

USER SOFTWARE GUIDE

PRD PM1703MA-II
PRD PM1703GNA-II
series

v. 1.4. June. 2018

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CONTENTS

PREFACE	4
Using This Guide	4
Conventions Used in This Guide	4
<i>Symbols</i>	4
<i>Abbreviations</i>	4
BEFORE YOU BEGIN	5
What is PRD PM1703MA-II\PM1703GNA-II User Software?	5
System Requirements and Prerequisites	5
Installing PM1703MA-II\PM1703GNA-II Software	6
Drivers installation	7
Troubleshooting	8
OPERATING THE SOFTWARE	10
Quick Start	10
Main Window	12
Setup menu	12
Control menu	13
CHANGING PM1703MA-II\PM1703GNA-II SETTINGS	14
Reading and Saving Instrument's Settings	14
Understanding PM1703MA-II\PM1703GNA-II Settings	15
<i>Thresholds Tab</i>	15
<i>Behavior Tab</i>	16
<i>Alarms Tab</i>	17
<i>History Tab</i>	17
<i>Indication Tab</i>	18
<i>Time Tab</i>	18
<i>ANSI Instrument item</i>	19
WORKING WITH PM1703MA-II\PM1703GNA-II HISTORY DATA	20
History Window and Menu	22
Event Filters	22
<i>Filtration by event types</i>	23
<i>Filtration by date</i>	23
Graph view	23
GETTING HELP	25
Displaying User Guide	25
Checking for Updates	25
Technical Support	25

PREFACE

Using This Guide

Polimaster and our support team are committed to providing high quality technical support to the users of our equipment and systems. This manual is intended to familiarize user with the fundamentals of the Polimaster PRD PM1703MA-II\PM1703GNA-II User Software. It includes a summary of the basic features, a detailed overview of advanced features, and the installation notes.

Conventions Used in This Guide

Symbols

	Additional information you should pay attention to.
	Information about potential danger for yourself, instrument or data.

Abbreviations

- PC – personal computer
- OS – operation system
- CPS – counts per second
- DER – dose equivalent rate
- DE – dose equivalent
- PRD – Personal Radiation Detector

BEFORE YOU BEGIN

What is PRD PM1703MA-II\PM1703GNA-II User Software?

Polimaster PRD PM1703MA-II\PM1703GNA-II User Software (hereinafter referred to as PM1703MA-II\PM1703GNA-II Software, Software) is designed to work with the family of Polimaster PM1703 Personal Radiation Detectors. The following devices are compatible with this software:

- Polimaster PRD PM1703MA-II
- Polimaster PRD PM1703GNA-II

The PM1703MA-II\PM1703GNA-II Software allows exchanging data between the instrument and PC, to change settings and extract data from non-volatile memory of the instruments and export, print and manage data.



Do not use this software with any other devices, including other Polimaster PM1703 models as this may damage equipment and void warranty.

System Requirements and Prerequisites

The following software and hardware specifications are required before using PM1703MA-II\PM1703GNA-II Software:

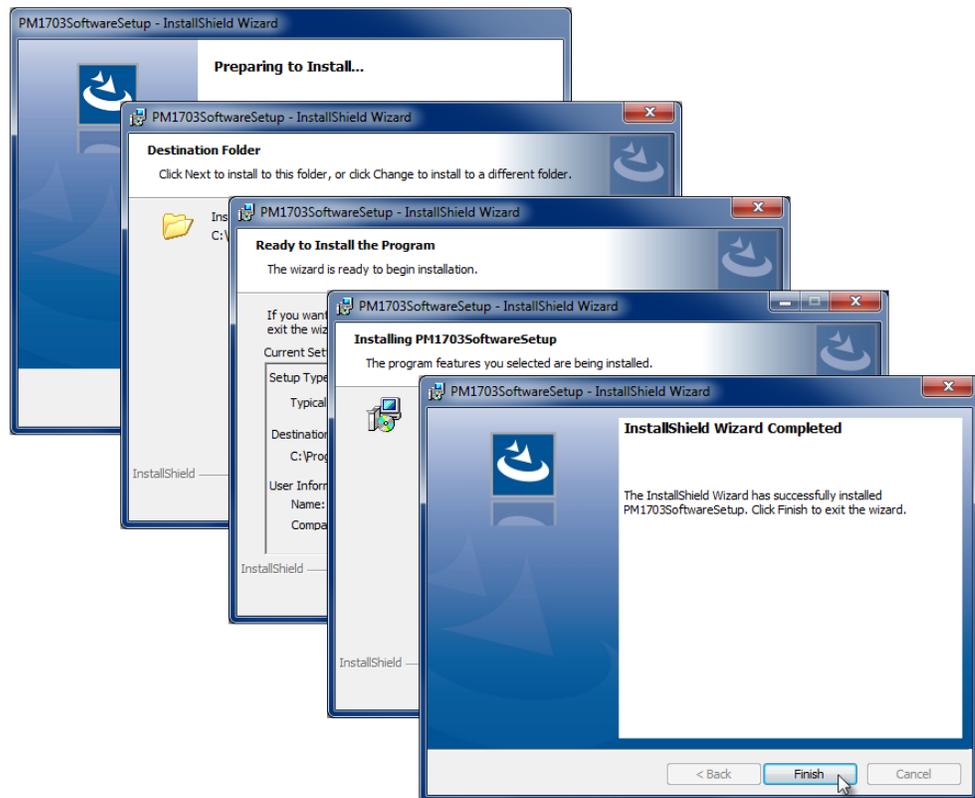
- Microsoft Windows® 7, 10;
- Windows Server 2012 or higher;
- Microsoft .NET Framework version 4.5 or higher.

Installing PM1703MA-II\PM1703GNA-II Software

	<p>The PM1703MA-II\PM1703GNA-II Software is based on the Microsoft.NET Framework (version 4.0 or higher). The installer will check the system and install it automatically if required. If the installer fails to do this, install the Microsoft.NET Framework manually according to its installation guidelines.</p>
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Use a PC with USB-port and a USB-cable supplied together with the instrument and installation CD included into delivery set with Polimaster Software to enable USB interfacing of the instrument.

Please follow these steps for installation of PM1703MA-II\PM1703GNA-II Software:

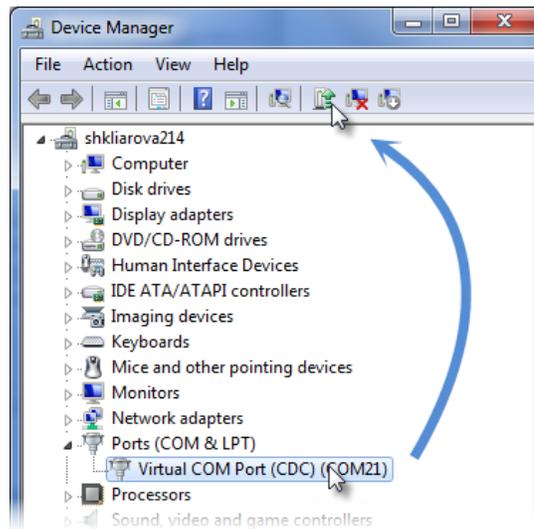


1. Run setup.exe file, located in the root directory of installation CD or memory drive to start the Setup Wizard.
2. Follow set up instructions and click the **“Install”** button to confirm and start installation.
3. After installation is completed, click the **“Finish”** button. PM1703MA-II\PM1703GNA-II Software is ready to start.

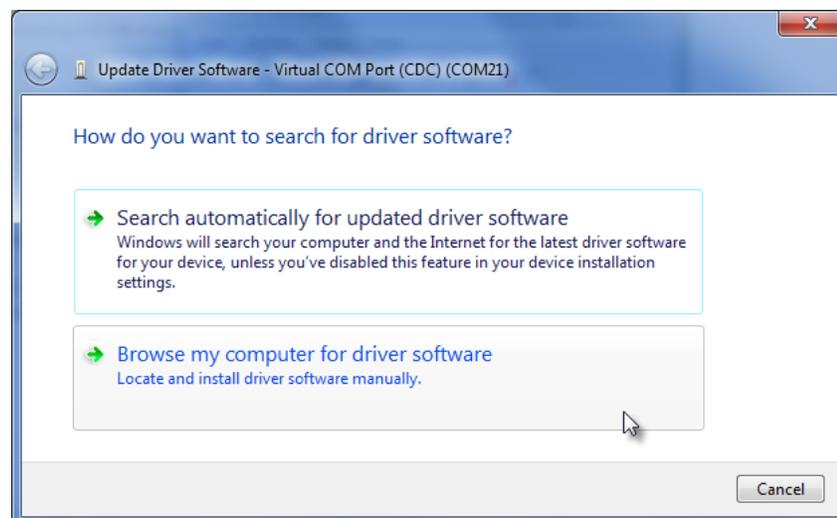
Drivers installation

It may be necessary to install drivers for the instrument operation via USB.

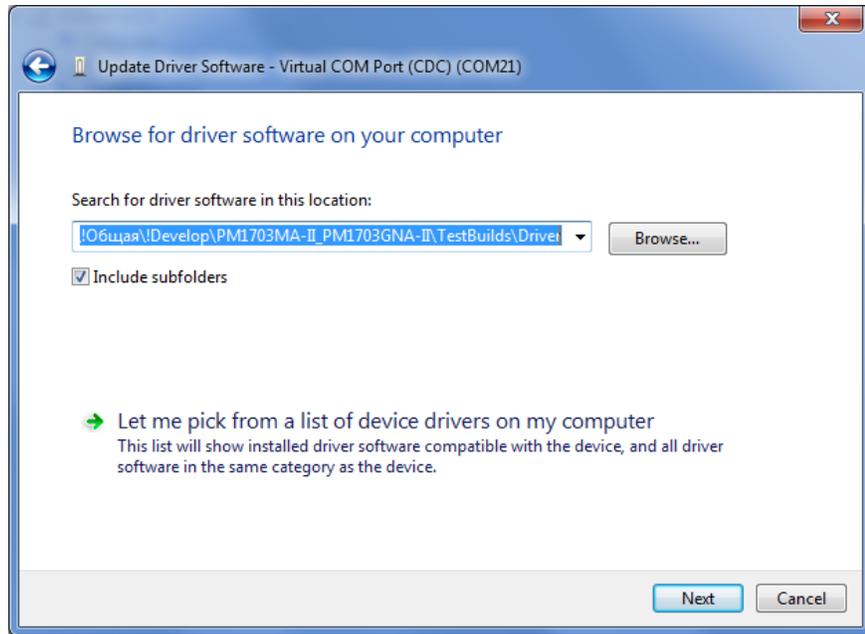
After the first connection to the PC system will detect a new hardware. Open the “**Control Panel**”, then the “**Device Manager**”.



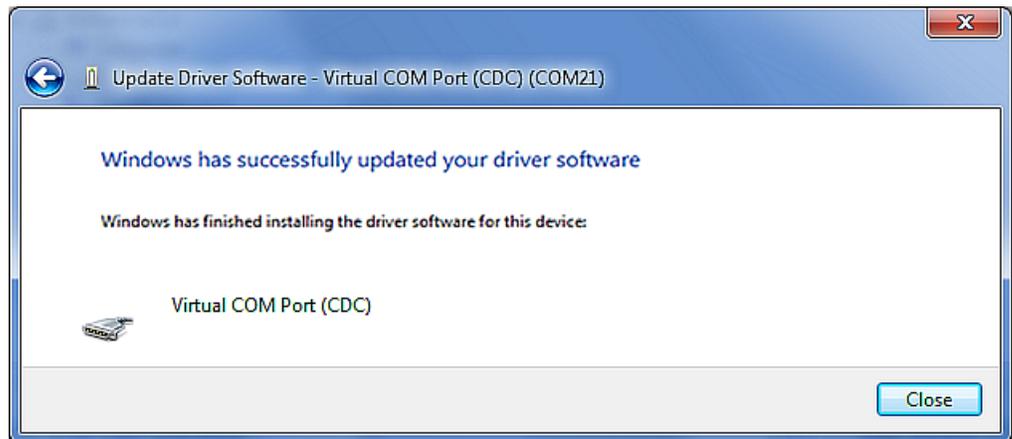
The Instrument will be recognized as “Other device” or “Virtual COM Port”. Select the device and update the driver using the “**Update driver software**” button on the action bar. The driver update window will appear. Choose the driver search and manual installation.



Select the driver folder from the drop-down list using the “**Browse**” button. This folder will be created after the software installation.



To complete the driver installation click **“Install”**. The system will automatically search for the required driver and install it. Click **“Close”** after the installation will be complete.



Troubleshooting

Most problems that may occur at installation phase that can prevent the PM1703MA-II\PM1703GNA-II Software from running have been traced to mainly three areas below:

1. Microsoft .NET Framework is not installed in your system or its version is lower than 4.0. Please download the latest version of Microsoft .NET Framework from the web and reinstall it.
2. If search results in error, check whether the instrument is properly connected to PC. Disconnect the cable for the USB

port, reconnect it again and repeat several times if required so that instrument's LCD displays "USB";

3. Instrument has a low battery. Replace the battery and try to connect the instrument and PC again.

If going through steps 1-3 above was still unsuccessful, please contact technical support.

OPERATING THE SOFTWARE

Quick Start

Instrument features USB interface for data exchange with computer.

Use a PC with USB-port and a USB-cable supplied together with the instrument and installation CD included into delivery set with Polimaster Software to enable USB interfacing of the instrument.

For the process of data exchange between the PC and Polimaster PM1703MA-II\PM1703GNA-II instruments to go smoothly, please follow the two-steps procedure described below.

Step 1 – Initiate the USB connection between the Instrument and PC

Although this can be done after starting the User Software, we recommend establishing USB-connection between the instrument and PC beforehand. To do this:

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

If the USB connection is established successfully,

Step 2 – Start the PM1703MA-II\PM1703GNA-II Software

You may start the program from the Start Menu or using a corresponding desktop shortcut icon.



This will open the Main program window.



Select the **“Read”** button and User Software will start searching for the instrument. If this operation is successful the main program window will show the:

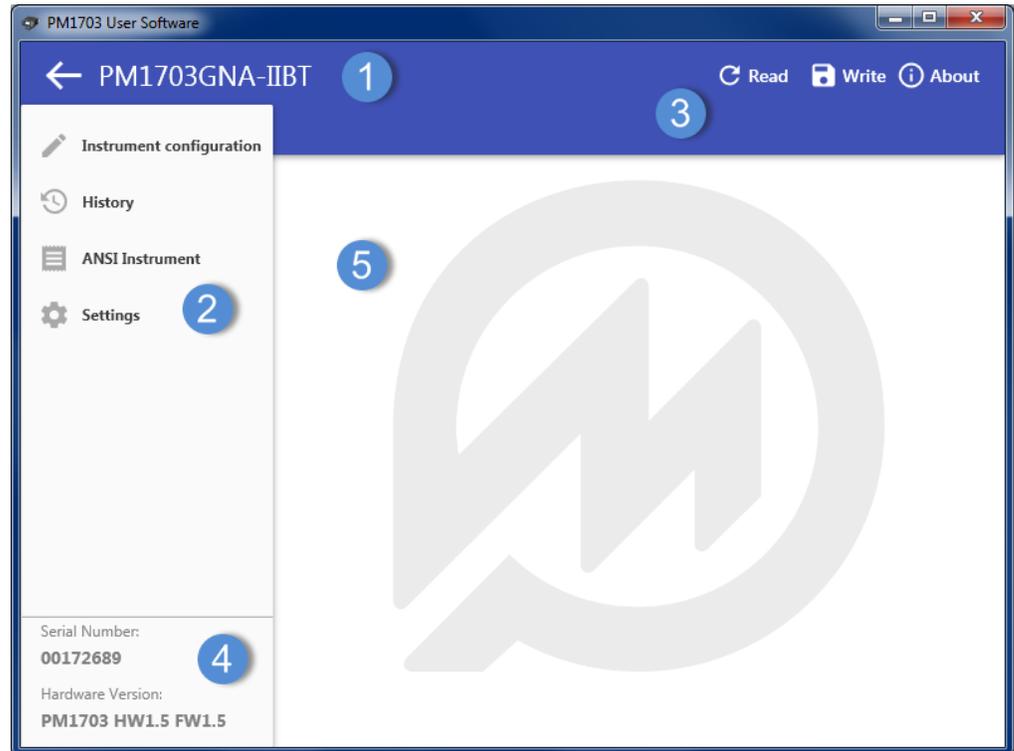
- **A** - instrument's type;
- **B** - instrument's serial number;
- **C** - firmware version.



Main Window

Simple graphic interface of the main program window represents a set of commands and tools for user to interact with the connected instrument and work with measurement results.

The main program window is divided in several functional areas:



1. Device type display field;
2. Setup menu;
3. Control menu;
4. Serial number/Hardware version display field;
5. Information display field.

Setup menu

There are four items in this section:

1. **“Instrument configuration”** item is used to change settings of PM1703MA-II\PM1703GNA-II Instrument and consists of several groups: **“Thresholds”**, **“Behavior”**, **“Alarms”**, **“History”**, **“Indication”** and **“Time”**.
2. **“History”** item contains three commands: **“Read History”**, **“Export To CSV”** and **“Reset History”** and is used to start

- instrument measurement history reading process followed by the read measurement history display as a table and graphs;
3. **“ANSI Instrument”** item allows user to get a test input file for the Algorithm Replay Tool from the instrument;
 4. **“Settings”** item is used to change the program settings (User interface language change).

Control menu

This menu contains the following commands that operate the PM1703MA-II\PM1703GNA-II instrument:

1. **“Read”** command is used to activate the process of the instrument search in order to enable further instrument-software communication, as well as to read currently active instrument settings and to undo unsaved changes;
2. **“Write”** command allows saving new software/instrument settings and parameters;
3. **“About”** command shows information about this Software, as well as the Software User Guide.

CHANGING PM1703MA-II\PM1703GNA-II SETTINGS

The PM1703MA-II\PM1703GNA-II Software allows changing the instrument's settings that have impact on performance. Please make sure you understand all changes you want to make to device to avoid improper behavior of the instrument.

	<p>Changing PM1703MA-II\PM1703GNA-II settings may lead to significant changes in the instrument specifications, including detection of radioactive sources. Polimaster is neither responsible nor liable for any consequential damages that may result therefrom. Do this at your own risk.</p>
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Reading and Saving Instrument's Settings

All operations start with reading settings from the instrument. There are two options after changes in program are done: to save changes and revert back.

To read the current instrument's settings, select the **“Read”** command in the **“Control menu”** of the main program window.

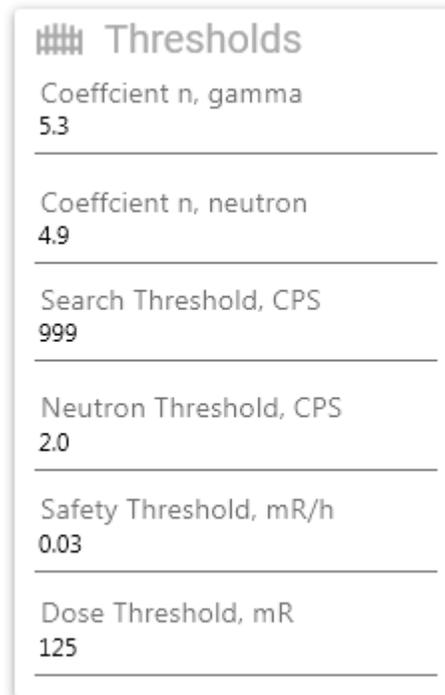
To make changes to the instrument settings use the **“Setup menu”**, **“Instrument configuration”** item.

To save changes made to the instrument's settings click the **“Write”** button. The software will reconnect with the instrument and write new settings into the instrument's memory.

It takes some time to write and read all settings into/from device memory.

Understanding PM1703MA-II/PM1703GNA-II Settings

Thresholds Tab



Thresholds	
Coefficient n, gamma	5.3
Coefficient n, neutron	4.9
Search Threshold, CPS	999
Neutron Threshold, CPS	2.0
Safety Threshold, mR/h	0.03
Dose Threshold, mR	125

This tab allows user to adjust thresholds for different operation modes. The following parameters can be set up:

Coefficient n, gamma – the value of measured deviations (coefficient n) number for gamma radiation;

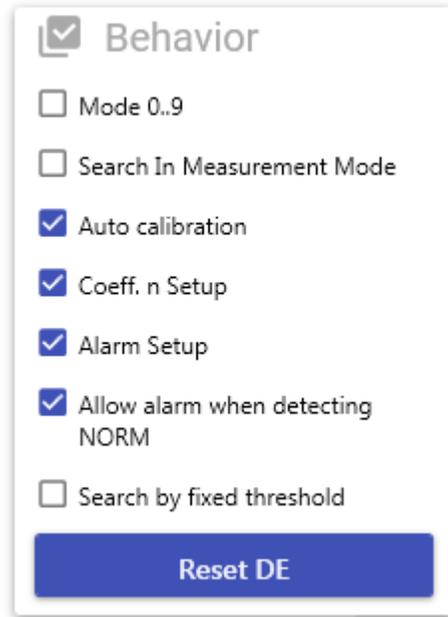
Coefficient n, neutron – the value of measured deviations (coefficient n) number for neutron radiation;

Search Threshold (CPS) – this field allows setting the search threshold;

Neutron Threshold (CPS) – this field allows setting the neutron threshold;

Safety Threshold (mSv/h-mR/h) – this field allows setting the safety threshold. Safety threshold is intended for alerting user when immediately dangerous for life radiation level is reached. When this threshold is exceeded, the instrument will produce easily distinguishable periodic audio and/or vibration alarm;

Dose Threshold (mSv-mR) – this field allows setting the DE threshold.

Behavior Tab

Behavior

Mode 0..9

Search In Measurement Mode

Auto calibration

Coeff. n Setup

Alarm Setup

Allow alarm when detecting NORM

Search by fixed threshold

Reset DE

This tab allows user to adjust instrument operation settings. The following parameters can be set up:

Mode 0..9 – when this checkbox is selected, the instrument will support 0..9 search mode instead of regular, as described in Operation manual;

Search In Measurement Mode – allows/forbids the search during the measurement mode;

Auto calibration – when this checkbox is selected, the autocalibration of the instrument is enabled;

Coeff. n Setup – allows/forbids the user to change the value of coefficients for gamma and neutron radiation using the instrument buttons;

Alarm Setup – when this checkbox is selected, the user can switch the audio, vibration and light alarms on and off by means of the instrument's buttons;

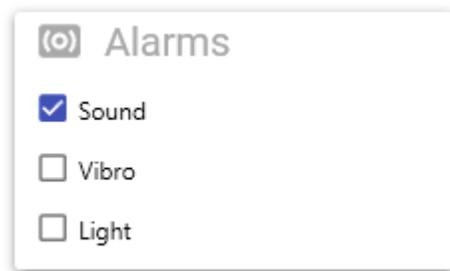
Allow alarm when detecting NORM - the system has the ability to suppress alerts to the operator for elevated radiation due to only Naturally Occurring Radioactive Materials (NORM). When this checkbox is selected, the Instrument emits the audio and vibration alarms in addition to the light alarm when detecting NORM;

Search by fixed threshold - allows/forbids the search with fixed threshold;

Reset DE button - is used to delete the accumulated dose from the instrument memory. To clear the accumulated dose click the “**Reset Dose**” button and then confirm the action by clicking “**Yes**” in the dialog box.



Alarms Tab



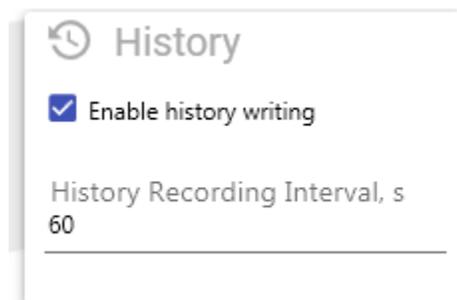
This tab allows user to adjust instrument sound and alarms behavior. The following parameters can be set up:

Sound– this checkbox enables the sound alarm;

Vibro– this checkbox enables the vibration alarm;

Light – this checkbox enables the light alarm.

History Tab

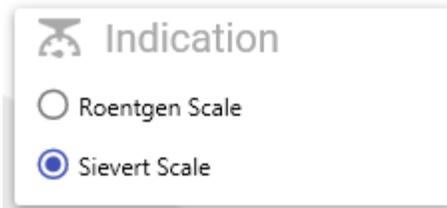


This tab allows user to monitor and adjust the instrument's settings that control data logging. The following parameters can be set up:

Enable history writing – this checkbox enables the writing of the instrument operation history;

History recording interval, s – sets the time interval (in seconds) for background data logging to the internal non-volatile memory of the instrument. The range is from 10 to 1440 seconds.

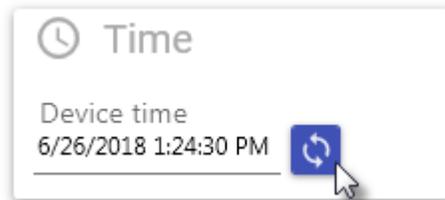
Indication Tab



This tab allows user to adjust instrument display and indication settings. The following parameters can be set up:

Roentgen Scale – Sievert Scale – this option is used to select a measurement unit (Sv/h or R/h, Sv or R) of the instrument. Software will display the history data as well as thresholds in measurement units selected by this option.

Time Tab



This tab allows user to record the PC System time into the instrument. Click the  button to synchronize the PC and instrument time.

	Check the system time before connecting the instrument to PC and correct it if needed.
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ANSI Instrument item

This Setup menu item allows user to get a test input file for the Algorithm Replay Tool from the instrument. The Tool is designed for the exact reproduction of the analysis results from the device, given identical sensor data and parameter inputs.

To get a test input file:

- choose the “**Setup menu**”, “**ANSI Instrument**” item;
- click the “**Start**” button. The indicator bar appears;



- move the radiation source at different distances from the instrument for a certain period of time;
- click the “**Stop**” button. The input file will be created. The dialogue window will appear automatically;



- choose the folder for saving the input file and click the “**Save**” button.

The further actions are described in the section “**Procedure**” of the **Replay Tool User Guide**.

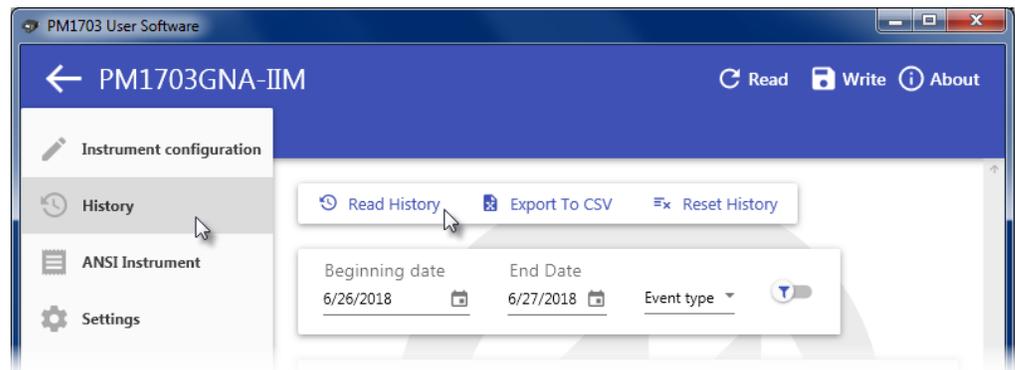
	<p>This mode is not suitable for the instrument normal operation and can be applied only to get the input file for the Algorithm Replay Tool. That is why the manufacturer does not guarantee meeting the stated technical specifications of the instrument operating in this mode.</p>
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WORKING WITH PM1703MA-II\PM1703GNA-II HISTORY DATA

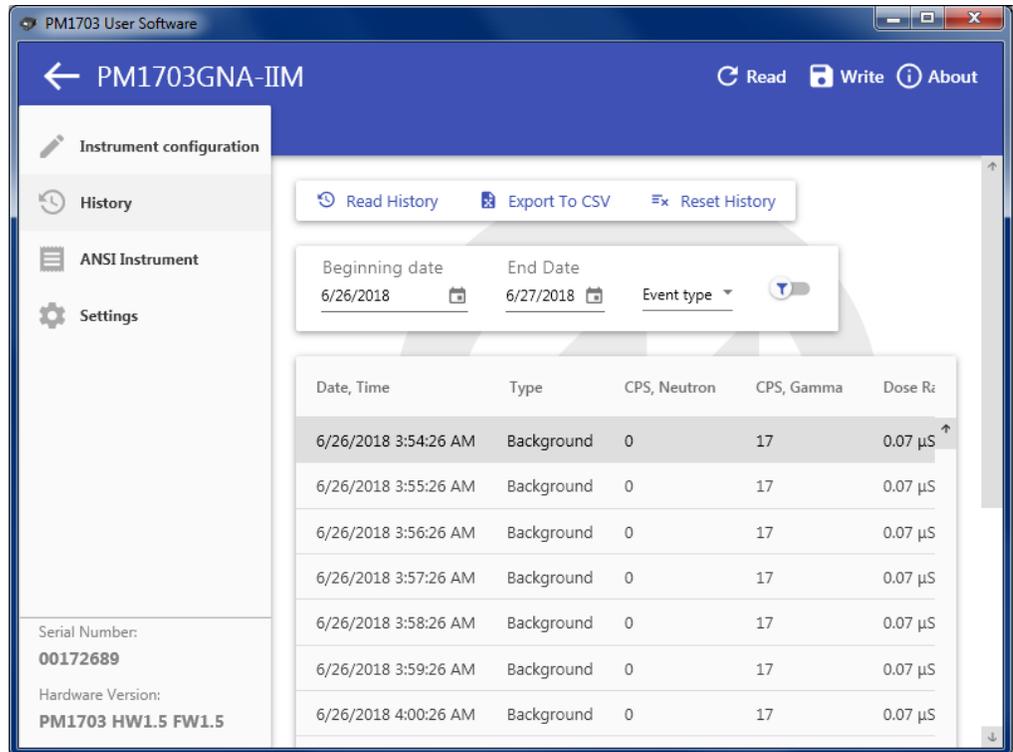
The PM1703MA-II\PM1703GNA-II instruments record the operation history into its non-volatile memory during its regular operation. The User Software allows downloading entire instrument's history to PC, displaying, printing and exporting it to different file formats.

Instrument's non-volatile memory accumulates and stores information: data/time, on/off state, threshold settings, alarms state, operating hours, periodic radiation, readings in system set units during alarm state, operational/maintenance state data.

To start working with the instrument's stored history data choose the **"Setup menu"**, **"History"** item and click the **"Read History"** button.



If the PC-connection is established, the **"History"** window will appear displaying the data reading progress and if finished successfully all the history data in table and graph view.



Instrument operation history may contain the following events:

Event type

- Instrument off
- Instrument on
- Calibration
- Background
- Gamma alarm
- Neutron alarm
- The 1st DER threshold was exceeded
- The 2st DER threshold was exceeded
- DER overload
- DE overload
- The 1st DE threshold was exceeded
- The 2st DE threshold was exceeded
- Reset DE
- Sigma number change
- Signaling change
- Vibro change
- Low battery
- Unknown

History Window and Menu

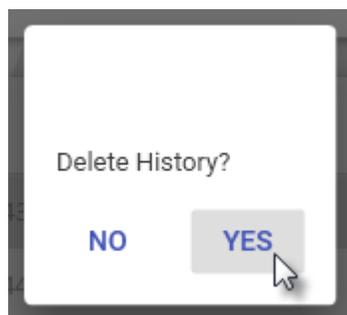
No active communication with the instrument is required to work with the read history (filter, print, save). However as soon as “**History**” window is closed, all unsaved data will be lost.

	<p>Please complete all operations with data, print, export or save it before you exit the History window.</p>
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The following commands and operations are available with the downloaded data in “**History**” window:



- **Read History** command is used to start instrument operation history reading;
- **Export To CSV** command is used to save the current history onto the user PC or a removable flash-drive as a *.xls file, as well as to print it;
- **Reset History** command is used to delete the instrument history. Choose the “**Reset History**” command from the “**History**” window and then confirm the action by clicking “**Yes**” in the dialog box.

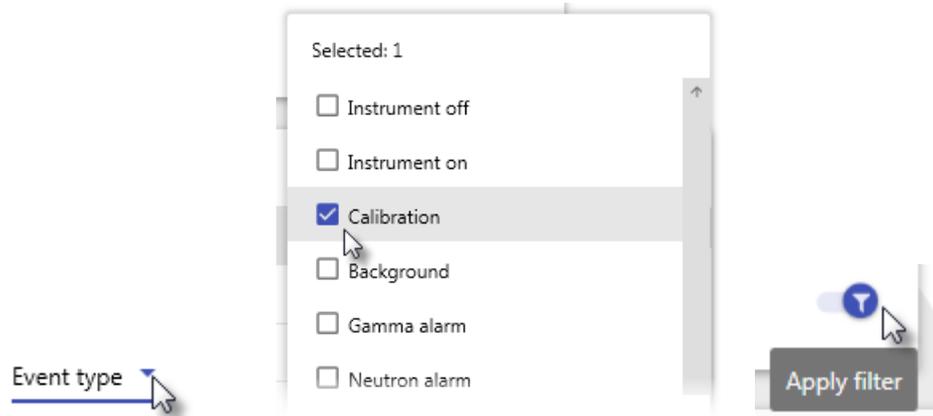


Event Filters

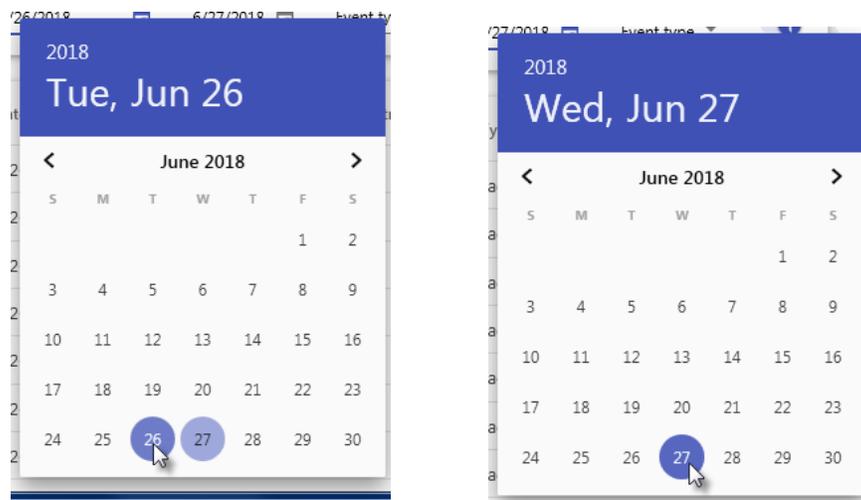
Displayed history can be filtered right in the table.

Filtration by event types

To filter history events by event type click the **“Event type”** field to open the event type list. Select required event from the list and switch the filter on.



Filtration by date

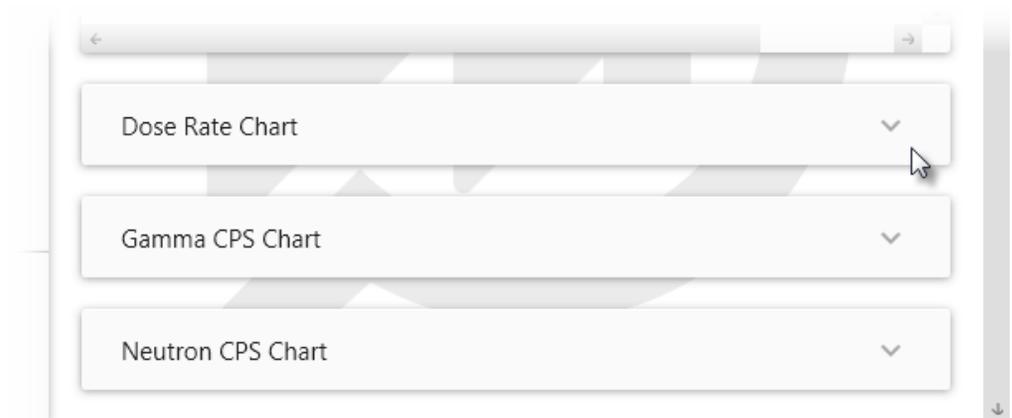


To filter the history events by date: click sequentially the **“Beginning date”** and **“End date”** fields to open the calendar and select required display dates.

Graph view

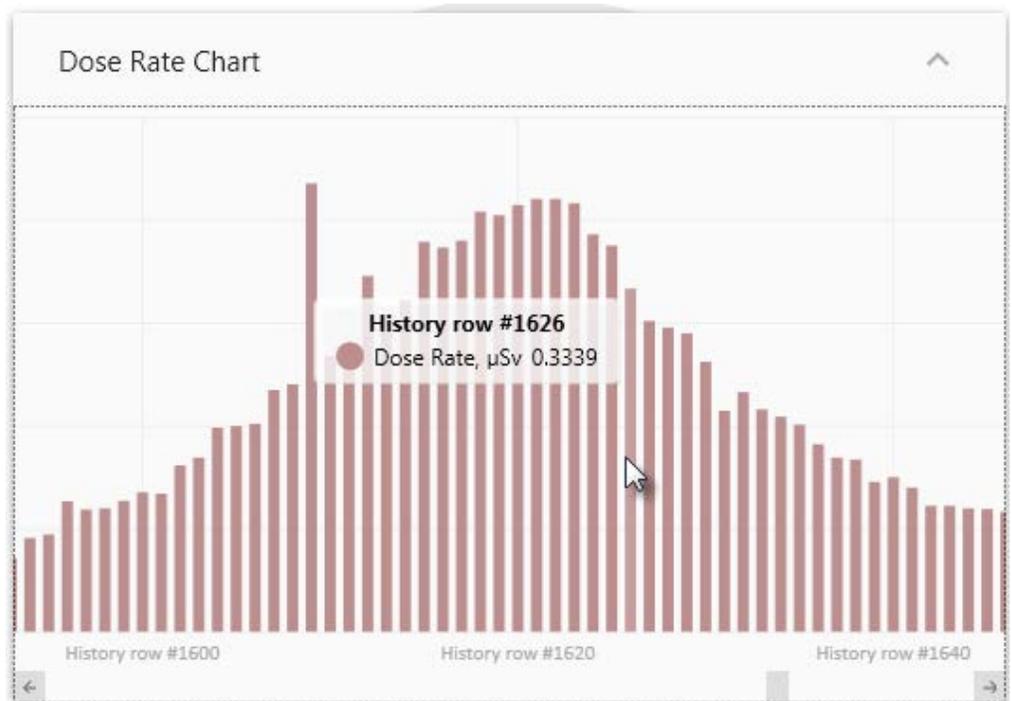
The History window contains the graph and table representation of downloaded data.

To display the read data as a graph click the arrow button on the corresponding bar (Dose rate chart, Gamma CPS chart or Neutron CPS chart).



The required field will be opened.

Dose rate chart view:



GETTING HELP

Displaying User Guide

In case any help or reference is needed, please consult this User Guide. It can be always found at the root directory of installation CD or memory drive.

Checking for Updates

Polimaster Inc. will provide updates to PRD PM1703MA-II\PM1703GNA-II User Software and documentation at the Polimaster website (<http://www.polimaster.us/>). Check the website periodically for important updates.

Technical Support

If you have technical questions about PRD PM1703MA-II\PM1703GNA-II User Software, contact your local Polimaster Technical Support or report to support@polimaster.us. If possible, save the design, image and/or output files related to the problem.