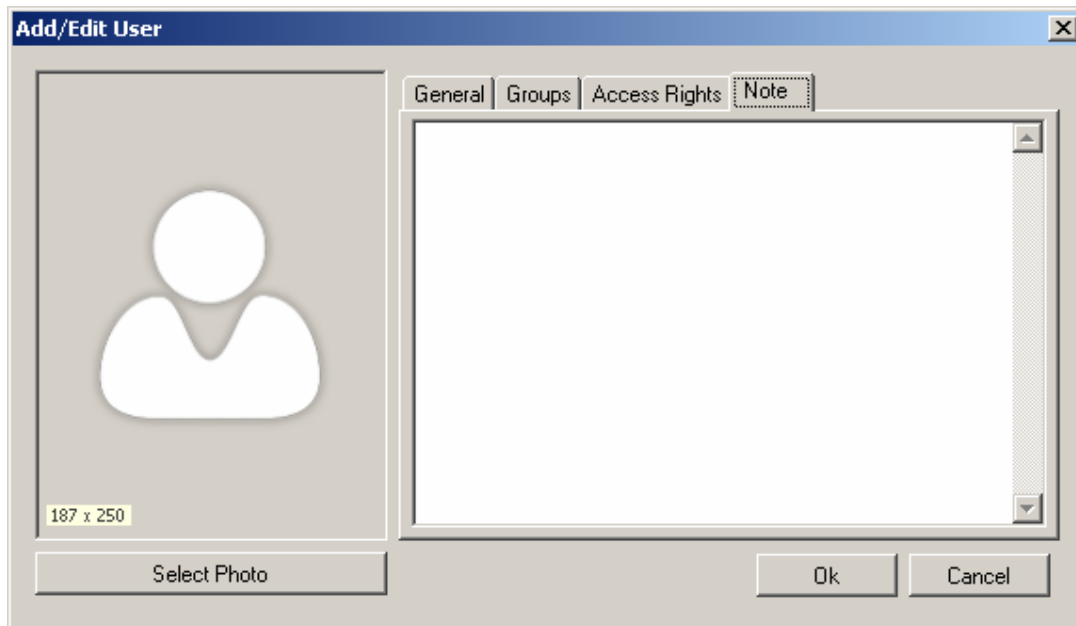
◆ **Enable using instruments** – flag this check box to allow the user working with the instruments, i.e., this user can be assigned instruments.

◆ **Enable using instruments** – unflag this check box to prohibit user working with the instruments, i.e. this user cannot be assigned instruments.

◆ **Reason** – unflagged *Enable Using Instruments* check box activates an entry field for the prohibitive reason. Explanatory message will be displayed at every attempt to assign the instrument to this user.

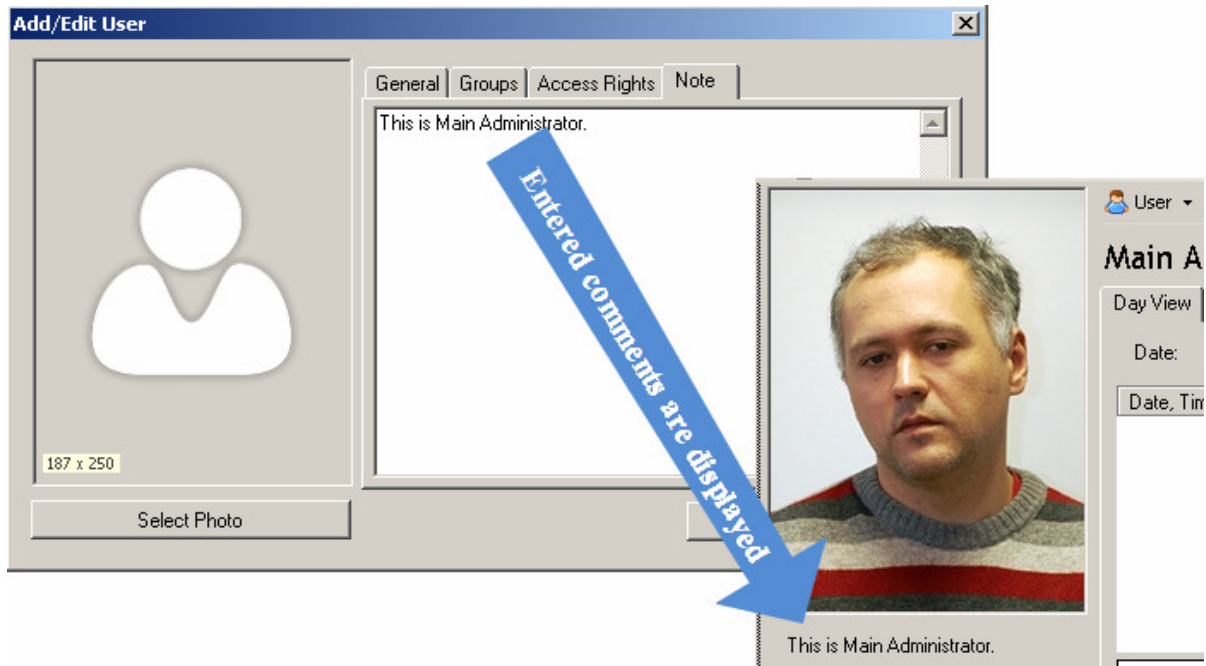
Press **OK** button to confirm and save changes.

### Note Tab

The screenshot shows a software window titled "Add/Edit User". It has four tabs: "General", "Groups", "Access Rights", and "Note". The "Note" tab is currently selected. On the left side of the window, there is a placeholder for a user photo, represented by a white silhouette on a grey background, with the dimensions "187 x 250" indicated below it. Below the photo placeholder is a button labeled "Select Photo". On the right side, under the "Note" tab, is a large, empty text area with a vertical scrollbar. At the bottom right of the window are two buttons: "Ok" and "Cancel".

Enter notes, additional information and other information on the user in this field. Entered notes will be displayed in the user card under his/her photo.





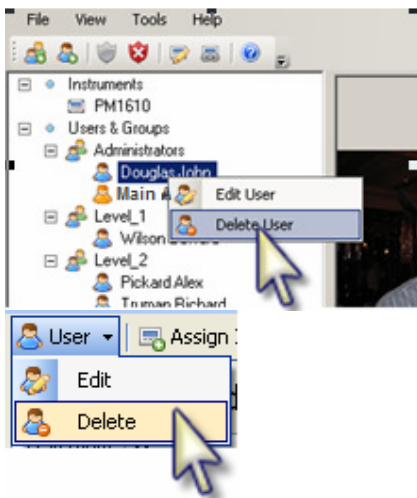
Press **OK** button to confirm and save changes.

## EDIT/DELETE USER



Only **MAIN ADMINISTRATOR** can edit **USER** information or delete user from the system.

Use one of the following ways\* to edit/delete user from the system:



\*Right-click on the highlighted user name. Select *Edit/Delete User* command from the context menu.

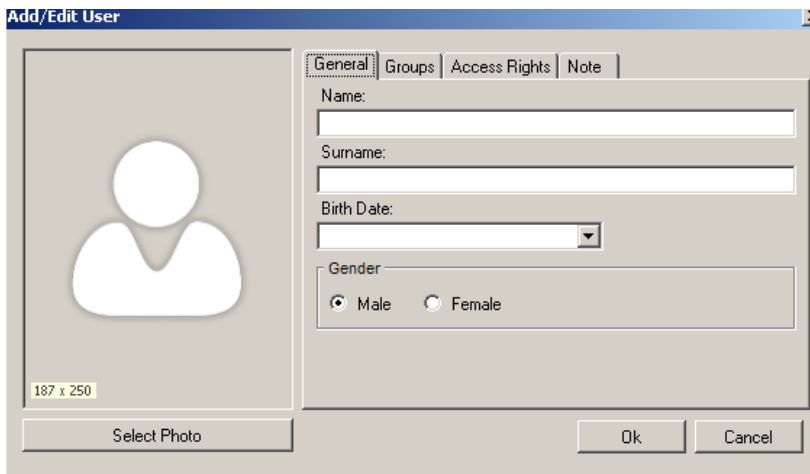
\*In the *User* card select *Edit/Delete* command.

### Edit User Information

Select *Edit User* command. *Add/Edit User* dialogue window opens.

MAIN ADMINISTRATOR, having chosen a corresponding tab of the *Add/Edit User* window, can edit information on user, change his/her group membership, access level, as well as enter or edit notes (see **Add User** chapter).

Press **OK** button to save changes.



The 'Add/Edit User' dialog box has a title bar with a close button. It contains a tabbed interface with 'General', 'Groups', 'Access Rights', and 'Note' tabs. The 'General' tab is active, showing fields for 'Name:', 'Surname:', 'Birth Date:' (with a dropdown arrow), and 'Gender' (with radio buttons for 'Male' and 'Female'). On the left, there is a placeholder for a user photo with the dimensions '187 x 250' and a 'Select Photo' button below it. At the bottom right are 'Ok' and 'Cancel' buttons.

## Delete User



### Attention!

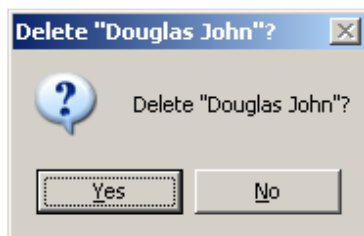
No user if he/she has history can be deleted!

**MAIN ADMINISTRATOR**  is a primary software user and cannot be deleted from the database.

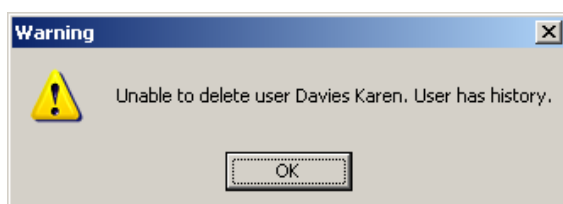
If user has history, he/she can be transferred to another group only.

Users without history are deleted from the database **IRREVERSIBLY!**

Click **Delete User** command. A dialogue window opens. Press **Yes** to delete, or **No** to cancel.



If this user has no history, he/she will be deleted completely. If this user already has history, the following message will be displayed:



## THRESHOLDS LIST

### Danger alerts

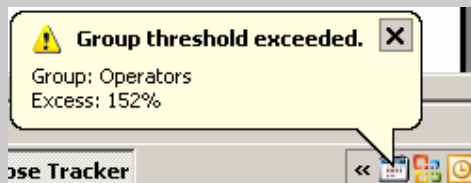


#### INSTRUMENT

- Instrument continuously monitors two threshold levels along the whole DER indication range and two threshold levels along the whole DE indication range;
- Instrument immediately indicates set thresholds excess by light, audio and vibro- alarms;
- If first DER threshold level is exceeded - instrument will emit discontinuous beep;
- If second DER threshold level is exceeded - instrument will emit rapid discontinuous beep;
- DER threshold levels set range is from 0.01  $\mu\text{Sv/h}$  to 10 Sv/h (1  $\mu\text{R/h}$  to 999.9 R/h);
- DE threshold levels set range is from 1  $\mu\text{Sv}$  to 10.0 Sv (100  $\mu\text{R}$  to 999.9 R).

## SOFTWARE

- ◆ Software enables continuous monitoring and control over software set DE threshold values on the basis of database-recorded history during the set DE accumulation time;
- ◆ DE threshold levels can be set for all system users (**User threshold**), as well as for definite group users (**Group threshold**);
- ◆ Software provides setting several (more than two) threshold levels;
- ◆ If any set thresholds are exceeded, software immediately (and then at every next program load) will display pop-up message (under the program icon in the Windows task tray);



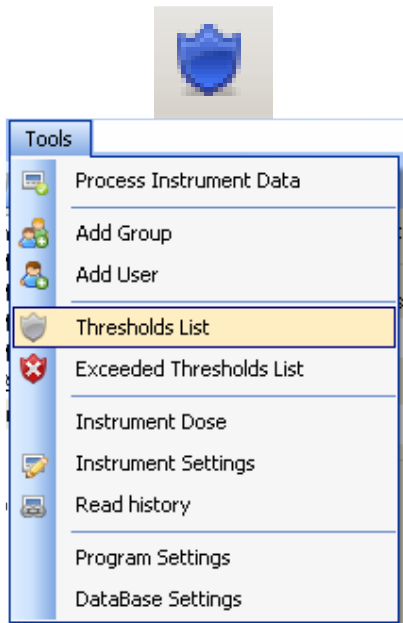
- ◆ If Operator tries to assign instrument to the user who has exceeded at least one DE threshold during the set accumulation time, software displays danger alarm. Confirm intention several times to continue the assignment;
- ◆ Software enables setting DE thresholds in the range **from 1  $\mu$ Sv to 9.9 Sv (100  $\mu$ R to 999.9 R).**

## ADD/EDIT/DELETE THRESHOLD



Only system MAIN ADMINISTRATOR and OPERATOR can add/edit/delete thresholds.

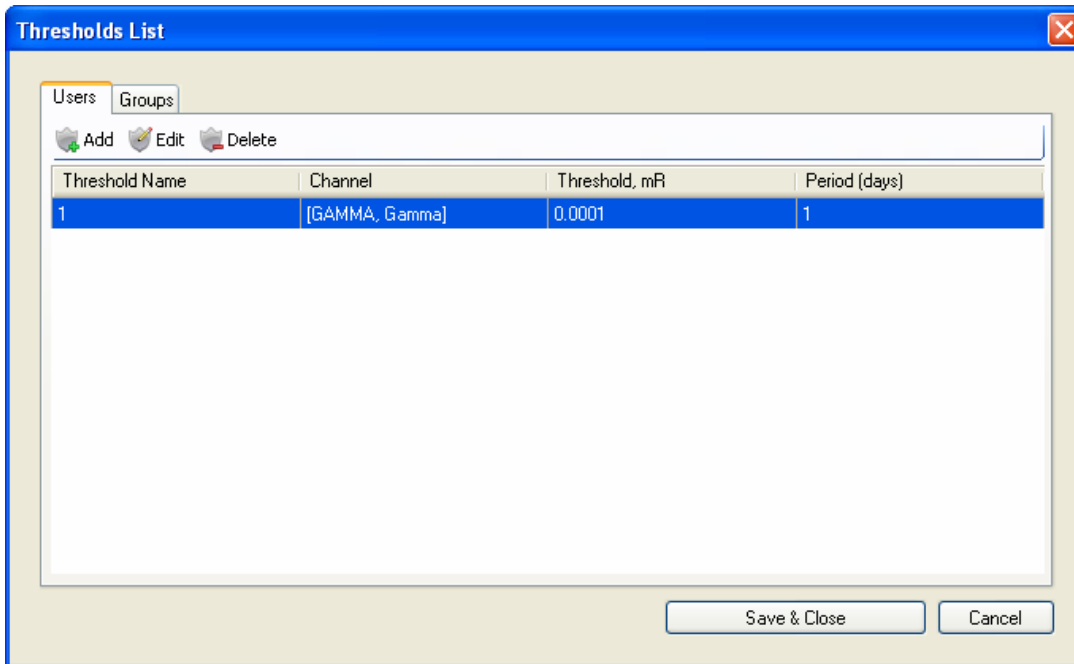
Use one of the following ways\* to add/edit/delete threshold:



\* Press this toolbar button.

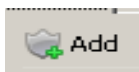
\* Select **Tools** menu and click **Thresholds List** command.

**Thresholds List** dialogue window opens for MAIN ADMINISTRATOR/OPERATOR to enter new (change or delete existing) threshold for all system users or for a given users group.



Threshold Name	Channel	Threshold, mR	Period (days)
1	[GAMMA, Gamma]	0.0001	1

Control buttons:



**Function:** opens entry field of threshold values for users and/or users groups.



**Function:** opens edit field of threshold values for users and/or users groups.



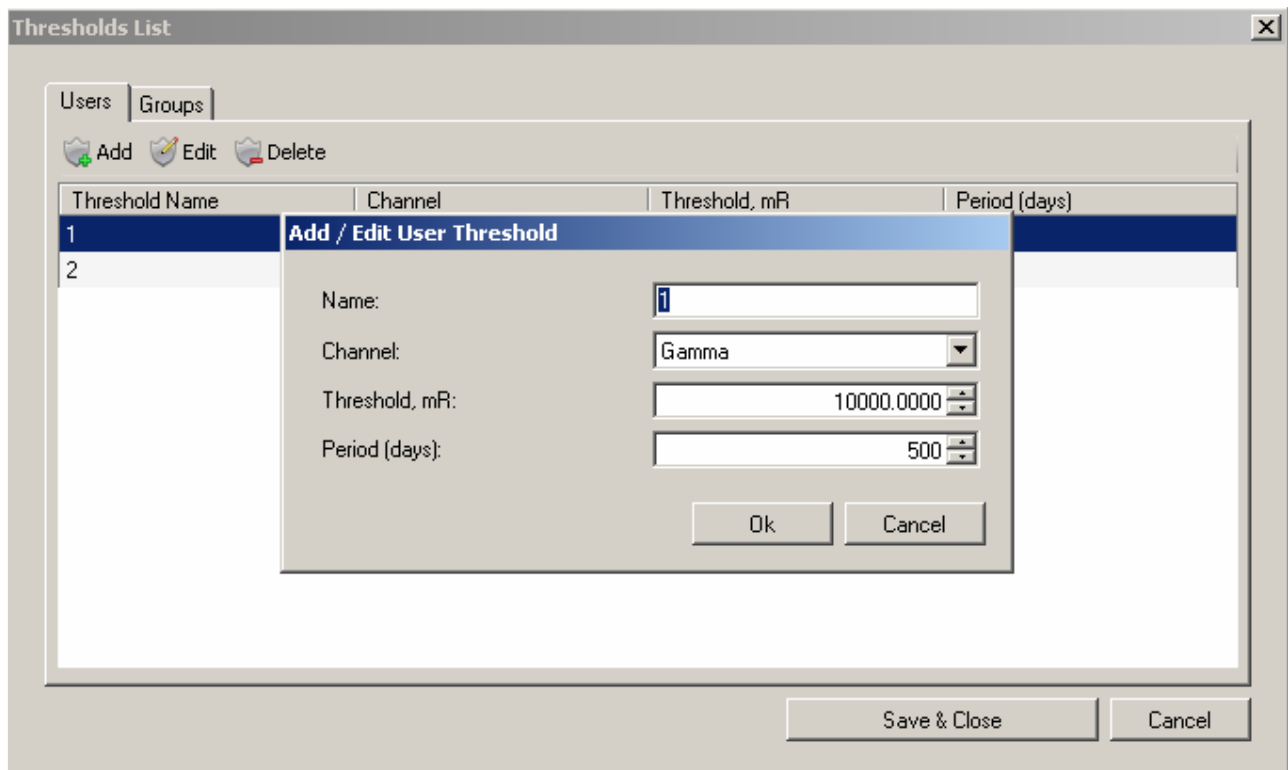
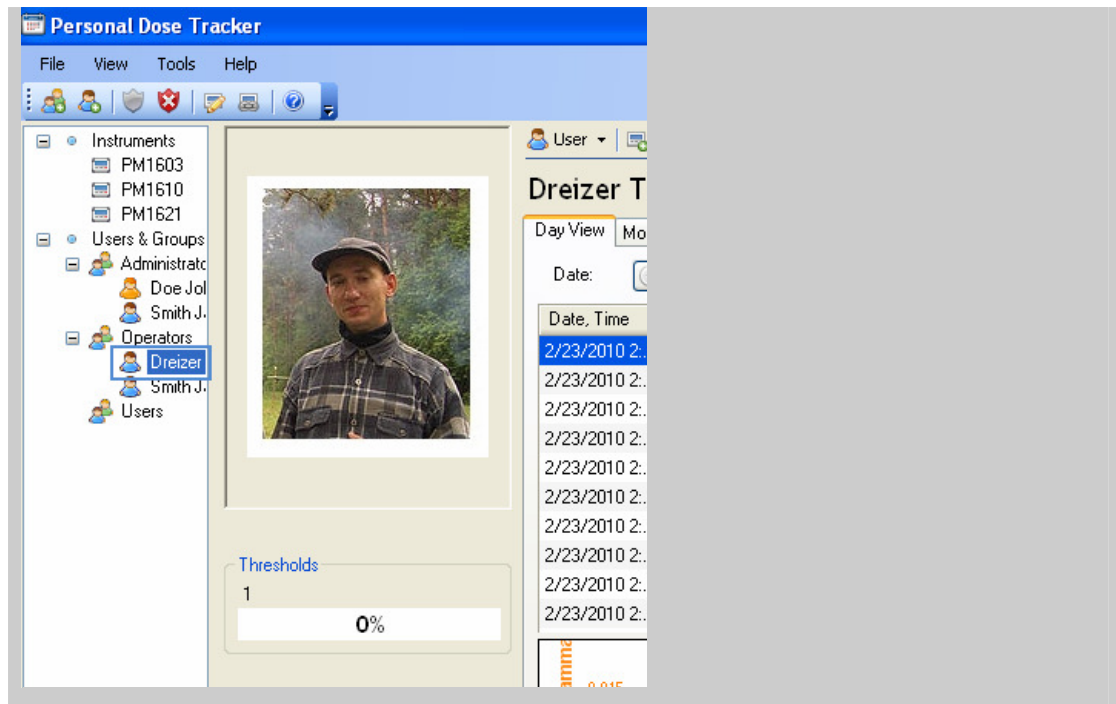
**Function:** deletes highlighted threshold from the thresholds list.

## USER THRESHOLD



⚠ **Thresholds set in the *Users* tab (*Thresholds List* window) are valid for all system users.**

⚠ **Accumulation level of thresholds entered at the *Users* tab will be displayed in percents under user photo when his/her card is opened.**



➤ **Name** — conventional name of the threshold being created.



➤ **Channel** – select channel type from the drop-down list to set the threshold. Software lets setting gamma-, alpha-, and beta- thresholds, though its current version works with gamma dosimeters only.

➤ **Threshold, mR** – entry field for fixed DE threshold value in mR (mSv). Threshold setting range corresponds to DE measurement range.

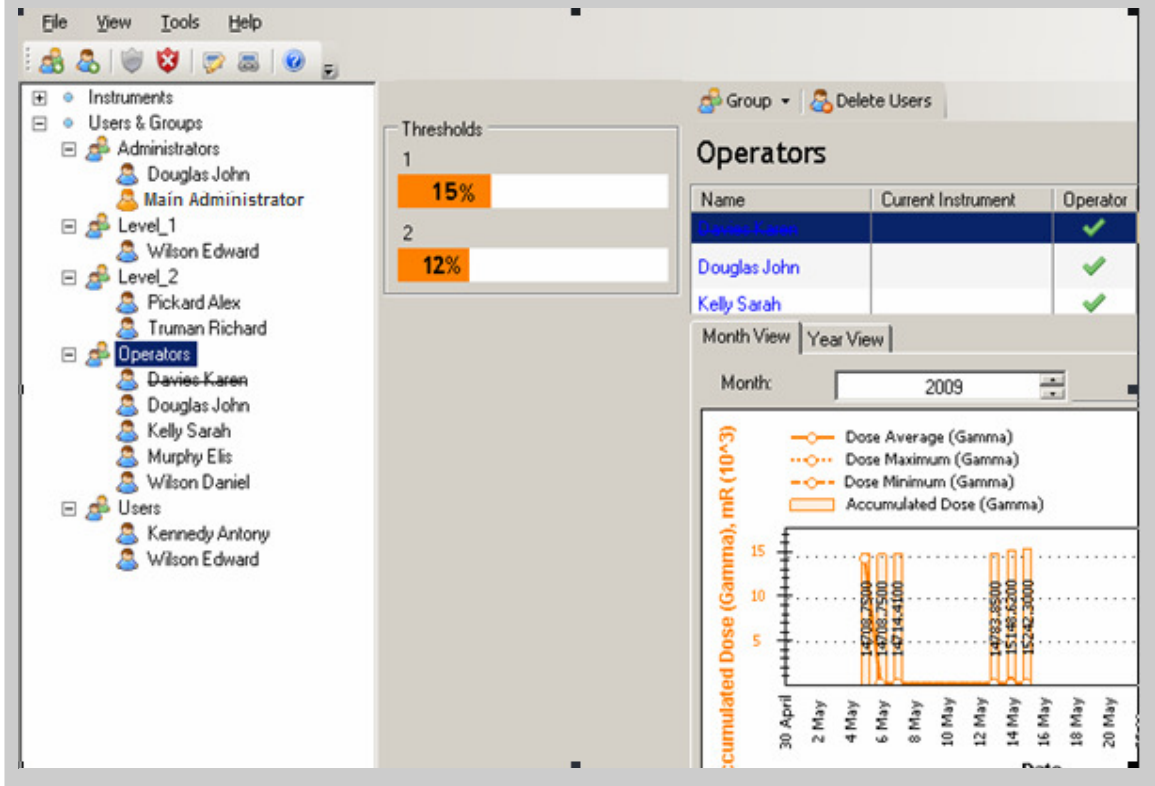
➤ **Period** (days) – time period starting from the **current date**. During this period software accumulates DE and analyses correspondence of the received data to thresholds. **Current date** is considered as start point (not the date when this threshold was set). So, the DE history interval being analyzed by software, every day shifts one day ahead.

Press **OK** button after threshold values were entered, then press **Save & Close** button.

Double-click on the column names in the **Thresholds List** window to sort the list by all described criteria.

## GROUP THRESHOLD

- Thresholds set in the *Group* tab are valid for members of the selected group only.
- Accumulation level of thresholds entered at the *Groups* tab will be displayed in percents in the highlighted group card in the *Thresholds* field.

The screenshot shows the Polimaster software interface with the following components:

- Tree View (Left):**
  - Instruments
  - Users & Groups
    - Administrators
      - Douglas John
      - Main Administrator
    - Level\_1
      - Wilson Edward
    - Level\_2
      - Pickard Alex
      - Truman Richard
    - Operators** (highlighted)
      - Davies Karen
      - Douglas John
      - Kelly Sarah
      - Murphy Elis
      - Wilson Daniel
    - Users
      - Kennedy Antony
      - Wilson Edward

- Thresholds Panel (Center):**
- Group: [Dropdown]
- Delete Users: [Button]
- Thresholds:
  - 1: 15%
  - 2: 12%
- Operators Panel (Right):**

Name	Current Instrument	Operator
Davies Karen		✓
Douglas John		✓
Kelly Sarah		✓

Month View | Year View

Month: 2009
- Dose Graph (Bottom Right):**

Y-axis: Accumulated Dose (Gamma), mR (10<sup>^3</sup>)

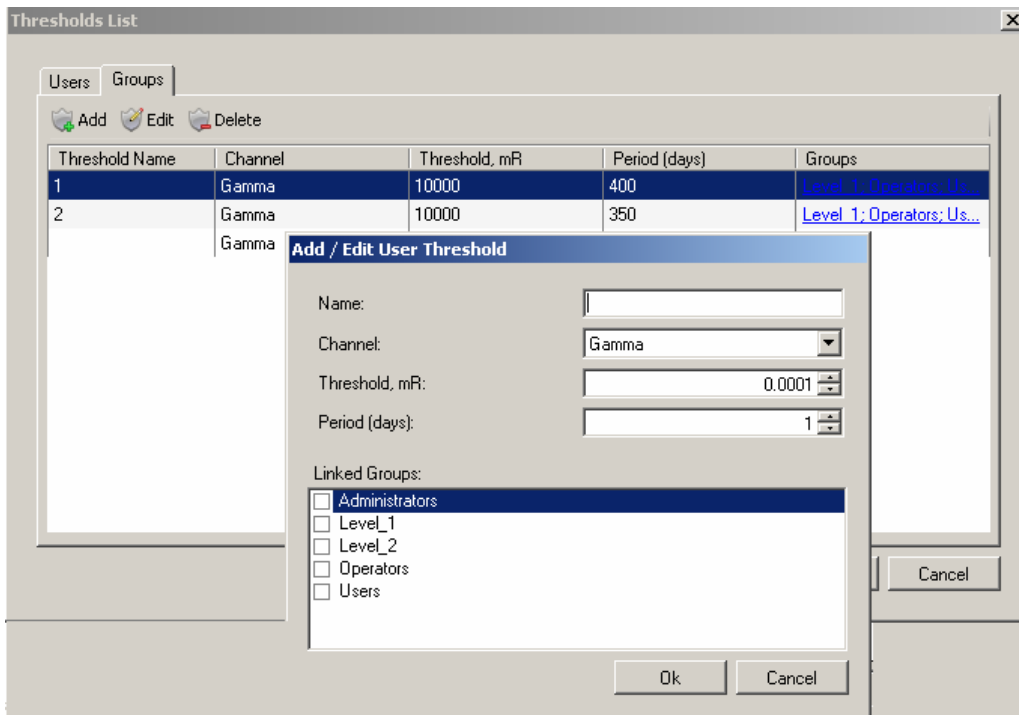
X-axis: 30 April, 2 May, 4 May, 6 May, 8 May, 10 May, 12 May, 14 May, 16 May, 18 May, 20 May

Legend:

- Dose Average (Gamma)
- Dose Maximum (Gamma)
- Dose Minimum (Gamma)
- Accumulated Dose (Gamma)

Data points from the graph:

Date	Dose Average (Gamma)	Dose Maximum (Gamma)	Dose Minimum (Gamma)	Accumulated Dose (Gamma)
4 May	14083.7500	14083.7500	14083.7500	14083.7500
6 May	14083.7500	14083.7500	14083.7500	14083.7500
12 May	14083.8500	14083.8500	14083.8500	14083.8500
14 May	15148.6200	15148.6200	15148.6200	15148.6200
16 May	15242.3000	15242.3000	15242.3000	15242.3000



➤ **Name** — conventional name of the threshold being created.

➤ **Channel** – select channel type from the drop-down list to set the threshold. Software lets setting gamma-, alpha-, and beta- thresholds, though its current version works with gamma dosimeters only.

➤ **Threshold** – entry fields for **DE** threshold setting in mR (mSv). Thresholds setting range corresponds to DE measurement range.

➤ **Period** (days) – time period starting from the **current date**. During this period software accumulates DE and analyses correspondence of the received data to thresholds. **Current date** is considered as a start point (not the date when this threshold was set). So, the DE history interval being analyzed by software, every day shifts one day ahead.

➤ **Linked groups** – flag check box of the users group which will be applied to the created threshold.

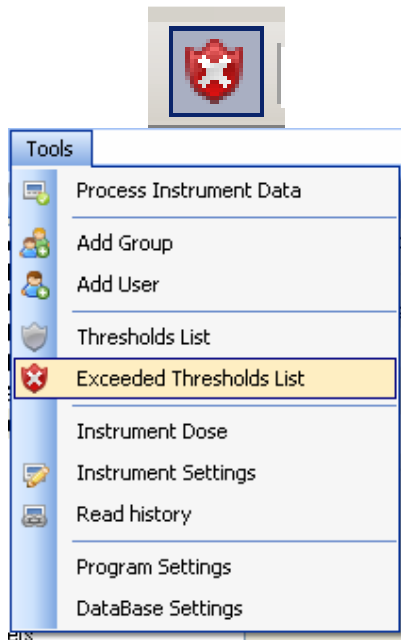
Press **OK** button when threshold criteria were set, then press **Save & Close** button.

Double-click on column names in the **Thresholds List** to sort the list by all described criteria.

## EXCEEDED THRESHOLDS LIST

Software analyses database history records and then generates exceeded thresholds list.

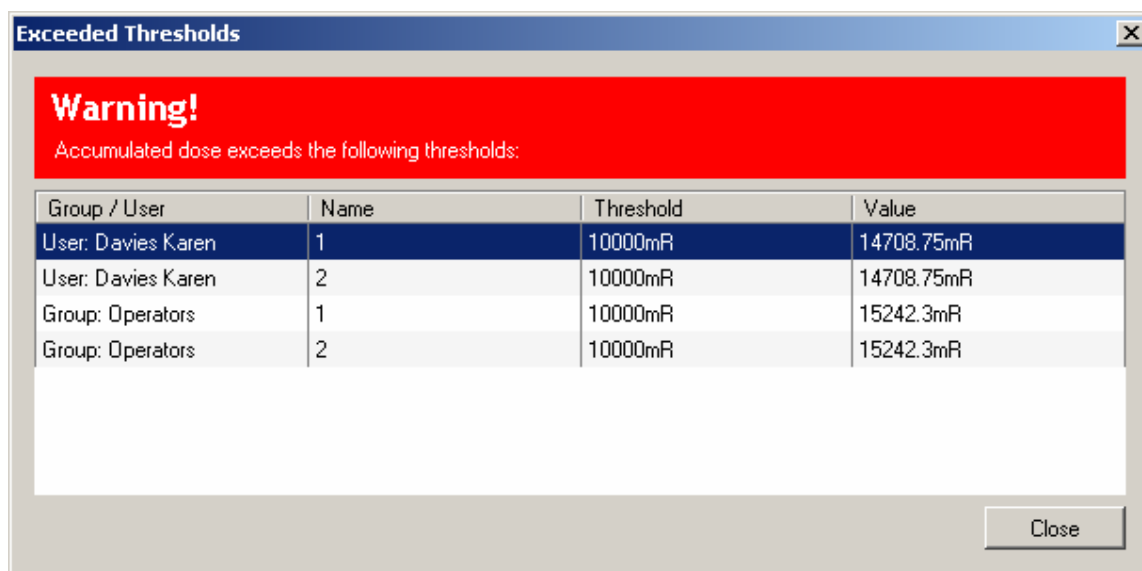
Use on of the following ways\* to view the list of exceeded thresholds:



\* Press this toolbar button.

\* Select **Tools** menu and click **Exceeded Thresholds List** command.

**Exceeded Thresholds** window opens. It displays information on exceeded user and group thresholds.



Every case of threshold exceeding is characterized by:

- ◆ Threshold name;
- ◆ Name of the user or group who exceeded the threshold;
- ◆ Set threshold level that was exceeded;
- ◆ Actual value of accumulated DE that was read-out from the instrument and processed by the software.

Double-click on the column names in the *Exceeded Thresholds* window to sort the list by all described criteria.

## WORKING WITH INSTRUMENT

### Note!

Before start working with the instrument, make sure that:

#### For 1610 series instrument

1. Instrument is hard-connected to PC:

- PM1610 by miniUSB-USB cable;
- PM1603/04 and PM1621 – via IR adapter;  
(see *relevant chapters*);

2. Driver for the instrument application type (PM1610) is installed in the system (see **PM1610 Driver Installation** chapter);

#### For PM1603/04, PM1621 series instrument

1. IR channel adapter is connected to PC (internal PC IR adapter can be used) (see **Connecting/Disconnecting Other Supported Instrument Series To a PC** chapter).

2. PC communication mode is enabled in the instrument. IR-link between PC and instrument is activated (see **Connecting/Disconnecting Other Supported Instrument Series To a PC** chapter).

3. Personal Dose Tracker (MySQL) software is running.

### Note!

Only system MAIN ADMINISTRATOR or OPERATOR<sup>1</sup> (according to the set access level) are allowed to work with the instrument.

Process of working with the instrument includes following:

- Assigning/detaching instrument to/from the user;
- Reading out the history of the assigned instrument to the user card;
- Reading out history of the detached instrument, not saving it into the program database;
- Access to instrument operation settings.

<sup>1</sup> MAIN ADMINISTRATOR sets OPERATOR access level (see Add Users Group chapter)

## ASSIGN/DETACH INSTRUMENT TO/FROM THE USER



**System MAIN ADMINISTRATOR or OPERATOR (if allowed by MAIN ADMINISTRATOR) can assign/detach instrument to/from the user.**

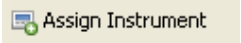
**Software enables assignment of one instrument to one user at a time (creation of user-instrument linked pair).**

### Assign Instrument

#### Assignment requirements:

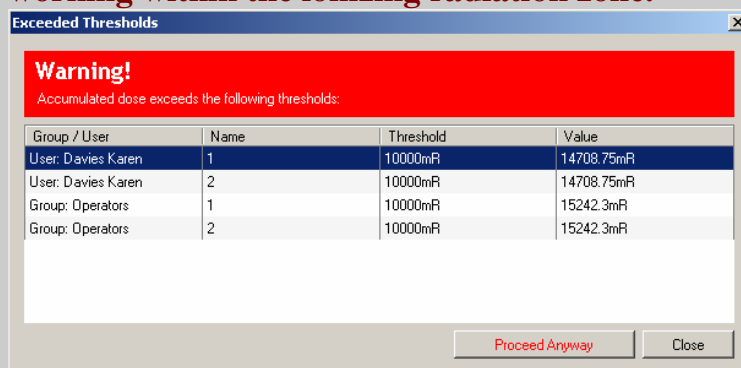
- ◆ User is allowed to use the instrument;
- ◆ No instrument is currently assigned to the user;
- ◆ User didn't exceed user or group DE threshold;
- ◆ Instrument is connected to PC.

To assign the instrument:

- Highlight required user in the system components field (a card of the selected user opens in the right area);
- Press initialization button of connection with the instrument –  .

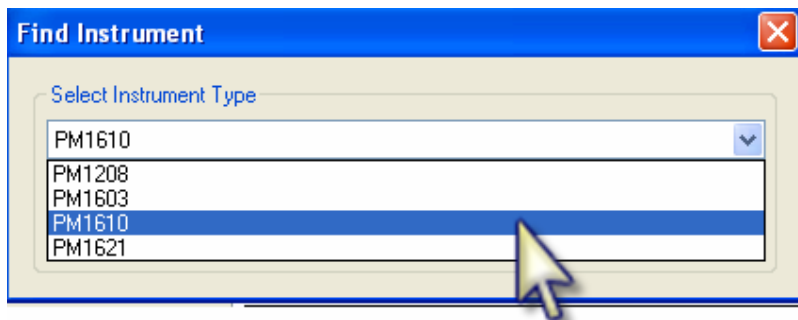
**If software detects any exceeded DE threshold, *Exceeded Thresholds* alarm window will be displayed immediately.**

**That means that this user had been exposed to the higher than preset thresholds levels of radiation and has potential health risks while working within the ionizing radiation zone.**

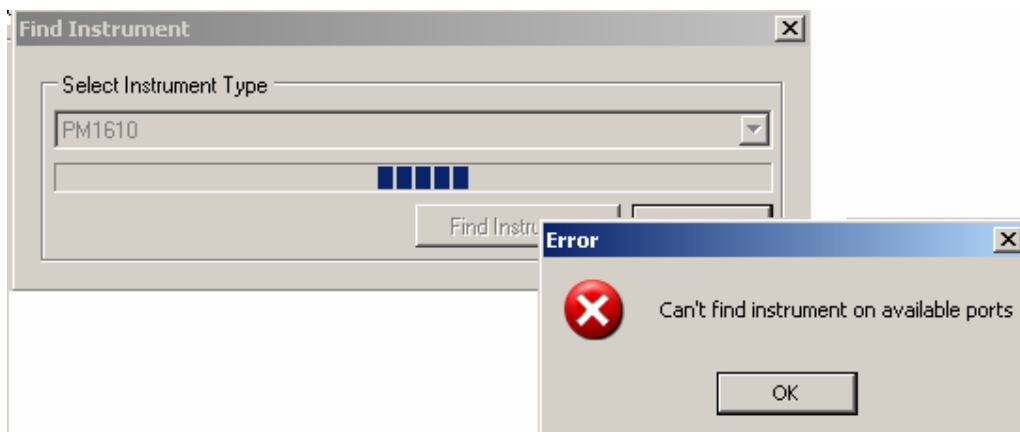


**If *Proceed Anyway* button is clicked software will ignore exceeded threshold warning and will continue the assignment.**

If preset thresholds were not exceeded, software opens *Find Instrument* window where user has to select instrument type<sup>1</sup>. Current software version uses the communication protocol to work with instruments of **PM1603/04**, **PM1610**, **PM1621** types only. Press *Find Instrument* button to start searching of the currently connected instrument.



If search results in error, check whether the instrument is properly connected to PC (For **PM1610** disconnect the cable for the instrument's miniUSB port, reconnect it again and repeat several times if required so that instrument's LCD displays "USB". For **PM1603/04** and **PM1621** check that IR link between instrument and adapter is engaged).



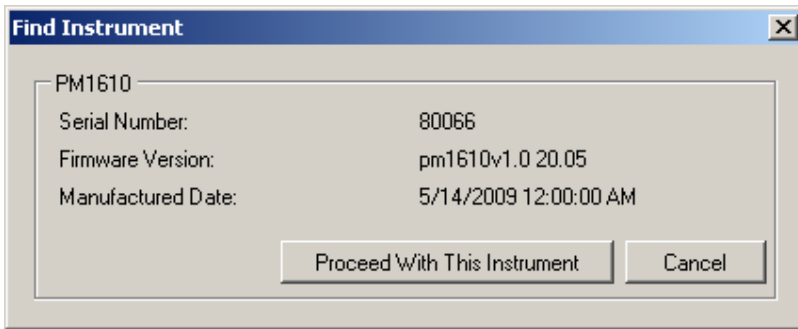
Successful search displays the following information on the found instrument:

- ◆ Instrument serial number;
- ◆ Firmware version;
- ◆ Instrument manufactured date.

Press *Proceed With This Instrument* button, and software opens *Assign Instrument* window.

<sup>1</sup> By default software indicates the most recently communicated type of the instruments.





**Find Instrument**

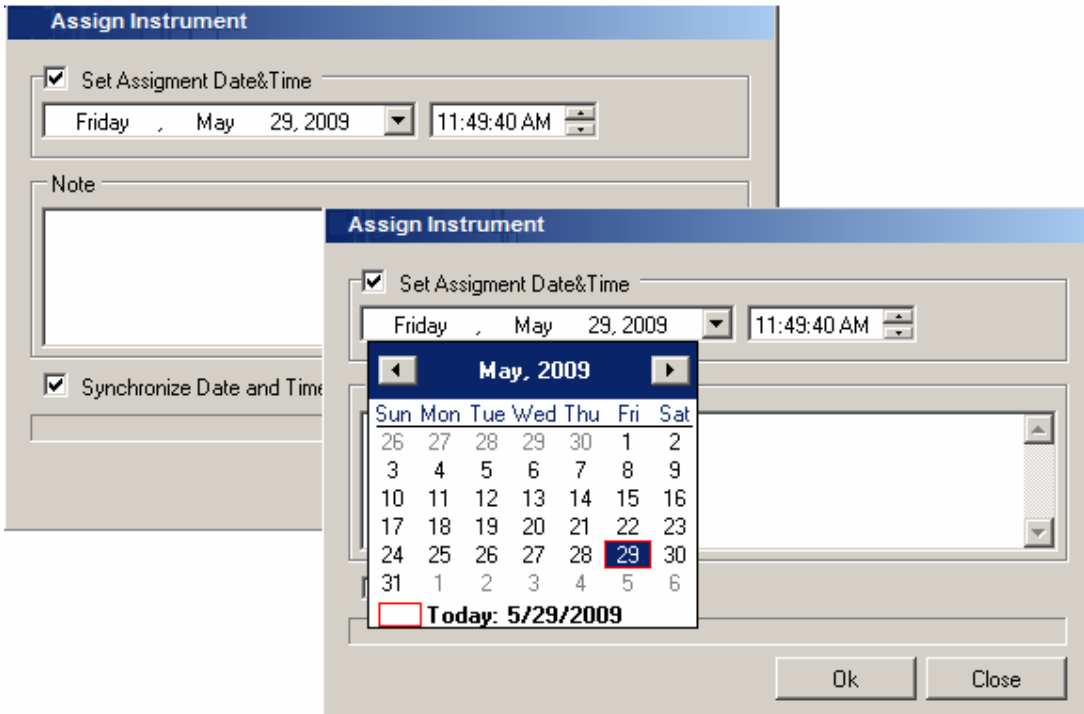
PM1610

Serial Number: 80066

Firmware Version: pm1610v1.0 20.05

Manufactured Date: 5/14/2009 12:00:00 AM

Proceed With This Instrument Cancel



**Assign Instrument**

☒ Set Assignment Date&Time

Friday, May 29, 2009 11:49:40 AM

Note

☒ Synchronize Date and Time

**Assign Instrument**

☒ Set Assignment Date&Time

Friday, May 29, 2009 11:49:40 AM

May, 2009						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27	28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

☐ Today: 5/29/2009

Ok Close

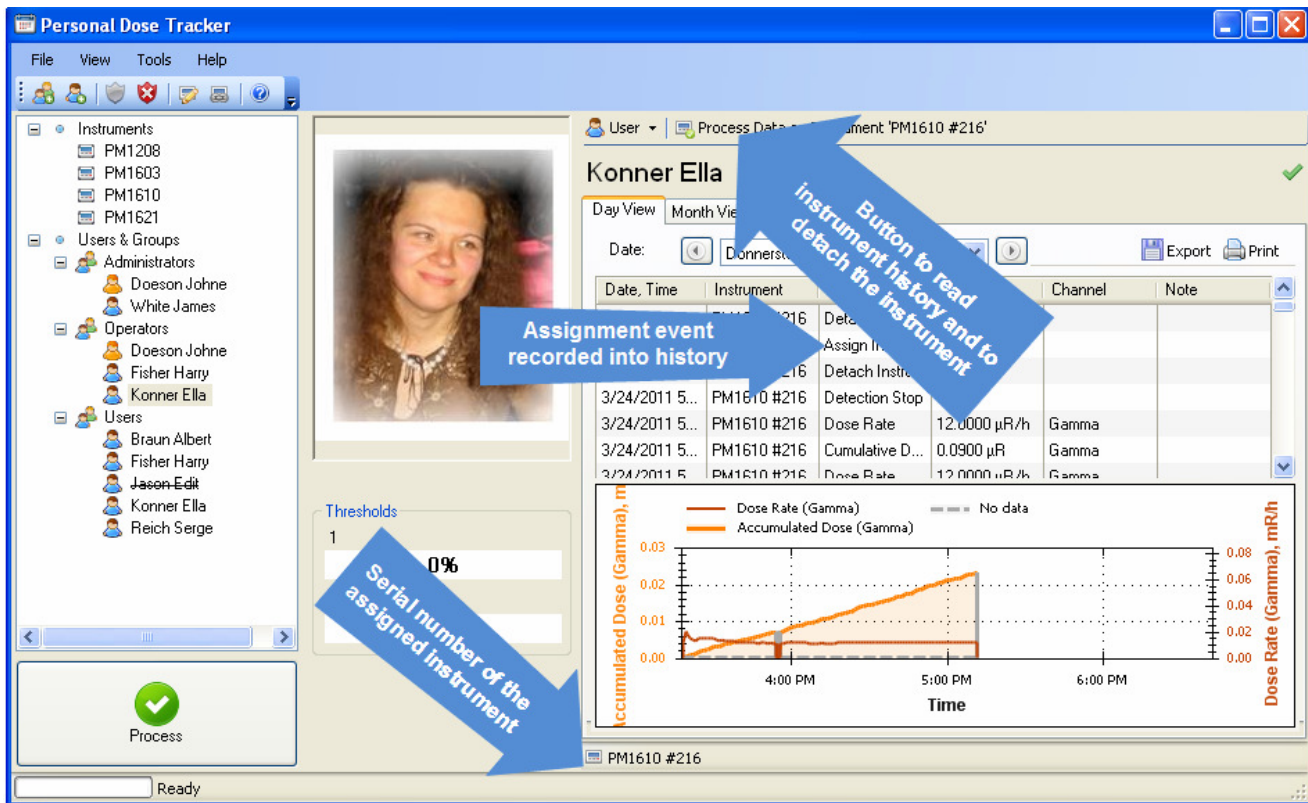
◆ **Set Assignment Date & Time** – flag this check box; a drop-down calendar opens, where user can select assignment date and time. By default the check box is unflagged – software records current instrument assignment date and time.

◆ **Note** – entry field for any required text information.

◆ **Synchronize Date and Time** – synchronization of instrument and PC internal time.

Enter all the parameters and press **OK** button to complete assignment.

If the instrument was assigned successfully, the following will be displayed in the user card:



Now stop USB connection between PC and instrument.



**Note!** No history events are recorded into instrument's memory when PC-instrument USB connection is active.

## Data Processing. Instrument Detachment/Emergency Instrument Detachment

Use one of the suggested ways to process data or to detach the instrument (screen-shots are made on example of software working with PM1610):

### I




Quick instrument detachment. Press **Process** button in the lower left corner of the main program window.

### II


This way fits if user knows name of the user who is coupled with the instrument (no need to search the user):

1. In the system components field – select a user who is assigned the instrument that will be detached. A card of the selected user opens in the right area.
2. In the user card – press instrument **Process** button with its serial number –

 Process Data on Instrument 'PM1610 #216'

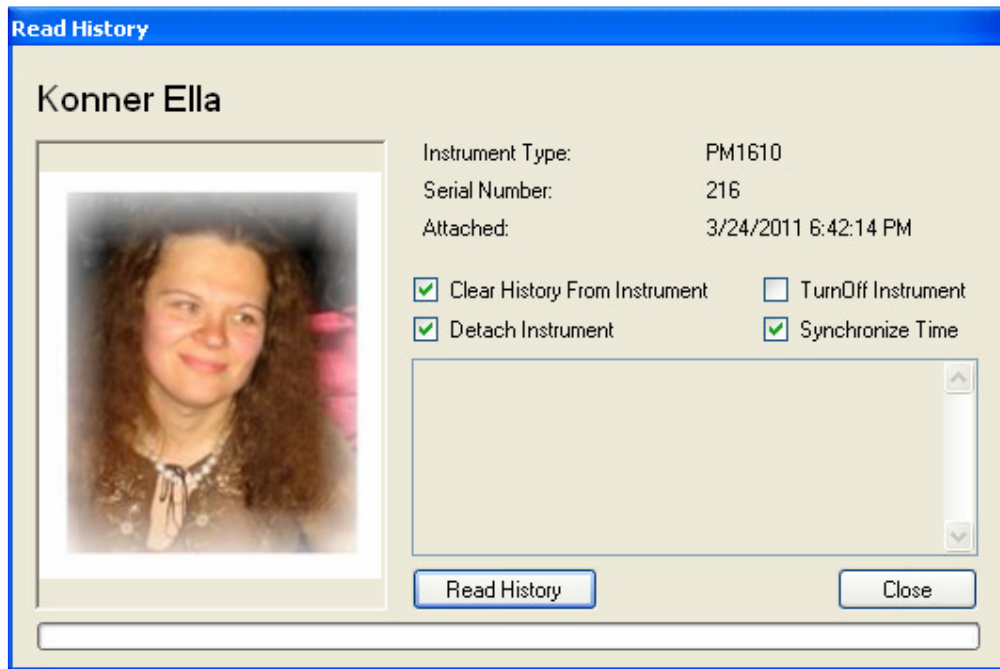
### III

This way fits if a lot of system components are registered in the system (users and instruments):

1. In the system components field – select required instrument type. In this example we deal with PM1610. **PM1610 Instruments** card opens in the right area correspondingly.
2. Open **Current State** tab and look through the list for serial number<sup>1</sup> of the instrument that will be detached.
3. A link to the card of the user who was assigned the instrument will be displayed in the **Belongs To** column.
4. Follow the link. Click initialization button of connection with the assigned (attached) instrument  Process Data on Instrument 'PM1610 #216'.

Software opens **Read History** window.

<sup>1</sup> Look for the instrument serial number on back label.

**Attention!**

History processing parameters are set for all users in the *Program Settings* window (see *Program Settings/History Processing* tab).

History processing parameters can be edited (flag/unflag options) for every individual user before the instrument history reading. Use *Read History* window.

If any setting is changed for individual user in the *Read History* window, then the same setting is automatically activated in the *Program Settings window/History Processing* tab) and then remains preset for all instruments of the database.

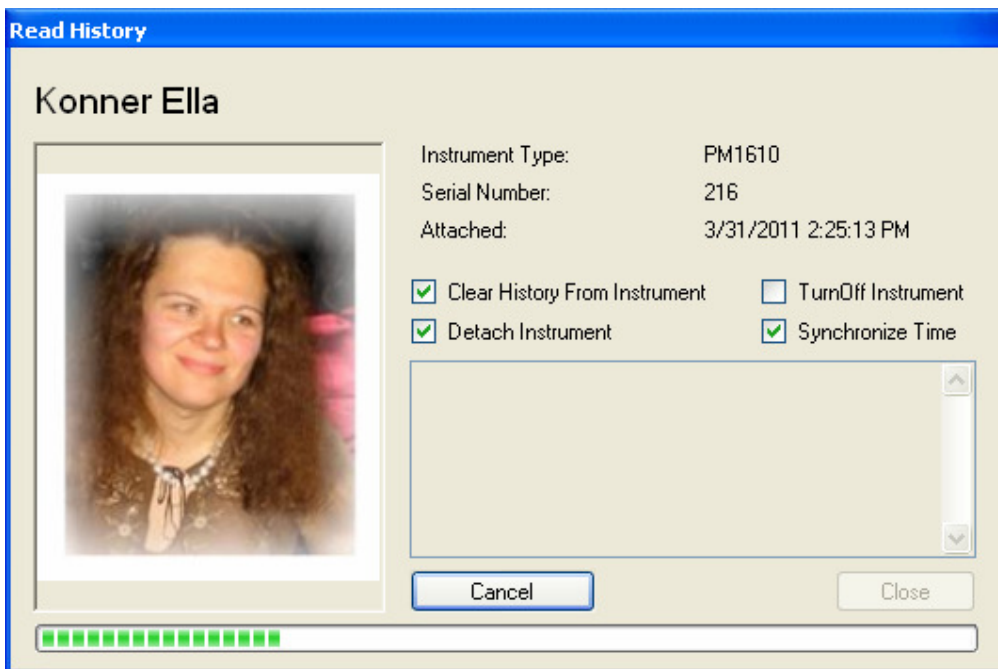
➡ **Clear History From Instrument** (recommended) – flag this check box to activate the function of immediate automatic history deletion when the history will be read out into the user card. It is done due to the limited size of the instrument internal memory. This function is disabled by default;

➡ **Turn Off Instrument** (available for PM1610 only) – flag this check-box to enable automatic turn off of the instrument when history was cleared and instrument was detached from the user. Instrument will switch off automatically when it is disconnected from PC (miniUSB-USB cable unplugged). This function is disabled by default;

➡ **Detach Instrument** – flag this check-box to enable function of instrument detachment from the user when history was read out into the user's card;

➔ **Synchronize Time** - (flag this check-box if the instrument is used in the measuring mode for a long period after the last detachment). This function enables synchronization of instrument and PC internal date and time at the moment of history reading.

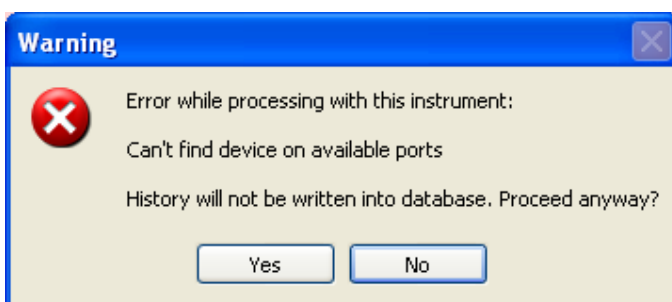
Press **Read History** button to continue. Software will start searching the instrument currently connected by USB as well as start reading history from the instrument and saving it into the database (card of the corresponding user). So every user history remains unique (see **Working With History** chapter).



If search results in error, press **No** button and check whether the instrument is properly connected to PC:

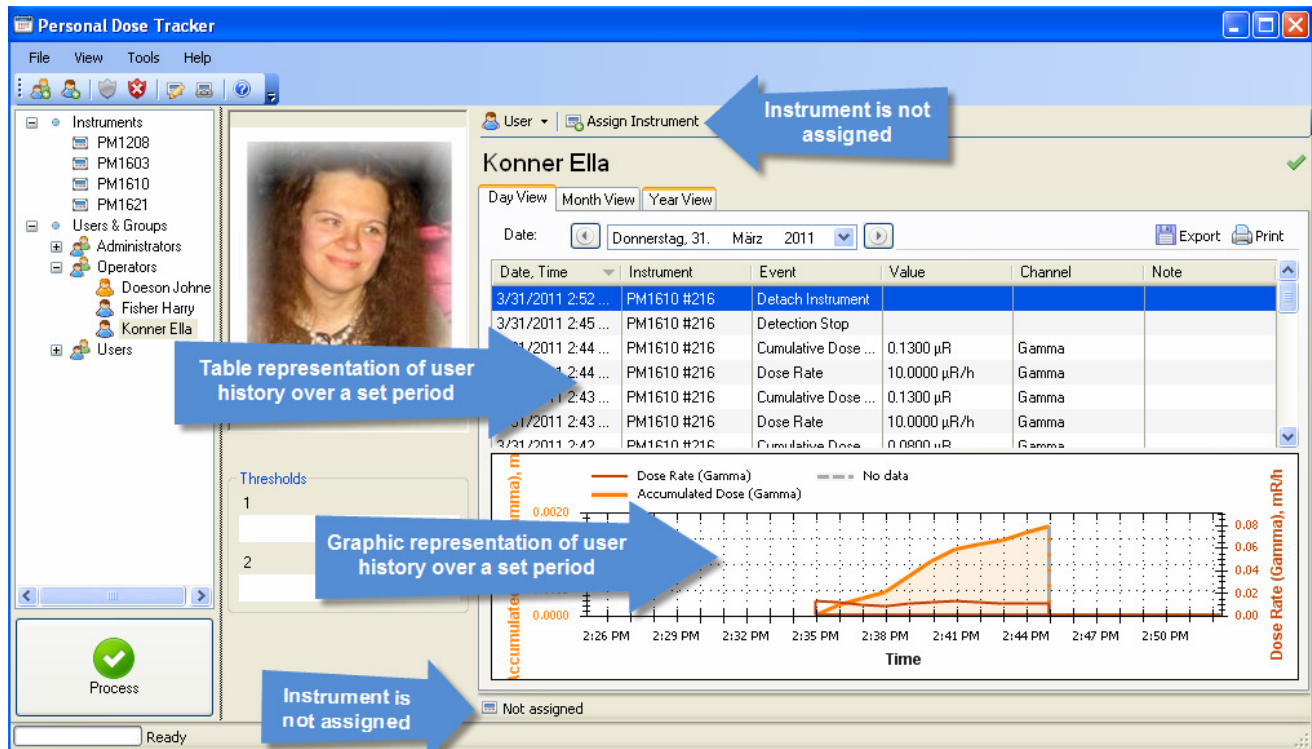
- ➔ For **PM1610** disconnect the cable for the instrument's miniUSB port, reconnect it again and repeat several times if required so that instrument's LCD displays "**USB**";
- ➔ For **PM1603/04**, **PM1208** and **PM1621** check that IR link between instrument and adapter is engaged).

Restart detachment again.



If history is read out successfully, software detaches instrument from the user and (when working with PM1610), makes the instrument ready for automatic turn off when miniUSB-USB cable is unplugged.

If the instrument was detached successfully, the following would be displayed in the user card:



See **Working With History** chapter for information on history processing in the user card.

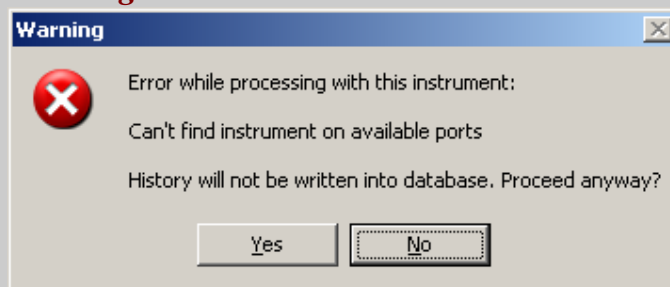
## EMERGENCY DETACHMENT

### EMERGENCY DETACHMENT!

The emergency detachment of the instrument is needed if software failed to find the instrument due to following reasons:

- the instrument doesn't respond to software;
- the instrument is faulty;
- the instrument is lost,

To do emergency detachment of the instrument, press **Yes** button in the **Warning** window.



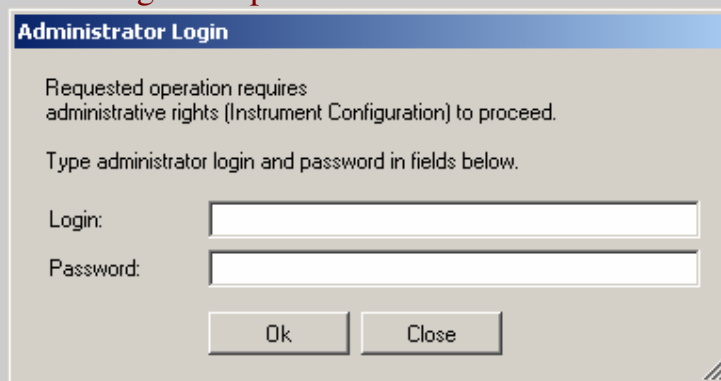
**Only system MAIN ADMINISTRATOR can detach the instrument in an emergency way! To do it he/she is to enter status access password.**

The default login and password of the Main Administrator are as follows:

Login – **"admin"**,

Password – **"admin"**.

Login and password are case-sensitive.



**After confirmation the program will detach the instrument from the user in an emergency way!**



---

### For PM1610 instruments.

If **Turn Off Instrument** option (available for PM1610 only) is activated, instrument will turn off when disconnected from PC (miniUSB-USB cable unplugged). To turn the instrument on, connect it to PC by miniUSB-USB cable or press any instrument control button on its front panel.



**Note that in this case when switched on by miniUSB-USB cable plugging, the instrument doesn't communicate with PC (no USB message is displayed on instrument's LCD).**

Use one of the following ways to switch PM1610 instrument into USB communication mode\*:

- \* Unplug miniUSB-USB cable and plug it again. Instrument starts communication with PC (instrument's LCD displays **USB** message);
- \* Switch instrument into USB mode using its control keys on its panel (see Instrument operation manual).



#### **Note!**

If PM1610 remains connected to PC by miniUSB-USB cable though it is already detached from the user and switching off function is activated, it will not switch off automatically (instrument's LCD displays USB message). If so, user can work with PM1610 as usual (assign it to another user, e.g.). But when miniUSB-USB cable is unplugged, instrument switches off automatically, even if it is already assigned to a different user and for this user the **Switch Off Instrument** option is deactivated (check-box is unflagged).



## INSTRUMENT OPERATION SETTINGS

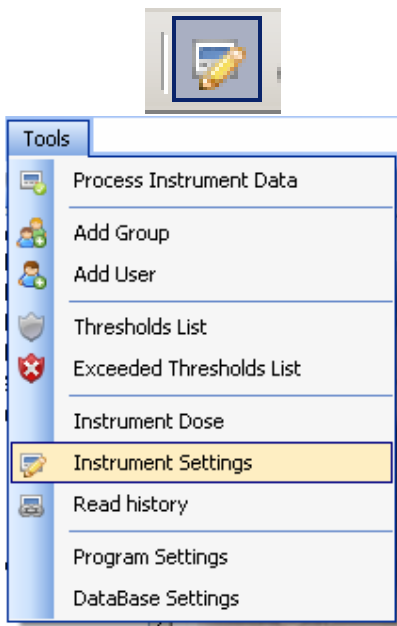


Only system MAIN ADMINISTRATOR and OPERATOR (if allowed by MAIN ADMINISTRATOR) can configure instrument settings. These users must be responsible for using such type of instruments. Untrained user is prohibited to configure instrument settings due to possible instrument malfunction.

Requirements for reading of instrument operation settings:

- ◆ User is allowed access to instrument settings;
- ◆ Instrument is connected to PC.

Use one of the following ways\* to read **Instrument settings**:

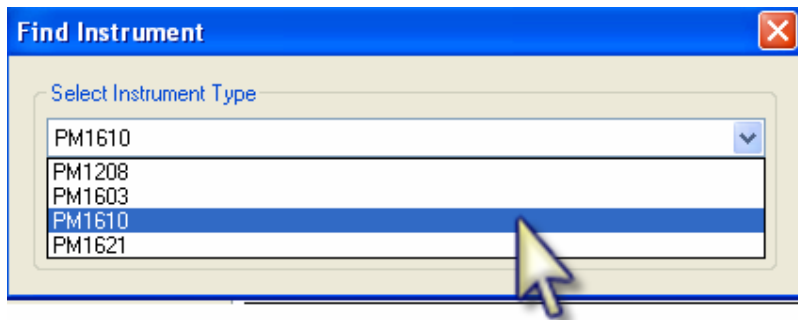


\* Press this toolbar button;

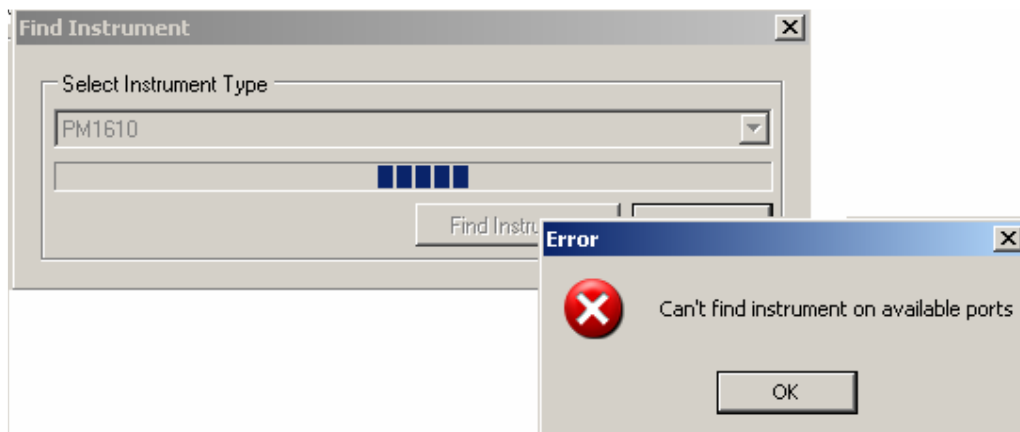
\* Select **Tools** menu and click **Instrument Settings** command.

Software opens **Find Instrument** window where user can select instrument type<sup>1</sup>. Current software version uses the communication protocol to work with instruments of **PM1610**, **PM1603/04** and **PM1621** types only. Select required instrument type in the drop-down list and press **Find Instrument** button to start searching of the currently connected instrument.

<sup>1</sup> By default software indicates the most recently communicated type of the instruments.



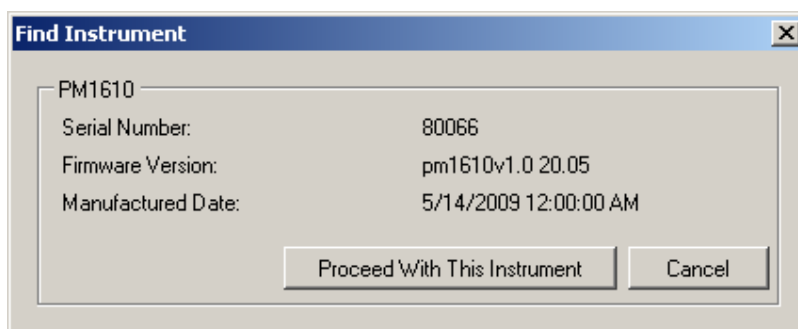
If search results in error, check whether the instrument is properly connected to PC (For **PM1610** disconnect the cable for the instrument's miniUSB port, reconnect it again and repeat several times if required so that instrument's LCD displays "USB". For **PM1603/04** and **PM1621** check that **IR link** between instrument and adapter is engaged).



Successful search displays the following information on the found instrument:

- ◆ Instrument serial number;
- ◆ Firmware version;
- ◆ Instrument's manufactured date.

Press ***Proceed With This Instrument*** button and software opens ***Instrument Settings*** window.

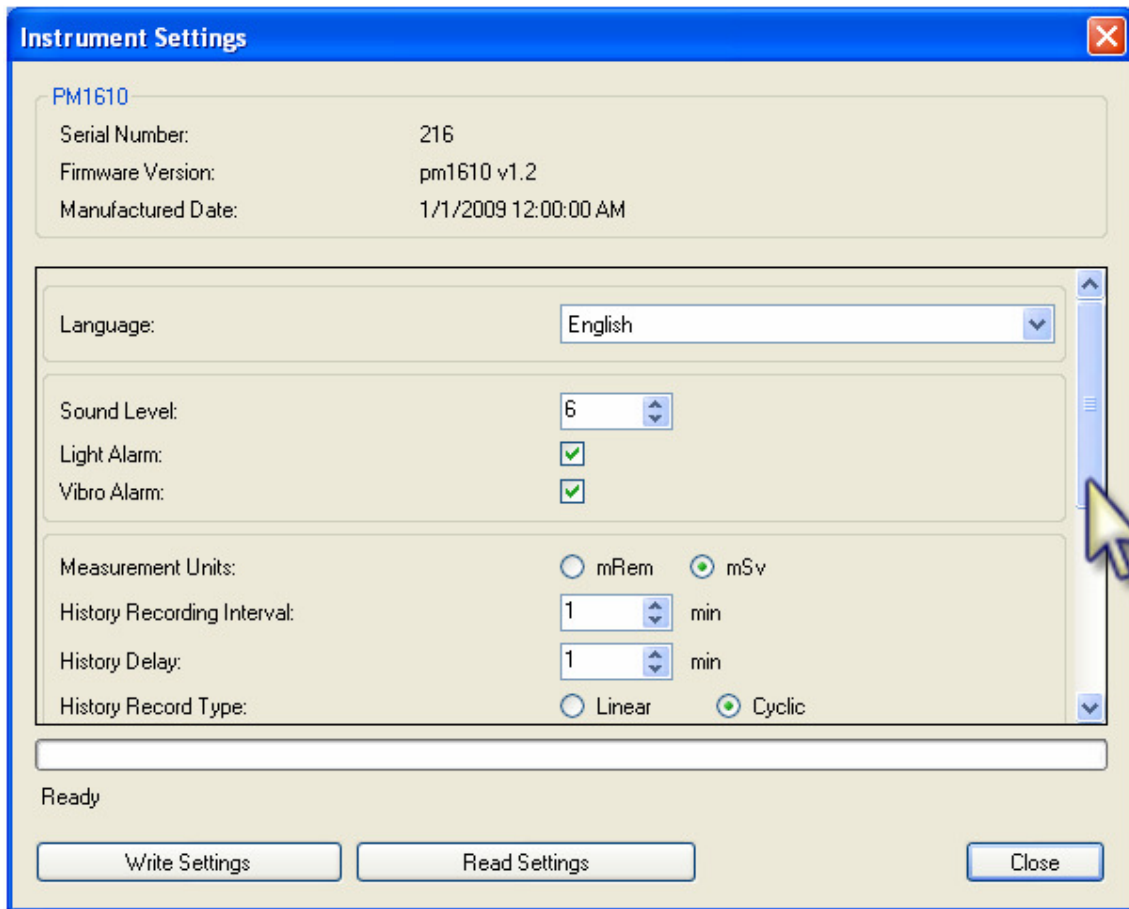



---

Software will take some time to read instrument settings from its memory. The process will be indicated by a progress bar in the lower window part.

When the process is completed, read instrument settings will be displayed in the corresponding active window parts. User can view settings using scrollbar in the right area of an active window.

## For 1610 instruments:



- ◆ **Serial number** – instrument's serial number;
- ◆ **Firmware version** – microprocessor software version;
- ◆ **Manufactured date** – manufacture date of the instrument;
- ◆ **Language** – instrument interface language. Use drop-down list to select Russian or English language;
- ◆ **Sound Level** – use arrow buttons  to set required audio alarm sound level;
- ◆ **Light Alarm** – flag this check box to enable turning on audio alarm when any set threshold is exceeded;
- ◆ **Vibro Alarm** – flag this check box to enable turning on vibro alarm when any set threshold is exceeded;
- ◆ **Measurement Units** – select instrument measurement units by flagging corresponding radio-button;
- ◆ **History Recording Interval** – time period in minutes between two subsequent events in the instrument history;
- ◆ **History Delay** – delay period upon which instrument history will be recorded.

- **History Record Type:** – flag required radio-button to enable linear or cyclic way of history recording;
- **I and II Dose Rate (DER) Threshold, mRem/h** – entry field for set value of the First and Second DER thresholds in mRem/h (mSv/h). Thresholds setting range corresponds to DER measurement range. Flag *Enabled* check-boxes to enable corresponding thresholds;
- **I and II Dose (DE) Threshold, mRem** – entry field for set DE value in mRem (mSv). Threshold setting range corresponds to DE indication range. Flag *Enabled* check-boxes to enable corresponding thresholds;

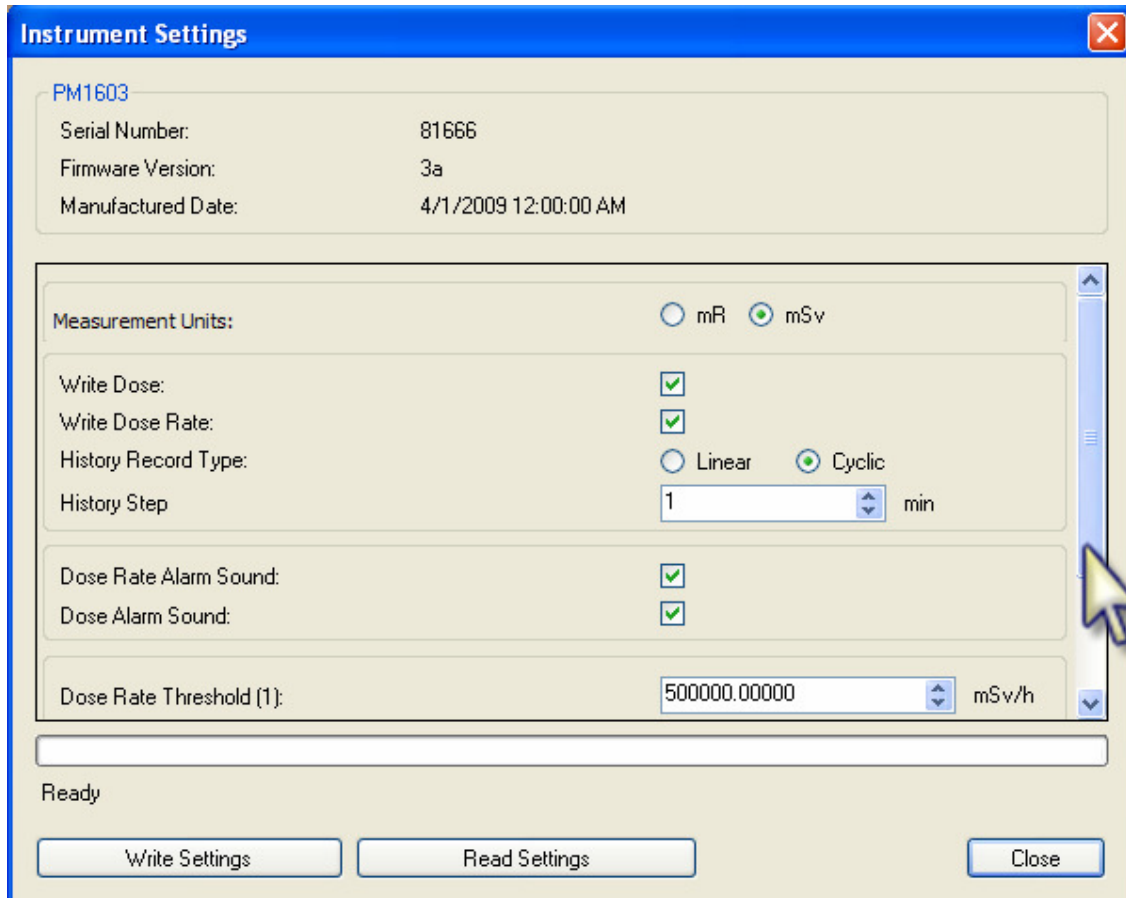
**Blocking** - field used by Administrator or Operator to block for a common user his/her ability to work with the following functions on the instrument (**for PM1610 only**):

- **I and II Dose (DE) and Dose Rate (DER) thresholds changing;**
- **Accumulated DE resetting;**
- **History recording parameters changing;**
- **Instrument turning off** by any instrument's control buttons;

To block required function: flag corresponding check-box.

Further Administrator or Operator can unblock all blocked functions or some of them in *Instrument Settings* window (unflag corresponding check-boxes).

**For PM1603/04 and PM1621 instruments:**



**Instrument Settings**

PM1603

Serial Number: 81666

Firmware Version: 3a

Manufactured Date: 4/1/2009 12:00:00 AM

Measurement Units: ☐ mR ☒ mSv

Write Dose: ☒

Write Dose Rate: ☒

History Record Type: ☐ Linear ☒ Cyclic

History Step: 1 min

Dose Rate Alarm Sound: ☒



Dose Alarm Sound: ☒

Dose Rate Threshold (1): 500000.00000 mSv/h


Ready

Write Settings Read Settings Close

- **Serial number** – instrument's serial number;
- **Firmware version** – microprocessor software version;
- **Manufactured date** – manufacture date of the instrument;

- **Measurement Units** – select instrument measurement units by flagging corresponding radio-button;
- **Write Dose** – flag this window to enable DE recording;
- **Write Dose Rate** – flag this window to enable DER recording;
- **History Record Type** – flag required radio-button to enable linear or cyclic way of history recording;
- **History Step** – use arrow buttons  to set required history recording interval;
- **Dose Rate Alarm Sound** – flag this check box to enable turning on audio alarm when any set DER threshold is exceeded;
- **Dose Alarm Sound** – flag this check box to enable turning on audio alarm when any set DE threshold is exceeded;
- **I and II Dose Rate (DER) Threshold, mSv/h** – use arrow buttons  to set required value of the First and Second DER thresholds in mSv/h (mRem/h). Thresholds

setting range corresponds to DER measurement range. Flag **Enabled** check-boxes to enable corresponding thresholds;

➤ **I and II Dose (DE) Threshold, mSv** – use arrow buttons  to set required value of the First and Second DE thresholds in mSv (mRem). Threshold setting range corresponds to DE indication range. Flag **Enabled** check-boxes to enable corresponding thresholds;

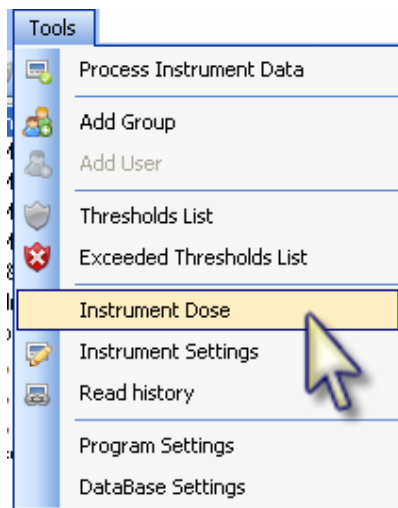
Press **Write Settings** button in the lower window part to save instrument settings configuration. Software will record saved settings and immediately check them.

Press **Read Settings** button to start manual (forced) reading of the settings.

If user presses **Close** button to close the **Instrument Settings** window, all unsaved changes will be lost.

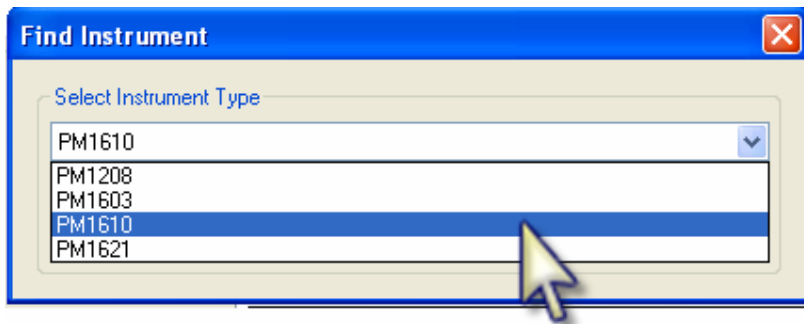
## READ/RESET INSTRUMENT DOSE

To read/reset accumulated instrument dose, select **Tools** menu in the main program window and click **Instrument Dose** command.

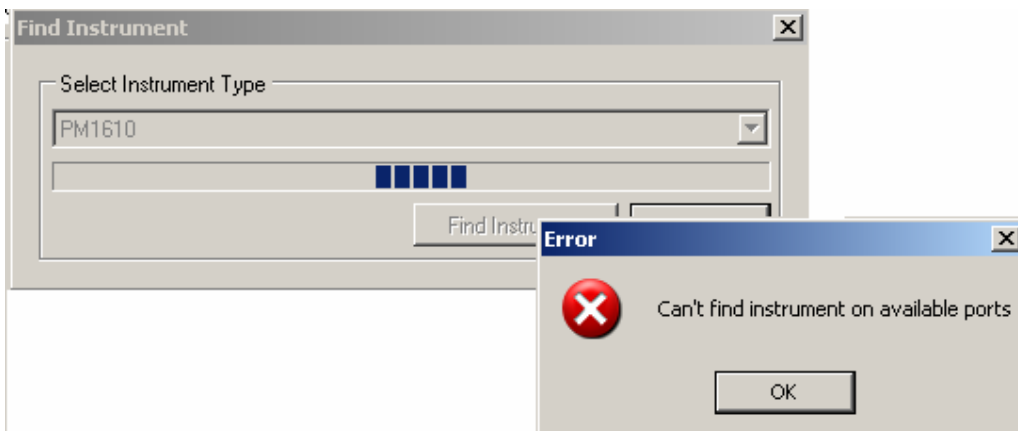


Software will open **Find Instrument** window with list of all supported instruments to select instrument type<sup>1</sup>.

<sup>1</sup> By default software indicates the most recently communicated type of the instruments.



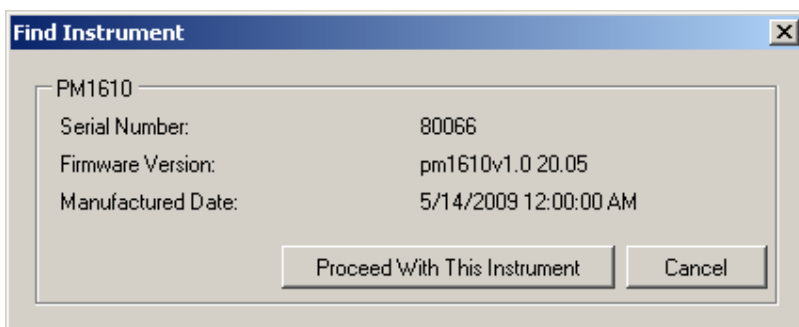
If search results in error, check whether the instrument is properly connected to PC (For **PM1610** disconnect the cable for the instrument's miniUSB port, reconnect it again and repeat several times if required so that instrument's LCD displays "USB". For **PM1603/04** and **PM1621** check that **IR link** between instrument and adapter is engaged).



Successful search displays the following information on the found instrument:

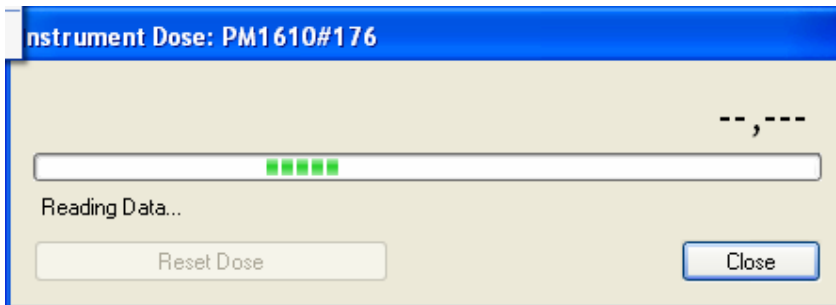
- ◆ Instrument serial number;
- ◆ Firmware version;
- ◆ Instrument's manufactured date.

Press ***Proceed With This Instrument*** button and software opens ***Instrument Settings*** window.

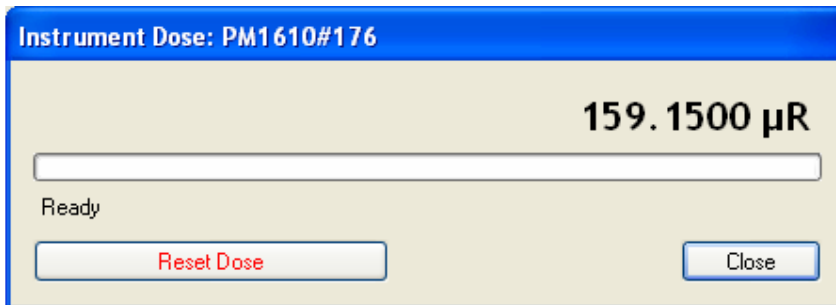




Software will take some time to read DE value from instrument non-volatile memory. The process will be indicated by a progress bar.



Successful reading displays the following window with instrument serial number and instrument DE.



Press **Reset Dose** button in the opened window to reset current accumulated DE in the instrument.



**Dose resetting is allowed for MAIN ADMINISTRATOR only. This function is password protected. By default MAIN ADMINISTRATOR login and password are:**

Login – "admin",

Password– "admin".

Login and password are case-sensitive.



**Administrator Login**

Requested operation requires administrative rights (Instrument Configuration) to proceed.

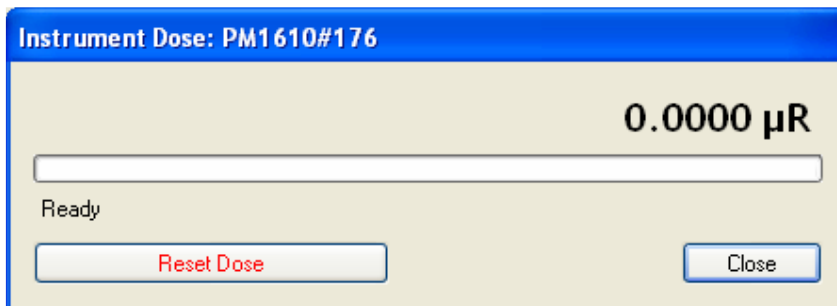
Type administrator login and password in fields below.

Login:

Password:

When administrator login/password are confirmed, software starts resetting accumulated DE.

Software will take some time to reset current accumulated DE in the instrument. Successful reset displays the following window:



**Instrument Dose: PM1610#176**

0.0000  $\mu$ R

Ready

## READING INSTRUMENT HISTORY



Only system **MAIN ADMINISTRATOR** or **OPERATOR** can read instrument history.

Software enables two ways to read history:

1. **Automatic reading history** of the assigned instrument into the user card when the instrument is detached from the user or the data are processed. Read history is saved into software database (see **Data Processing. Instrument Detachment** chapter).
2. **Forced history reading by user command:**
  - **Free instrument** (assigned to no user);
  - **Assigned instrument.**

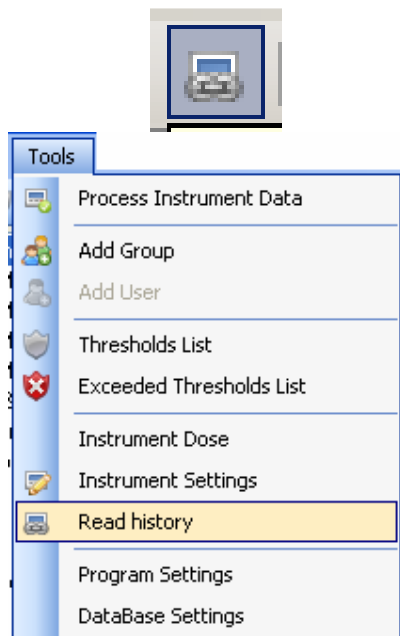
Read history is not saved into the software database (user can view and print this history (see **Working With History** chapter)).

### Forced reading of instrument history

Requirement for forced history reading:

◆ Instrument is connected to PC.

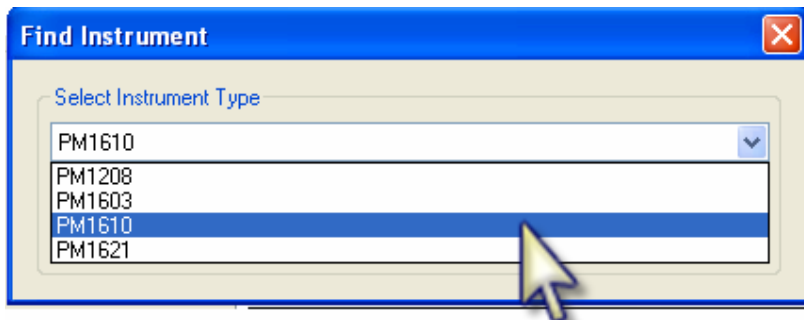
Use on of the following ways\* to read instrument history:



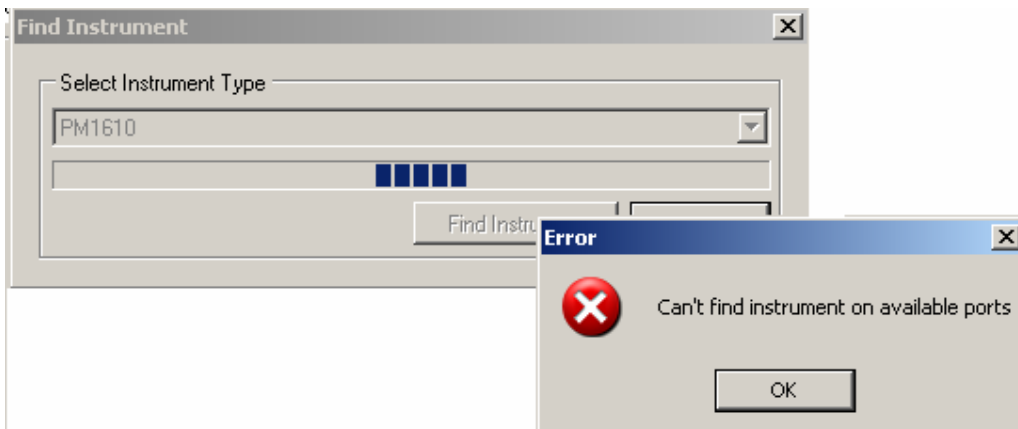
\* Press this toolbar button;

\* Select **Tools** menu and click **Read History** command.

Program will open **Find Instrument** window where user can select instrument type<sup>1</sup>. If search results in error, check whether the instrument is properly connected to PC (For **PM1610** disconnect the cable for the instrument's miniUSB port, reconnect it again and repeat several times if required so that instrument's LCD displays "USB". For **PM1603/04** and **PM1621** check that IR link between instrument and adapter is engaged. Press **Find Instrument** button to start searching of the instrument currently connected to PC.



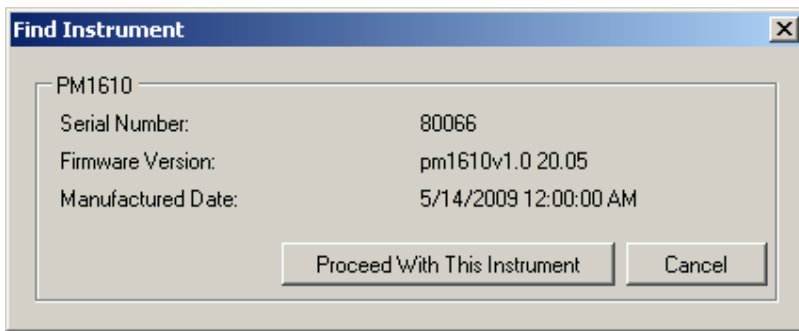
If search results in error, check whether the instrument is properly connected to PC (For **PM1610** disconnect the cable for the instrument's miniUSB port, reconnect it again and repeat several times if required so that instrument's LCD displays "USB". For **PM1603/04** and **PM1621** check that IR link between instrument and adapter is engaged).



Successful search displays information on the found instrument in the **Find Instrument** window:

- ◆ Instrument serial number;
- ◆ Firmware version;
- ◆ Instrument's manufactured date.

<sup>1</sup> By default software indicates the most recently communicated type of the instruments.



Press ***Proceed With This Instrument*** button and software opens ***History Viewer: Instrument Serial Number*** window.

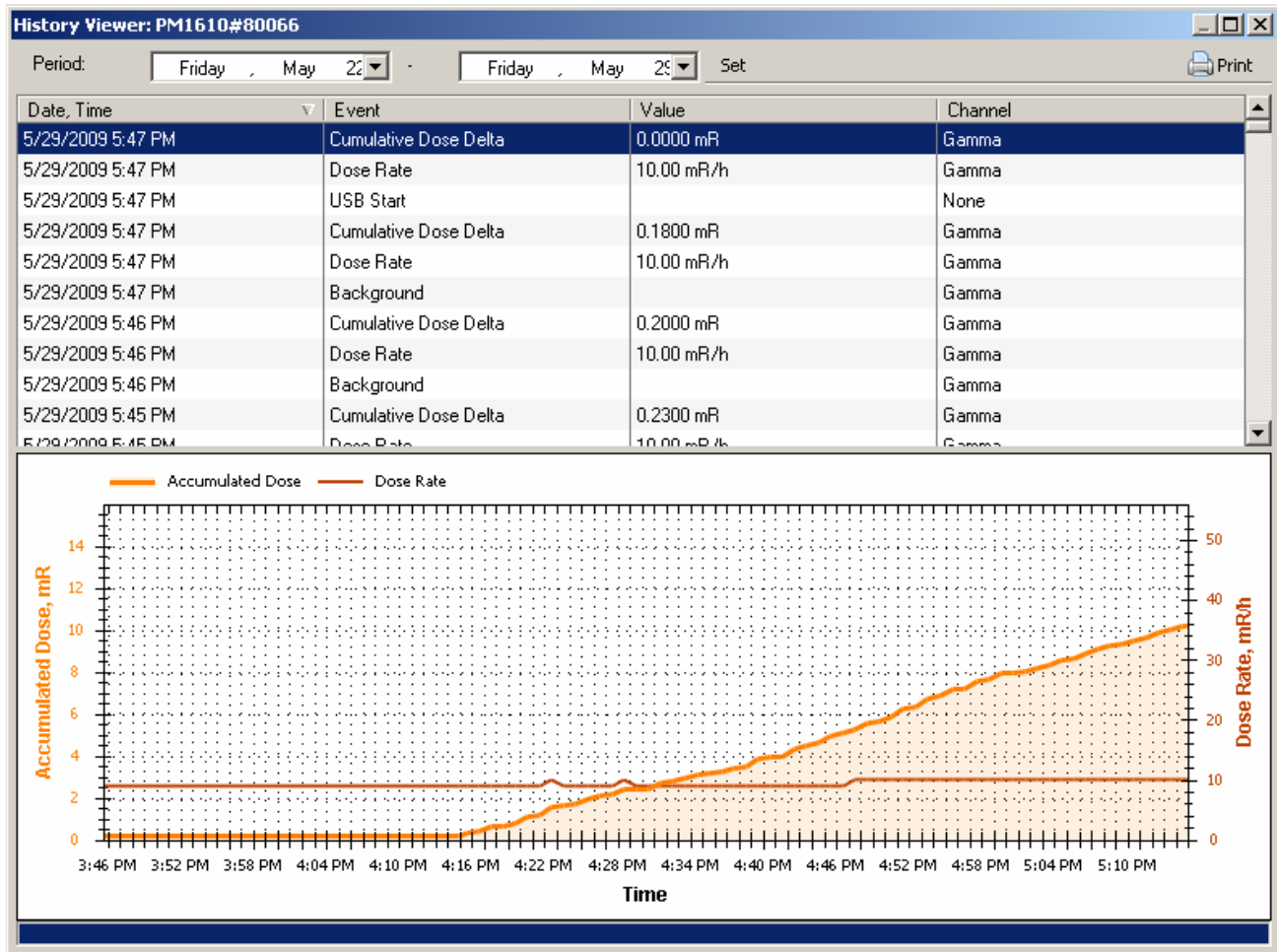
Program will take some time to read instrument history. The process will be indicated by a progress bar in the lower window part.

Completely read instrument history will be displayed in the ***History Viewer*** window as a graph and a table.

Software enables user to view all recorded (or filtered by data) history events as a table. History events are recorded chronologically and are characterized by **date** (day/month/year), **time** (hours/minutes), **name and value of the event**, as well as **channel name**.



**Note! No history events are recorded into instrument's memory when PC-instrument USB connection is active.**



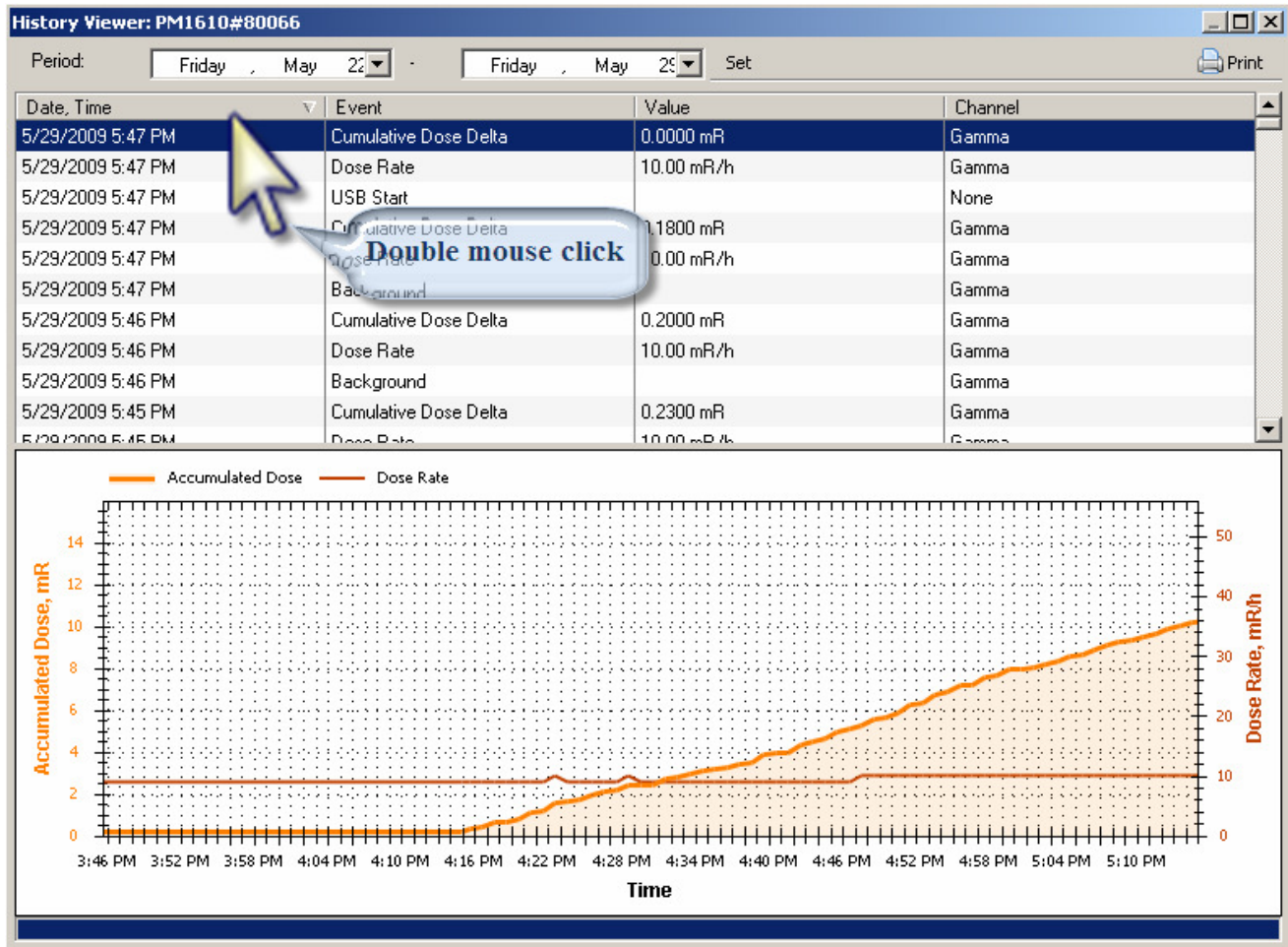
Instrument operation history consists of the following events:



**Note! No history events are recorded into instrument's memory when PC-instrument USB connection is active.**

- ◆ **Background;**
- ◆ **DER** (DER value recorded at set history recording interval (configured in the instrument settings));
- ◆ **DE delta** (addition of accumulated DE at set history recording interval);
- ◆ **Exceeding DE threshold 1;**
- ◆ **Exceeding DE threshold 2;**
- ◆ **DE overload;**
- ◆ **DER overload;**
- ◆ **Decreasing DER value to below threshold 1;**
- ◆ **Exceeding DER threshold 1;**
- ◆ **Decreasing DER value to below threshold 2;**
- ◆ **Exceeding DER threshold 2;**
- ◆ **Setting of DE threshold 1;**
- ◆ **Setting of DE threshold 2;**
- ◆ **Setting of history writing mode;**
- ◆ **Setting of DER threshold 1;**
- ◆ **Setting of DER threshold 2;**
- ◆ **History wipe;**
- ◆ **Writing on user request;**
- ◆ **Time setting;**
- ◆ **USB start;**
- ◆ **USB stop.**

Double click on the names of the columns in the table of the ***History Viewer*** window to sort the history by: date and time, parameter type, parameter value, name of the involved channel.





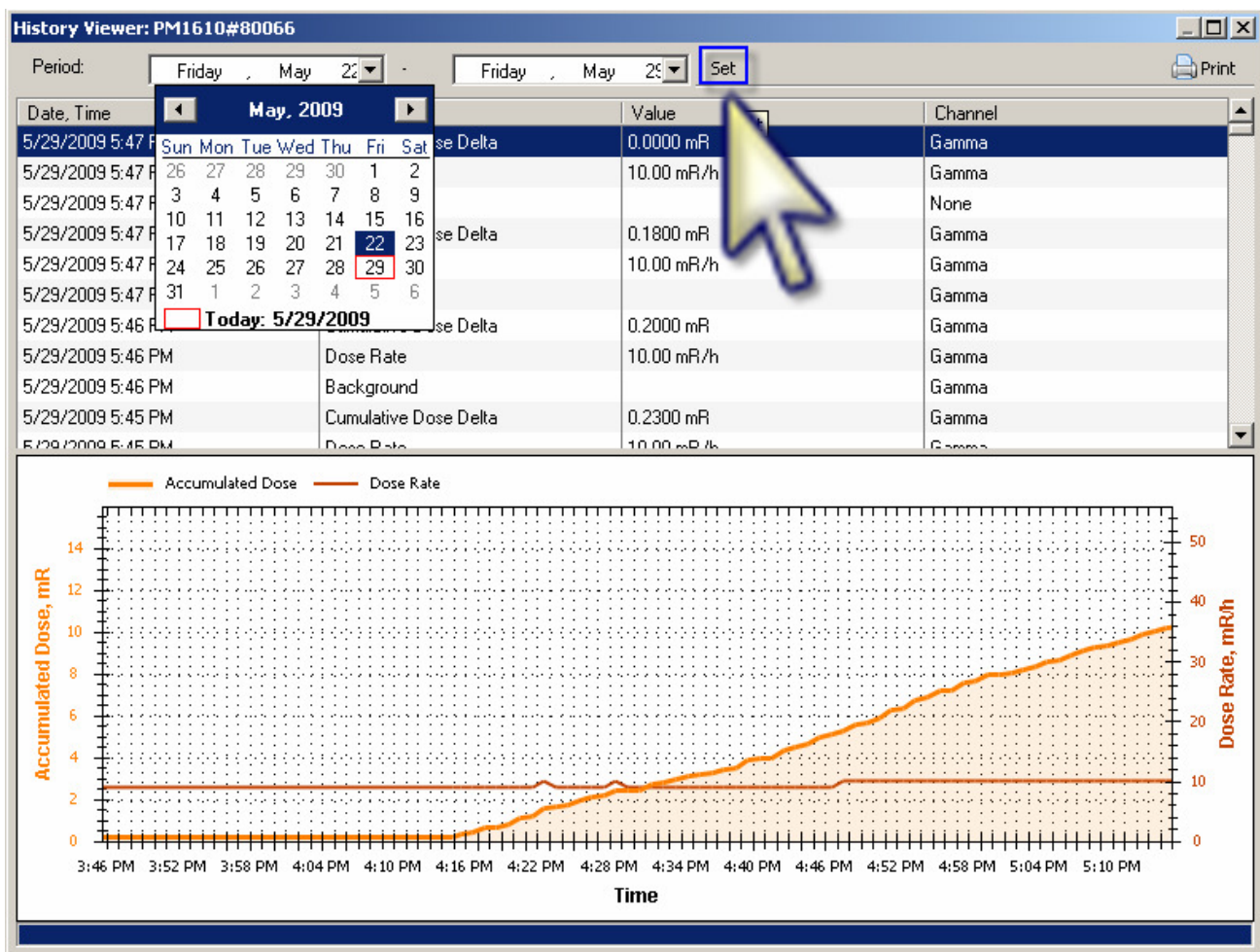
## WORKING WITH HISTORY

### Filter by Date

User can limit the viewed history area by set time period with the help of data filter.

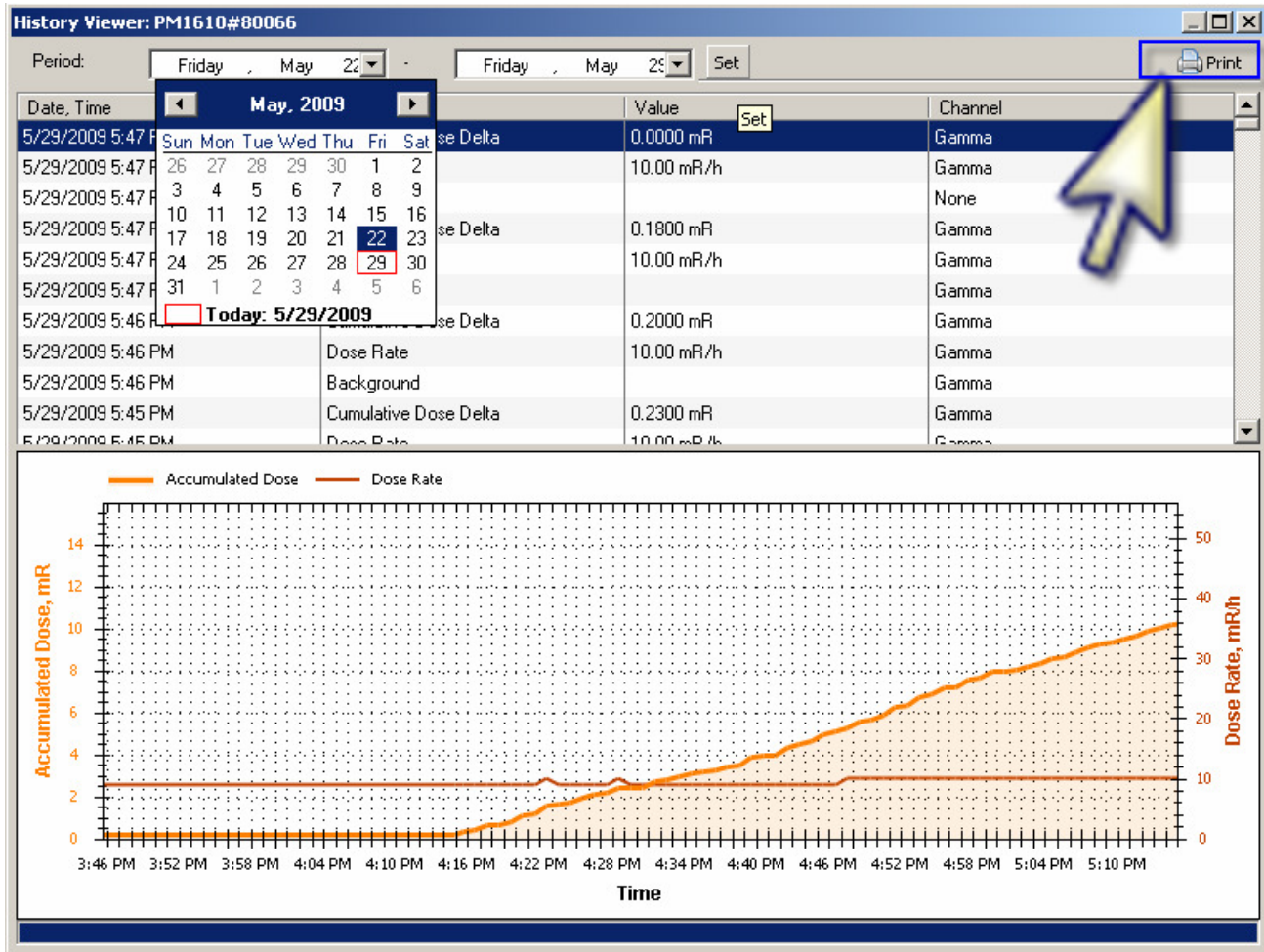
Filtration tools for history events by date are located in the upper window part.

Using standard Windows Calendar, specify start and end dates of the period and press *Set* button.

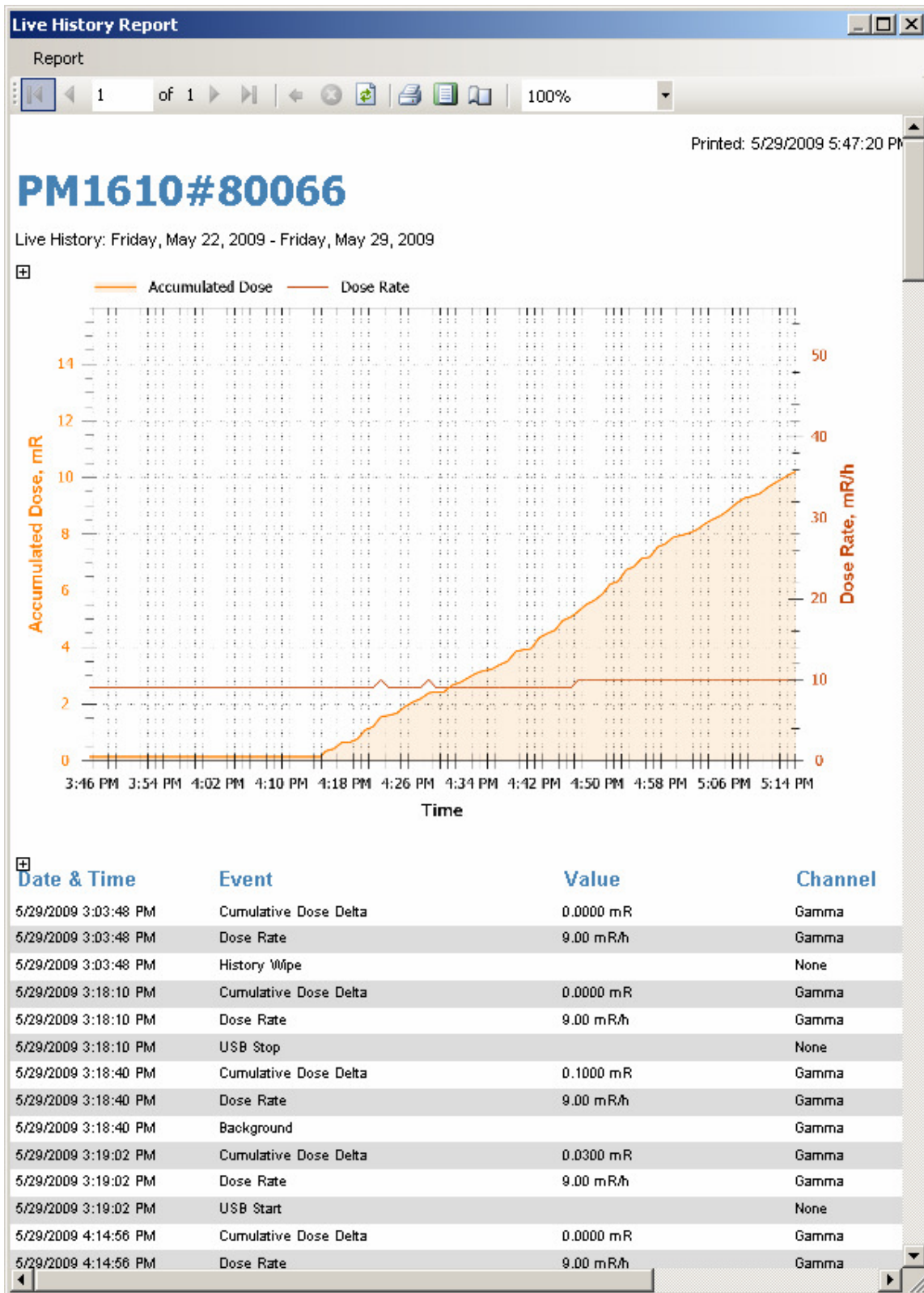


## REPORT GENERATION/PRINTOUT

Press **Print** button in the upper right window corner to generate the report and print it.



Software will generate print report on the basis of read history and display it in the **Live History Report** window before printing.

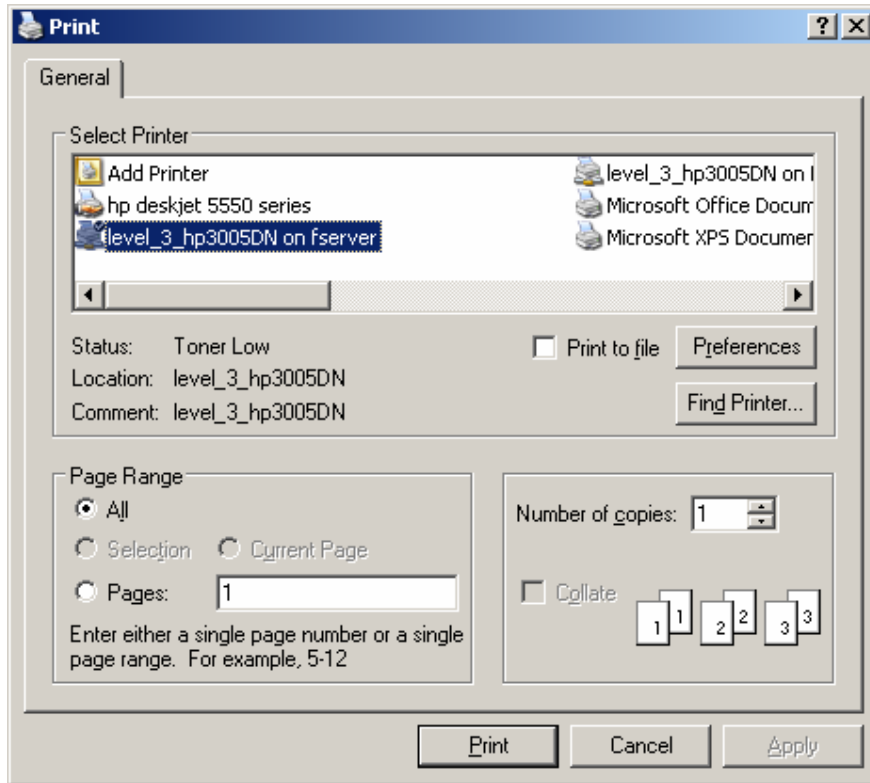


User can configure page and print settings by toolbar buttons of the *Preview* window.



Press  toolbar button to print the report.

Standard **Print** window opens where user can select the printer and configure print settings. Configure all required settings and press **Apply (OK)** and then **Print** buttons.

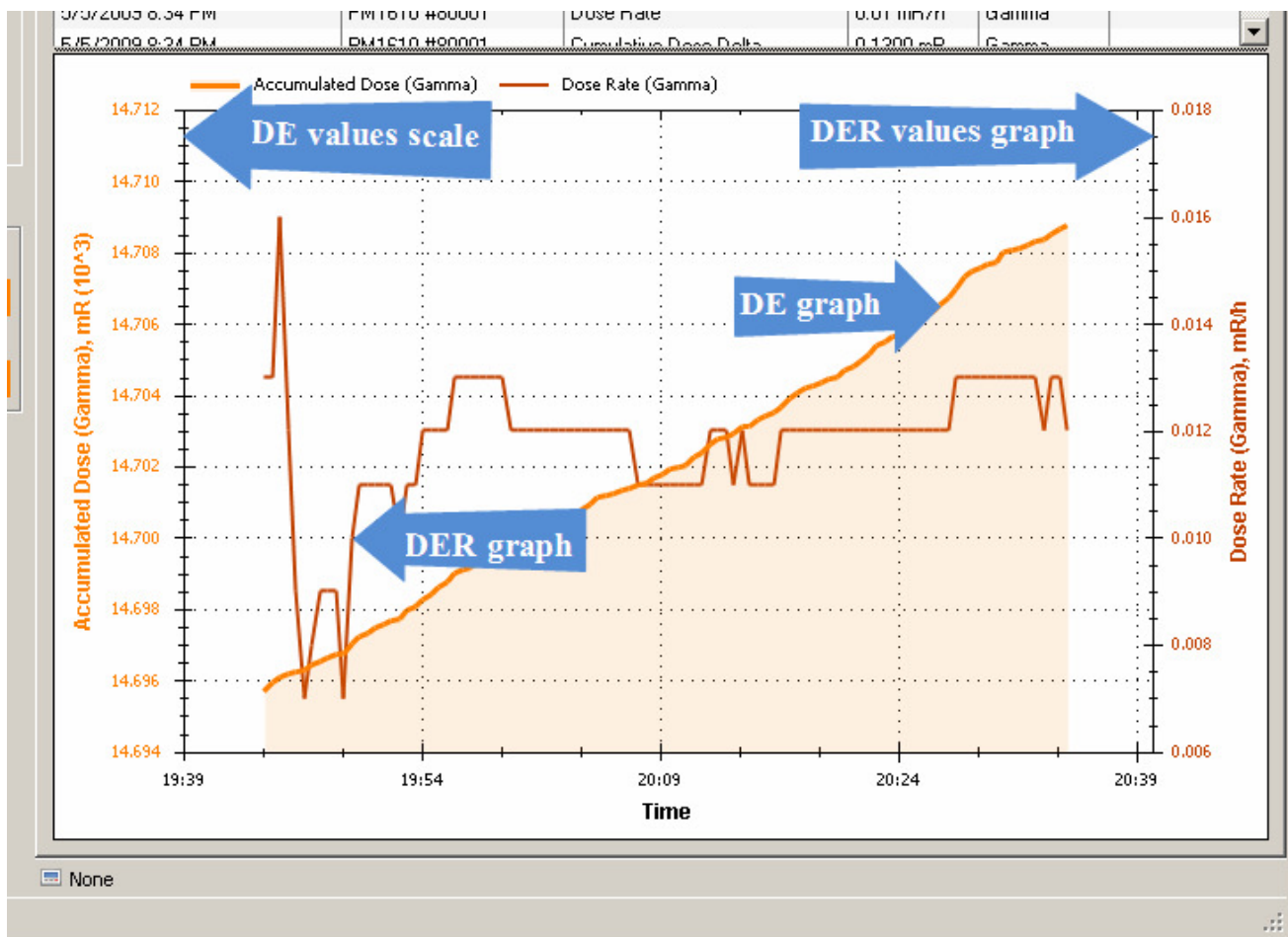


## WORKING WITH GRAPH

Program automatically generates **DER Graph** and **DE Graph** correspondingly on the basis of read history in the table.

History graphic representation is the most convenient way for the user to view and analyze variable DER and DE values (Y1 and Y2 axis) during time period (X axis).

User can narrow time interval so that to detail DER or DE view graph area. The graph is being zoomed automatically.



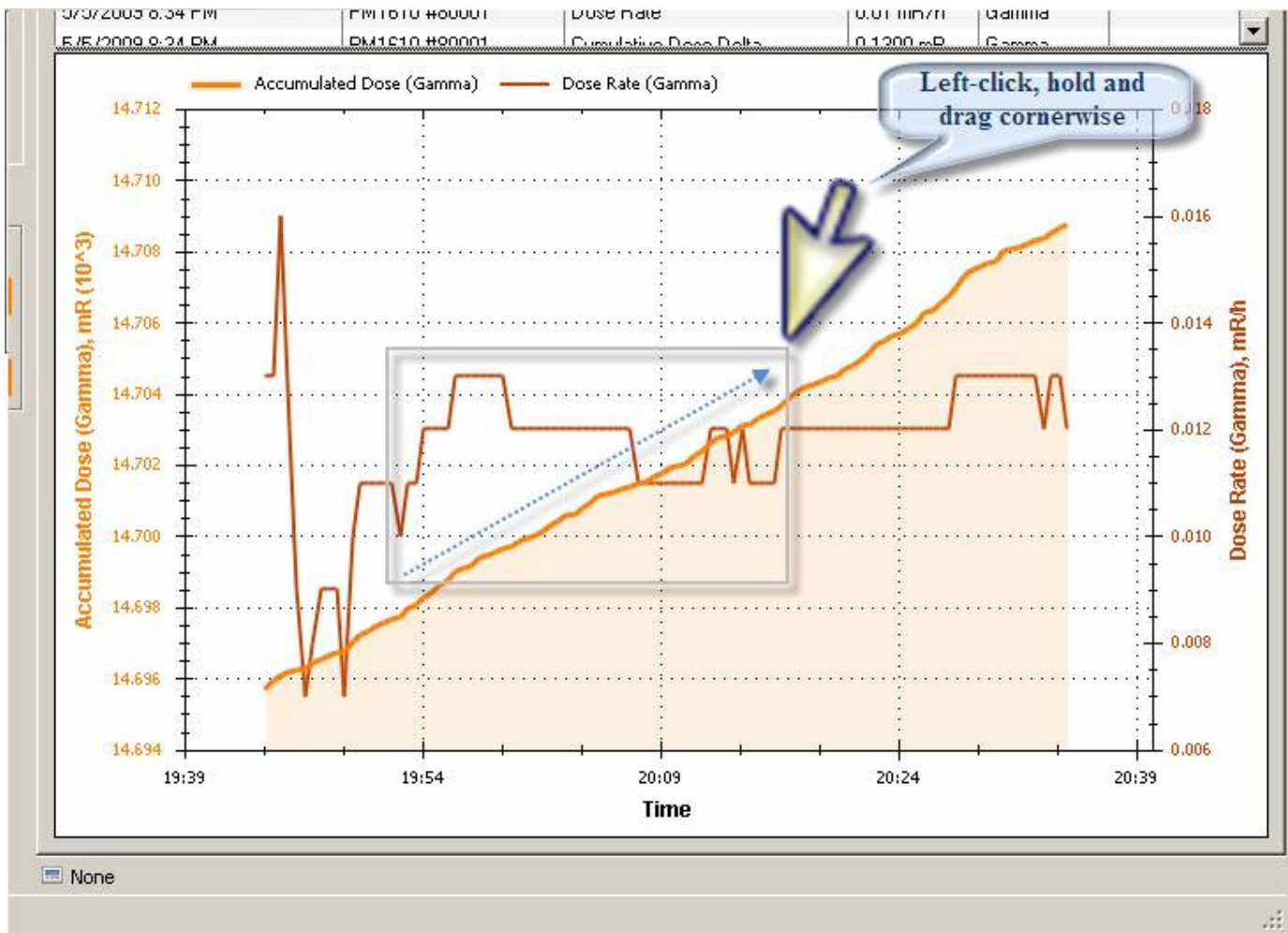
**Highlighting area of interests (Zooming in)** is done in a standard way:

- Press and hold left mouse button;
- Select required rectangle area on the graph: hover the pointer over left rectangle corner and move it to the right (cornerwise).

Program will automatically scale the axis and display selected area of interests to view in detail when user releases the mouse button.

User is recommended to do it if the graph is saturated with lots of curves and points.

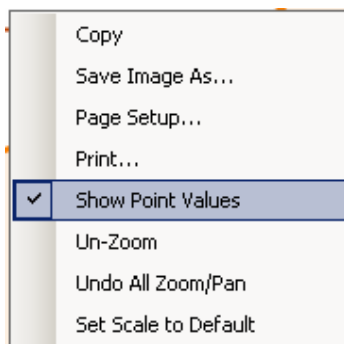




To **cancel** selection of the area or zooming:

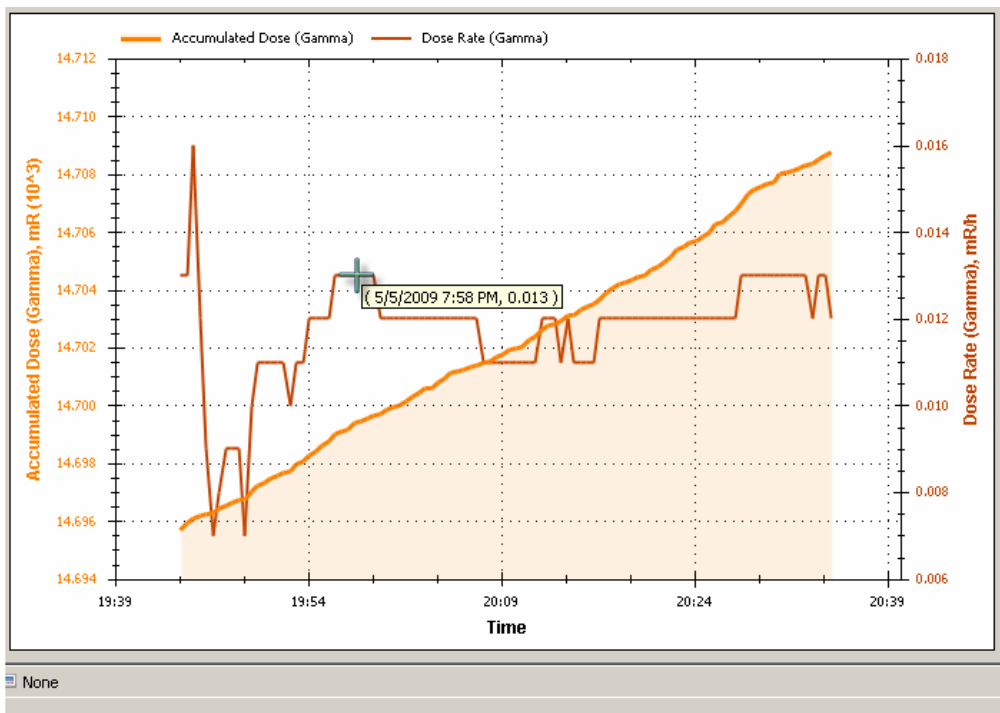
- Open context menu by right-clicking on the graph area;
- Select one of the suggested commands to cancel zooming.

Program will automatically scale the axis and cancel graph zooming.



## Context Menu Commands

- ◆ **Copy** – copies graph image into the clipboard;
- ◆ **Save Image As** – opens *Save As* standard Windows window where user can save the history graph as an image file (\*.gif/jpg/bmp) into the user defined folder;
- ◆ **Page Setup** – opens *Page Setup* standard Windows window where user can configure print settings;
- ◆ **Show Point Values** – flagged check box enables displaying of **marker-pointer** on the graph. When user hovers a marker-pointer over the graph line, program pops up window with point values along X and Y axis (see the illustration below).



***Thank You for Choosing  
Polimaster!***