

APPLICATION NOTE

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Revision A, January 2008

Explanation of the different Beam Qualities and detector types in Detector Manager

This application note describes different Beam Qualities (BQ) and detector types in Detector Manager Software.



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INTRODUCTION

Detector Manager is Software designed by RTI Electronics in order to simplify management of different detectors. This program can be used for all instruments manufactured since July 2007 and those systems upgraded since September 2007 (RTI20079A with oRTIgo v6.2A and QABrowser 3.2A). The program makes it possible to add or remove a detector, provided that the calibration factor is known, and shows which Beam Qualities (BQ) each detector is calibrated for. Calibration files can also be imported/exported through Detector Manager. Detector Manager has different limitations depending on whether a Barracuda or a Piranha is being used.

To add a detector requires that the calibration factor for that detector and the BQ the detector is calibrated for is known. This application note will clarify what each different BQ listed in Detector Manager means.

Description of different BQ

The letters used to describe different BQ:s varies in the Detector Manager from those used in other internal RTI programs, such as the program generating calibration files. The reason is that the calibration program follows an older appellation system whilst Detector Manager follows a newer system.

The following table, Table 1, will clarify the different BQ appellations used for different detectors.

Table 1. Old BQ appellation vs. new BQ appellation for different detector categories.

Old BQ	New BQ	Anode/TF
Dose detectors		
A	R2	W/23 mm Al
B	R1	W/3 mm Al
H	R3	W/2.5 mm Al
G	R4 = RQA	W/2.5 – 45 mm Al
C	M0	Mo/30 μ m Mo + 2 mm Al
K	M2	Mo/2mm Al
D	M1	Mo/30 μ m Mo
E	M3	Mo/25 μ m Rh
F	M4	Rh/25 μ m Rh
I	M5	Rh/1 mm Al
J	M6	W/50 μ m Rh
N	M7	W/0.5 mm Al
O	M8	Mo/1 mm Al
mAs Probe		
M	O1	mAs
V	O2	voltage
KAP-Meter		
H	R3 (RQR)	W/2,5 mm Al
Ion Chamber		
A	R2	W/23 mm Al
B	R1	W/3 mm Al
D	M1	Mo/30 μ m Mo
N	M7	W/0.5 mm Al
Light Probe		
U	L1	Luminance for CRT (L100-M)
Y	L2	Iluminance (L100-L)
T	L3	Luminance for I.I (L100-GX)
CT Ion Chamber		
B	R1 = C1	W/3 mm Al
BQA	R1	W/3 mm Al + 20 mm Al
B110	R1	W/4 mm Al + 2 mm Cu
RQR 8	R3	W/2.5 mm Al

Adding a detector to Barracuda

Detectors purchased at RTI Electronics

Detectors recalibrated at RTI Electronics will be sent with calibration protocol and a correct calibration file with instructions on how to proceed. (If the Barracuda was also sent to RTI by the time the detector was purchased/recalibrated then the correct information is already included in your Barracuda.)

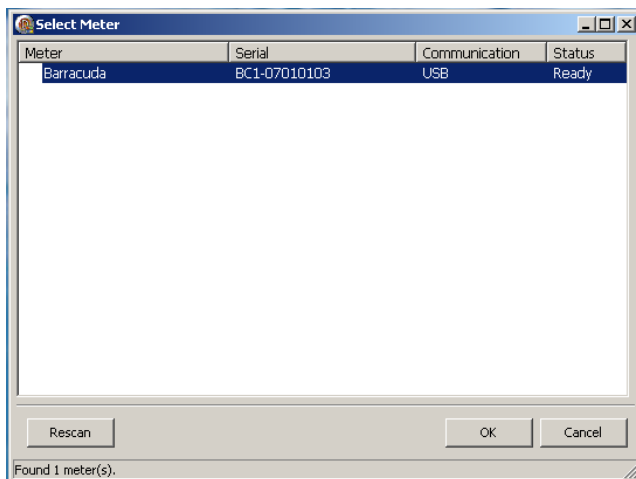
Detectors which have been calibrated at RTI Electronics but are not included in the calibration file or can not be seen in the Detector Manager can be added to the Barracuda by following the instructions below.

Connect the detector you wish to add to the Barracuda.

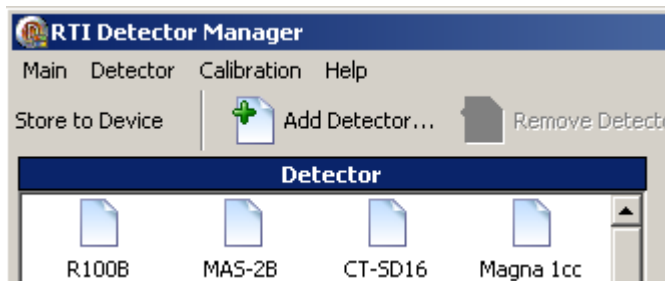
Start the Barracuda

Start Detector Manager

Select the meter (the Barracuda)



Select “Add detector”

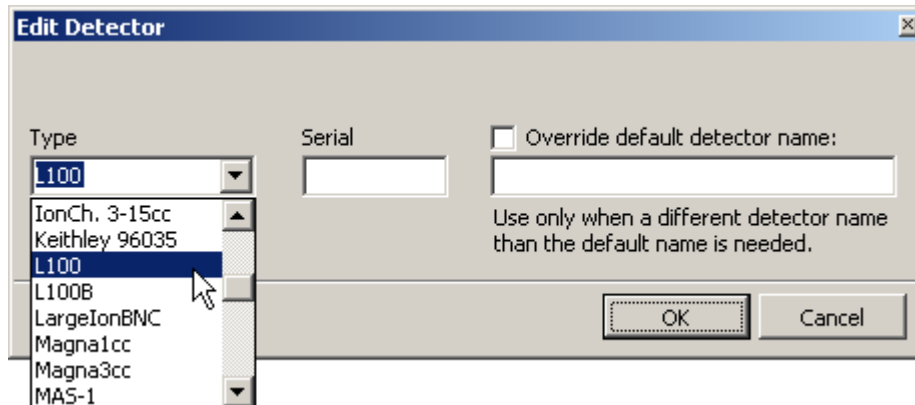


Select the type of detector you wish to add

NB. If you are using an ion chamber please select a suitable contact (See Appendix).

Enter the s/n for the detector

Press OK



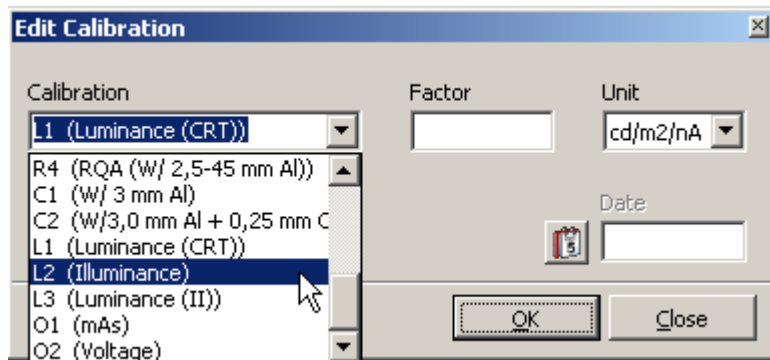
Another window is now opened

Select a suitable BQ (See Table 1 in “Description of different BQ”)

Enter the correct calibration factor

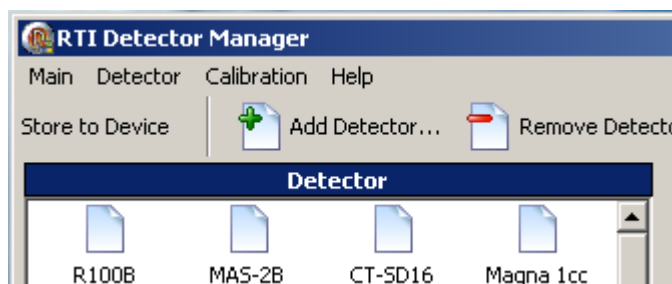
Select a suitable unit

NB. The correct BQ and calibration factor are noted in the detectors calibration protocol



Press Close

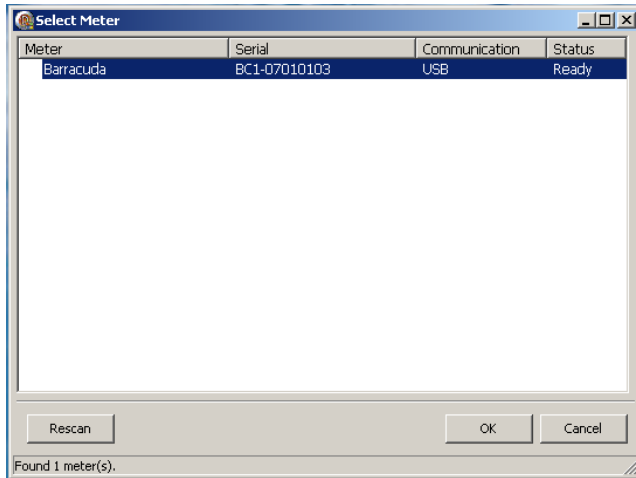
Select “Store to Device”



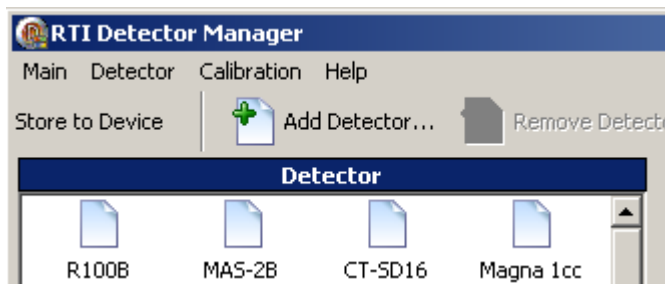
Detectors not purchased at RTI Electronics

Ion chambers which are not purchased/calibrated at RTI Electronics can also be added to Barracuda provided the BQ the detector was calibrated for and the calibration factor are known. Since it is most likely that an ion chamber is desirable to be added to the Barracuda this chapter is concentrated on ion chambers. Follow the instructions below.

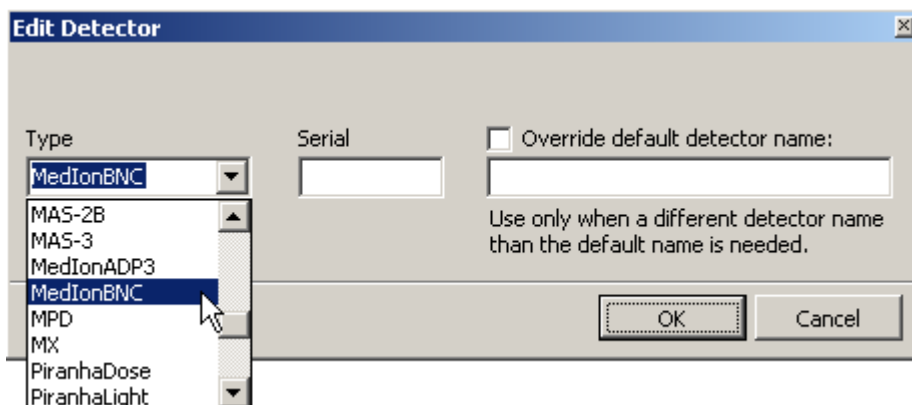
Connect the detector you wish to add to the Barracuda.
 Start the Barracuda
 Start Detector Manager
 Select the meter (the Barracuda)



Select “Add detector”



As “Type” select either smallIon or MediumIon depending on the size of the ion chamber with a suitable contact (See Appendix)
 Enter the s/n for the detector
 Select “Override default detector name”
 Enter a suitable name for the ion chamber in the box under (optional)
 NB. Point 1-4 in this chapter is mostly for your own convenience in order for you to recognize your ion chamber better.
 Press OK



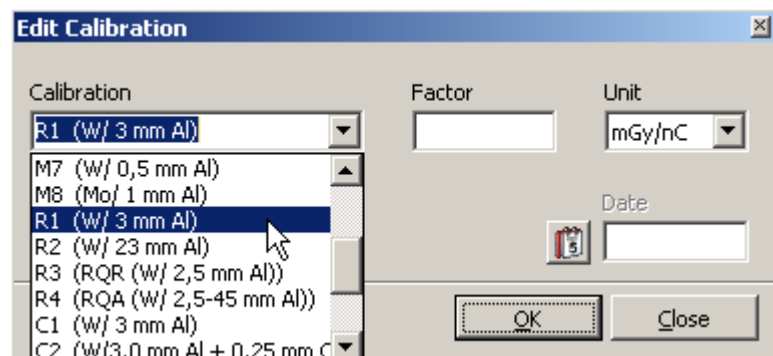
Another window is now opened

Select a suitable BQ (See Table 1 in “Description of different BQ”)

NB. If the BQ for the ion chamber is not included in Table 1, choose the next best BQ. For ion chambers used in radiography, CT, etc R1 is the most suitable BQ and for ion chambers used in mammography BQ M1 can be selected*

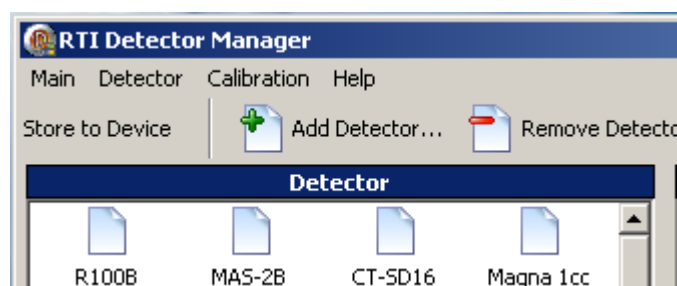
Enter the correct calibration factor

Select a suitable unit (NB. for CT ion chambers [mGycm/nC] should be selected)



Press Close

Select “Store to Device”



*A suitable BQ for the ion chamber in combination with the correct calibration factor will result in correct measurements.

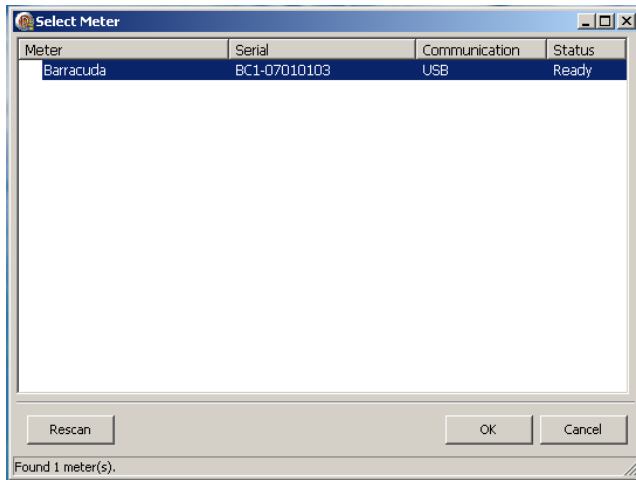
Converting a calibration file

After update of the firmware and software to the latest version the calibration file must also be converted. The calibration file can be converted by using oRTIgo or QABrowser. The calibration file can also be calibrated by using Detector Manager. Observe that the conversion of the calibration file through Detector Manager should not be used as a first option. The usage of the Detector Manger as a conversion method should first be recommended by RTI support.

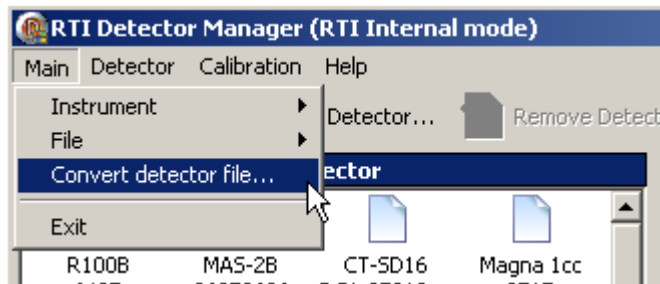
The calibration file needs to be put under BRCD_Detectors. Observe that **only the correct calibration file** and no other file should be put under BRCD_Detectors regardless of which conversion method is chosen.

In order to convert a calibration file by using Detector Manager, follow the instructions below.

Connect the MPD to the Barracuda
Start the Barracuda
Start Detector Manager
Select the meter (the Barracuda)



Select “Main” _ “Convert detector file...”



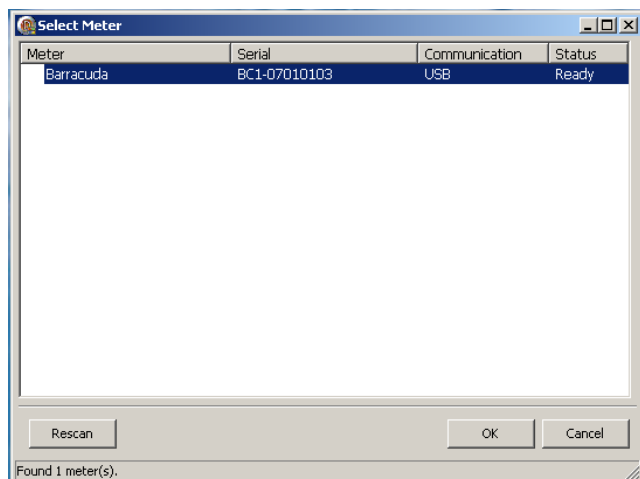
Follow the instruction given by the active messages
Select “Store to device” when the conversion is finished

Transferring detector data between different Barracudas

It is possible to use an external detector already stored in one Barracuda with different Barracudas by using Detector Manager. The MPD of one Barracuda can also be used with any other Barracuda after a successful conversion. The MPD however does not need to be transferred but is automatically recognized by the new Barracuda since all information is stored in the MPD itself after the conversion. This will make it possible to use all available detectors with all systems.

In order to convert a calibration file by using Detector Manager, follow the instructions below.

Connect the first Barracuda containing the desired external detector to a PC
Start the Barracuda
Start Detector Manager
Select the meter (the Barracuda)

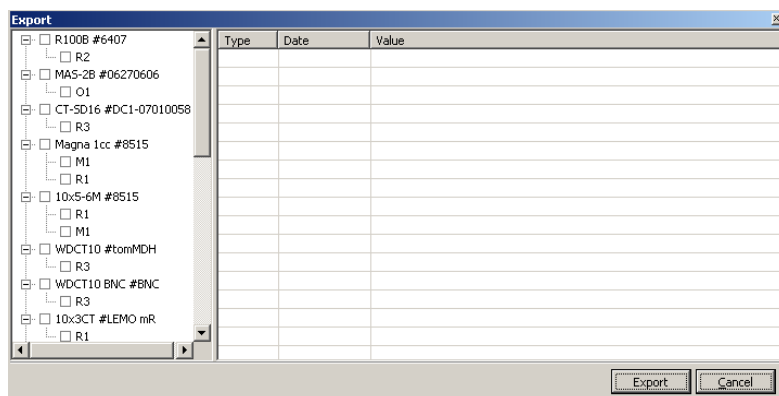


Select “Main” _ “File” _ “Export”

A “tree”-view of all the external detectors is shown, with the calibrations as ”leaves”. Mark the detector or calibration that you want to transfer

Select “Export”

NB. Note where your exported file is stored in order to be able to access this file easily again



Connect the other Barracuda (which is now going to use the detector) to a PC

Start the Barracuda

Start Detector Manager

Select your meter (your Barracuda)

Select “Main” _ “File” _ “Import”

The window shows all files exported, presently and earlier. Select the proper file (the one just exported).

Mark the detectors and/or calibration to be imported

Select “Import”

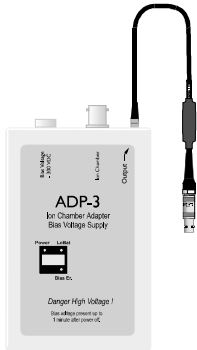
Select “Store to Device” to save the imported data to the Cabinet.

NB. The same export file can be used for importing detectors into more than one cabinet.

Appendix

Please pay attention to which kind of contact the ion chamber has. The different contacts are listed below.

ADP (an external device that provides the bias voltage)



BNC (Banana contact)



Lemo

