Hardware Conversion Factor

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> This topic has 13 replies, 4 voices, and was last updated 7 years ago (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-4722) by uRADMonitor (https://www.uradmonitor.com/users/uradmonitor/).

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Author	Posts

September 9, 2015 at 3:29 am
#2393 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-2393)

monkeybutt (https://www.uradmonitor.com/users/monkeybutt/)
Participant

Hey guys, just messing around getting my shiny new uRADMonitor tied in to my home automation system. Through the web interface in the new firmware you can pull CPM but not uSv/hr, which is fine. But when I convert CPM to uSv/hr based on the 0.0057 conversion factor which is what I can find online for the SBM-20 tube, my uSv/hr readings do not match what pops up on the uRADMonitor website. The conversion factor used seems to be about 0.066 instead. So my question is what is the actual conversion factor for this geiger counter so I can make my home automation system read correct values? Thanks.

September 10, 2015 at 12:43 pm
#2394 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-2394)

uRADMonitor (https://www.uradmonitor.com/users/uradmonitor/)

Please use the following as a reference:

Keymaster

```
/*
** uRADMonitor radiation detectors
** Version:      0.1.0
** Date:                  January, 2014
** License:              LGPL v3
** Copyright:     (C) 2009 - 2015 Radu Motisan, radu.motis
an@gmail.com
** Description: Used in the uRADMonitor code to identify
various radiation detectors, mostly Geiger tubes
**
** www.pocketmagic.net
**
** This file is a part of "Portable Environmental Monito
r" open source project presented on
** https://hackaday.io/project/4977-portable-environment
al-monitor
**
** This project is free software; you can redistribute i
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** or (at your option) any later version.
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** MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
See the
** GNU Lesser General Public License for more details.
**
** You should have received a copy of the GNU Lesser Gen
eral Public License
** along with this program. If not, see <http://www.gn
u.org/licenses/>.
*/

#include "detectors.h"

// not more than 10 chars!
char *aux_detectorName(uint8_t param) {
        switch (param) {
                case GEIGER_TUBE_SBM20:         return
"SBM20";
                case GEIGER_TUBE_SI29BG:        return
"SI29BG";
                case GEIGER_TUBE_SBM19:         return
"SBM19";
                case GEIGER_TUBE_LND712:        return
"LND712";
                case GEIGER_TUBE_STS5:          return
"STS5";
                case GEIGER_TUBE_SI22G:         return
```

```
                            "SI22G";
                                        case GEIGER_TUBE_SI3BG:        return
                            "SI3BG";
                                        case GEIGER_TUBE_SBM21:        return
                            "SBM21";
                                        case GEIGER_TUBE_SBT9:         return
                            "SBT9";
                                        case GEIGER_TUBE_SI1G:         return
                            "SI1G";
                                        default: return "unknown";
                                }
                        }

                        float aux_detectorFactor(uint8_t param) {
                                switch (param) {
                                        case GEIGER_TUBE_SBM20:        return
                            0.006315;
                                        case GEIGER_TUBE_SI29BG:       return
                            0.010000;
                                        case GEIGER_TUBE_SBM19:        return
                            0.001500;
                                        case GEIGER_TUBE_STS5:         return
                            0.006666;
                                        case GEIGER_TUBE_SI22G:        return
                            0.001714;
                                        case GEIGER_TUBE_SI3BG:        return
                            0.631578;
                                        case GEIGER_TUBE_SBM21:        return
                            0.048000;
                                        case GEIGER_TUBE_LND712:       return
                            0.005940;
                                        case GEIGER_TUBE_SBT9:         return
                            0.010900;
                                        case GEIGER_TUBE_SI1G:         return
                            0.006000;
                                        default: 0;
                                }
                        }
```

September 13, 2015 at 6:57 am
#2398 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-2398)

Excellent. Exactly what I was looking for. Props on the new website, by the way. I'm not sure about the green superman shields, but the detailed graphing when you click on a node is top notch!

monkeybutt
(https://
www.uradmonitor.com/
users/
monkeybutt/)
Participant

September 13, 2015 at 7:11 am

#2399 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-2399)

Thanks! It is finally functional.
The shields are clusters of units. The bigger their size, the more units are represented. Click one or zoom in to see individual units.

The detailed graphing is now done on the client side, you get the local timezone to the data's time coordinates, but also zooming capabilities and more.

uRADMonitor
(https://
www.uradmonitor.com/
users/
uradmonitor/)
Keymaster

May 7, 2016 at 7:49 pm

#2923 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-2923)

Hello, Radu!

I'm building a portable one based on STS-1 (that's what I had nearby). I already have all the parts, I'm working now to position parts on the PCB that suits my case (Gainta 828G-S-BC).

I know that you have used the same model on your previous prototypes, can you please tell me what factor to include in detectors.cpp? I will add STS1 in detectors.h too (at number 9).

This particular prototype would not be used online. When I would decide to become part of the community, I will use a tube that would allow uniformity between my measurements and the rest of the network.

Outsider
(https://
www.uradmonitor.com/
users/razvan/)
Participant

May 12, 2016 at 7:50 am

#2929 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-2929)

Thanks for understanding the uniformity requirements. The conversion factor for your STS1 is available here:
https://github.com/radhoo/geiger-dosimeter-v3-4/blob/master/src/GMD.cpp
(https://github.com/radhoo/geiger-dosimeter-v3-4/blob/master/src/GMD.cpp)

The STS1 is identical with the SI1, with a factor of 0.006 . You can directly use the previous code posted above, and the Detectors.cpp file

uRADMonitor
(https://
www.uradmonitor.com/
users/
uradmonitor/)
Keymaster

December 12, 2016 at 10:02 am

#3866 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-3866)

Hello and Thank You for this very nice project. I have built my DIY uRADMonitor KIT1 and i'm wondering what is the conversion factor for tube SI-16BG. I did not found any information in internet, only few details.
I did some calculations, but i'm not sure, so please help me to understand.

Radiation determine: beta (> 0.25 MeV) ; gamma soft/hard
Voltage of start of counting: 280 – 330 V ;

LZ1JER
(https://

www.uradmonitor.com/ *Operating voltage (recommended): 360 – 440 V;*
users/lz1jer/) *Length of flat part of counting curve (plateau): 80 V*
Participant *Slope of the counting curve: < 0.12 %/V;*
Natural background: < 0.4 counts/s;
Maximum radiation: 1*10E5 counts/min;
Load resistance: > 8 MOhm
Allowable stray input capacitance: 10 pF
Working temperature range: -50…+70 C

Best Regards, LZ1JER, Bulgaria

Attachments:

(https://
www.uradmonitor.com/
wp-content/
uploads/2016/12/
DIY_uRad_KIT1_smal_2.jpg

DIY_uRad_KIT1_sm
al_2.jpg (https://
www.uradmonitor.c
om/wp-content/
uploads/2016/12/
DIY_uRad_KIT1_sm
al_2.jpg)

(https://
www.uradmonitor.com/
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Hardware-
Conversion-
factor-
SI-16BG.jpg)

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om/wp-content/
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Hardware-
Conversion-factor-
SI-16BG.jpg)

December 12, 2016 at 4:52 pm
#3869 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-3869)

0.005 for your tube seems very reasonable, however you would need to test
it against a calibrated dosimeter.

I might do that as well, should I find 2x SI16BG tubes. Do you know any
good source for them?

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(https://
www.uradmonitor.com/
users/
uradmonitor/)
Keymaster

December 12, 2016 at 8:00 pm
#3870 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-3870)

Thanks for Your reply *radhoo*, SI16BG is rare tube and I found only one seller

in ebay. I will test the device in physics lab soon.

LZ1JER
(https://
www.uradmonitor.com/
users/lz1jer/)
Participant

August 2, 2017 at 2:12 pm
#4712 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-4712)

Hi, I was curious if you had the chance to do the test and if you have any results.

uRADMonitor
(https://
www.uradmonitor.com/
users/
uradmonitor/)
Keymaster

August 2, 2017 at 6:30 pm
#4715 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-4715)

Hi Radhoo, I did compare uRADmonitor with lab gamma spectrometer. The source of radiation was 60Co. KIT1 with SI16BG tube and HW factor 0.005 show us surprisingly correct readings, even when the source was very close to the dosimeter.

LZ1JER
(https://
www.uradmonitor.com/
users/lz1jer/)
Participant

August 2, 2017 at 6:40 pm
#4716 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-4716)

Some pics with this or more documentation on your experiment would be very helpful.

uRADMonitor
(https://
www.uradmonitor.com/
users/
uradmonitor/)
Keymaster

August 4, 2017 at 9:11 am
#4721 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-4721)

Sorry, no experimental data or images, it was just a quick test.

LZ1JER
(https://
www.uradmonitor.com/
users/lz1jer/)
Participant

August 4, 2017 at 2:07 pm
#4722 (https://www.uradmonitor.com/topic/hardware-conversion-factor/#post-4722)

That is regretful, any chance for a second experiment with more persistent observations?

uRADMonitor
(https://
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users/
uradmonitor/)
Keymaster

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2x(3+4)=?**

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