Appendix D
(Obligatory)

LIST OF PARAMETERS ACCESSIBLE FOR DISPLAYING AND EDITING USING THE "Configurator" SOFTWARE

The list of pages (tabs) available for configuring:

- Common;
- *Special;*
- Measures;
- Alarms;
- Calibration;
- Spectra;
- Sensors;
- Network;
- *SubNetwork;*
- *DC Configuration.*

Note – Tabs "Service" and "Calibration" are displayed only when the program is switched into expanded access mode. Those tabs are hidden by default.

Tab "Common"

This tab contains general information about the device and includes the following parameters:

Serial number – serial number (works number) of the connected device.

Current time – date, month, year and time, minutes and seconds of the reading.

Firmware version – version of the device's built-in software.

Device version – hardware platform version of the connected device.

Life, h – total operating time of the device (in hours) from putting into operation.

Device status – number, which represents the operability or failure of the device and its interpretation bit–by–bit. The revealed malfunctions are automatically checked by "ticks" and highlighted by yellow colour.

"Special" tab

This tab appears only after the program was switched into expanded access mode. The tab includes the following parameters:

Service functions – service parameter, which characterizes the service functions used and their interpretation bit-by-bit.

Mandatory parameters net send – when necessary, this field is used for setting of the compelled sending of technological parameters (checked with «ticks») to server via Ethernet. Sending of parameters will take place then during the next recording of the measured value.

Work mode (0 - normal) – service parameter that describes current state of the device. In the normal working mode the "0" is displayed in the field for this parameter.

Send spectrum via UDP – service parameter controlling the transfer of spectral information from the device to the external information network and its interpretation bit–by–bit.

"Measures" tab

This tab displays the results of measurements performed by the device. The tab includes the following parameters:

Detector 1 : Activity, Bq/m^3 – measured value of the volumetric activity of gamma-emitting radionuclides in the adjustable energy range for the first measurement channel.

Detector 2 : Activity, Bq/m^3 – measured value of the volumetric activity of gamma-emitting radionuclides in the adjustable energy range for the second measurement channel.

Detector 1 : N16 activity, Bq/m^3 – measured value of the volumetric activity of ^{16}N in the fixed energy range (from 5000 keV to 7500 keV) for the first measurement channel.

Detector 2 : N16 activity, Bq/m^3 – measured value of the volumetric activity of 16N in the fixed energy range (from 5000 keV to 7500 keV) for the second measurement channel.

"Alarms" tab

This tab represents values of the Warning and Alarm thresholds set for the device. The tab includes the following parameters:

Channel 1 warning threshold, Bq/m^3 – the value of volumetric activity of gamma-emitting radionuclides that corresponds to the first threshold (Warning) for the first measurement channel.

Channel 1 alarm threshold, Bq/m^3 – the value of volumetric activity of gamma-emitting radionuclides that corresponds to the second threshold (Alarm) for the first measurement channel.

Channel 2 warning threshold, Bq/m^3 – the value of volumetric activity of gamma-emitting radionuclides that corresponds to the first threshold (Warning) for the second measurement channel.

Channel 2 alarm threshold, Bq/m^3 – the value of volumetric activity of gamma-emitting radionuclides that corresponds to the second threshold (Alarm) for the second measurement channel.

Channel 1 DC threshold, Bq/m^3 – the threshold value of volumetric activity of gamma–emitting radionuclides that corresponds to the first dry contact closing/opening.

Channel 2 DC threshold, Bq/m^3 – the threshold value of volumetric activity of gamma–emitting radionuclides that corresponds to the second dry contact closing/opening.

"Calibration" tab

This tab displays service parameters necessary for calibration of the device: The tab includes the following parameters:

Sensor 1 energy calibration factor (EnergyA) – value of multiplicative coefficient for radiation energy expressed as a function of the ADC channel number for the first detector.

Sensor 1 energy calibration factor (EnergyB) – value of additive coefficient for radiation energy expressed as a function of the ADC channel number for the first detector.

Sensor 2 energy calibration factor (EnergyA) – value of multiplicative coefficient for radiation energy expressed as a function of the ADC channel number for the second detector.

Sensor 2 energy calibration factor (EnergyB) – value of additive coefficient for radiation energy expressed as a function of the ADC channel number for the second detector.

Sensor 1 Efficiency calibration factor – value of calibration coefficient – detection efficiency of gamma-radiation from point source for the first detector in the first range.

Sensor 1 Geometry calibration factor – value of calibration coefficient for calculation of the volumetric activity for the first detector in the first range.

Sensor 2 Efficiency calibration factor – value of calibration coefficient – detection efficiency of gamma-radiation from point source for the second detector in the first range.

Sensor 2 Geometry calibration factor – value of calibration coefficient for calculation of the volumetric activity for the second detector in the first range.

Efficiency factor of point source (sensor 1, range 2) – value of calibration coefficient – detection efficiency of gamma-radiation from point source for the first detector in the second range.

Geometry factor (sensor 1, range 2) – value of calibration coefficient for calculation of the volumetric activity for the first detector in the second range.

Efficiency factor of point source (sensor 2, range 2) – value of calibration coefficient – detection efficiency of gamma-radiation from point source for the second detector in the second range.

Geometry factor (sensor 2, range 2) – value of calibration coefficient for calculation of the volumetric activity for the second detector in the second range.

Intrinsic background (detector 1, range 1), cnt/s – value of intrinsic background (counts per second) for measurements of the first detector in the first energy range.

Intrinsic background (detector 1, range 2), cnt/s – value of intrinsic background (counts per second) for measurements of the first detector in the second energy range.

Intrinsic background (detector 2, range 1), cnt/s – value of intrinsic background (counts per second) for measurements of the second detector in the first energy range.

Intrinsic background (detector 2, range 2), cnt/s – value of intrinsic background (counts per second) for measurements of the second detector in the second energy range.

Left edge of energy range 1, kEv – value (in keV) of the left limit of the first adjustable energy range for measurements of volumetric activity.

Right edge of energy range 1, kEv – value (in keV) of the right limit of the first adjustable energy range for measurements of volumetric activity.

Left edge of energy range 2, kEv – value (in keV) of the left limit of the second adjustable energy range for measurements of volumetric activity.

Right edge of energy range 2, kEv – value (in keV) of the right limit of the second adjustable energy range for measurements of volumetric activity.

Digital discriminator threshold A – service parameter necessary for controlling the threshold of digital discriminator of the ADC.

Digital discriminator threshold B – service parameter necessary for controlling the threshold of digital discriminator of the ADC.

"Spectra" tab

This tab represents energy spectra of the first and the second channels. Principles of working with spectra are described in the User Manual for the "Configurator" software.

"Sensors" tab

This tab represents detector parameters of the device. The tab includes the following parameters:

Sensor 1 : Serial number – identifier of the first detector necessary for adjustment of the UDP protocol.

Sensor 1: used (1)/not used (0) – flag of the first detector usage.

Sensor 1: measure time, s (multiple of 10) – duration of one measurement (in seconds) for the first detector.

Sensor 2: Serial number – identifier of the second detector necessary for adjustment of the UDP protocol.

Sensor 2: used (1)/not used (0) – flag of the second detector usage.

Sensor 2: measure time, s (multiple of 10) – duration of one measurement (in seconds) for the second detector. Measurement interval of the second channel and the first channel shall be equal.

"Network" tab

This tab represents network parameters of the device and contains the following:

Ethernet settings:

- **Device IP address** – IP address of the device.
- **Server IP address** – IP address of the automated distribution of data.

MODBUS options:

- **Device MODBUS address** – net address, provided that the device supports the MODBUS protocol.
- **MODBUS rate** – data exchange rate (bps), provided that the device supports the MODBUS protocol.
- **MODBUS port number (default 0)** – COM-port number to which the device is connected.

"SubNetwork" tab

This tab appears only after the program is switched into expanded access mode.

"DC Configuration" tab

This tab appears only after the program is switched into expanded access mode. It allows setting up of a system of "dry contacts" controlling when organizing interaction of devices.