

Dimension QC Receiver Interface (v 3.0)

1. Introduction

1.1. Intended use

QCDimensionA is a QC receiver interface intended to

- Receive analytical data from Siemens Dimension or XPand clinical chemistry analysers through a serial port.
- Extract control assays from received data.
- Re-send QC data to MultiQC, a QC management software which can be downloaded at www.multiqc.com.

QCDimensionB and QCDimensionC are be used when the same QC computer must receive QC data simultaneously from several Dimension analysers (see section 4.1).

QCDimensionA, B and C, version 3.0.0, are compatible with Windows 2000 to Windows 7.

1.2. Starting and stopping QCDimension

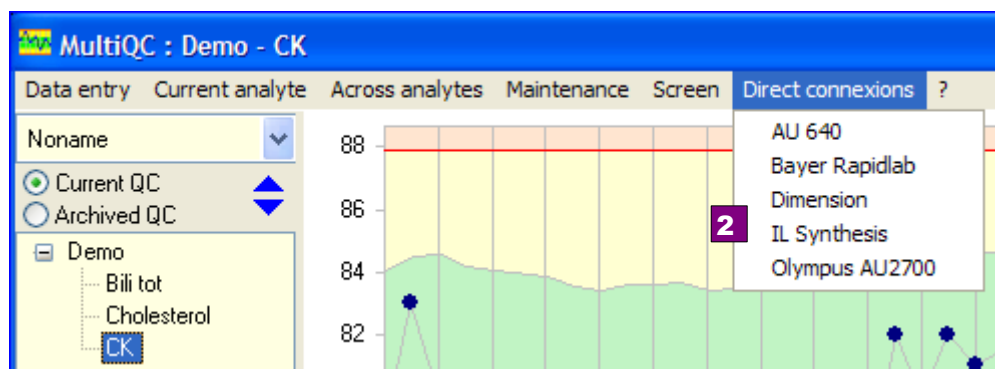
The receiver interface is not directly launched or closed in routine use. It is under control of MultiQC. The interface is automatically launched or closed when MultiQC is launched or closed. Any action that would close a normal program (click in the Windows close box or key Alt+F4) only iconizes the QC receiver interface.

After launching MultiQC, you can check that the installed receiver interfaces are running:

1- They are present in the Windows taskbar as icons



2- New sub-menus are added to the main menu of MultiQC <Direct connexions>.



1.3. Data management

➤ QC assays

QC assays can be extracted from the stream of analytical results by two means :

- Keeping the built-in QC system of the Dimension, control materials are identified by the analyser when selecting a sample fluid (SerumQC1, 2, 3 or UrineQC1, 2). The QC receiver interface uses the QC level position assigned by the analyser.

- Dropping out the built-in QC system of the Dimension, control materials may be managed like patient samples. Each material is identified by a reserved name.

➤ **Repeatability assays**

The data receiver interface recognizes repeatability assays thanks to a reserved identifier (**rep** by default). To perform a repeatability verification, the lab assistant has only to do 10, 20 or 30 repeated assays of the same sample identifying every one by **rep**.

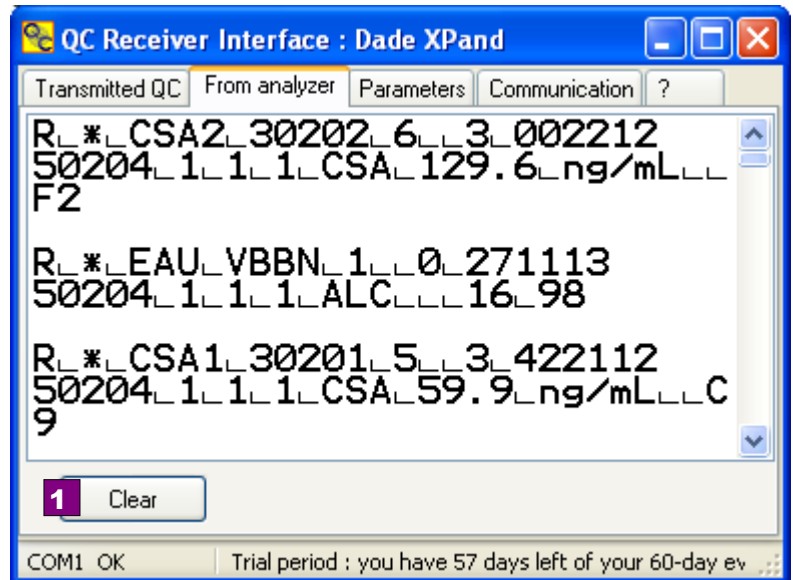
2. Running the interface

In routine work, the QC receiver interface stays iconized in the Windows taskbar. QCDimension has to be restored only on installation to enter communication and analytical parameters.

2.1. Tab “From analyser”

This panel shows the raw messages received from the analyser. Only the 100 latest lines are kept.

1- The button **Clear** erases all the lines.

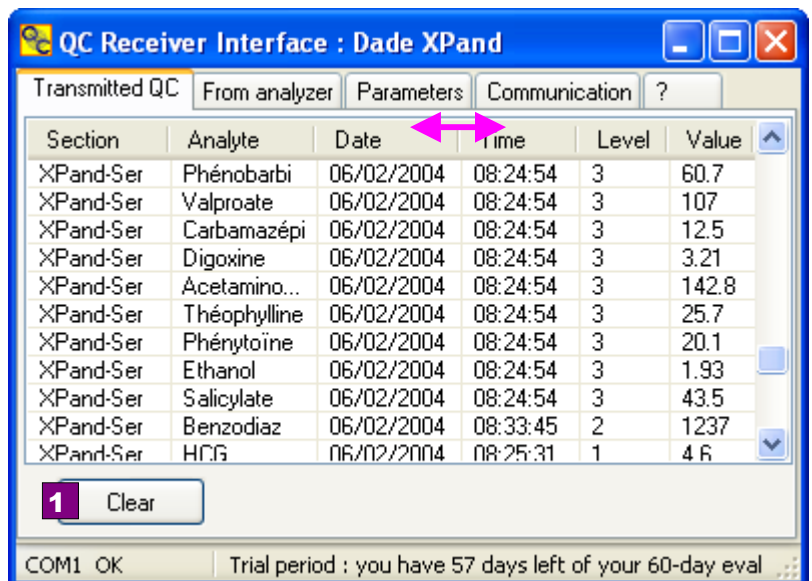


2.2. Tab “Transmitted QC”

This panel shows the latest 100 QC results sent to MultiQC.

↔ The width of the columns can be adjusted.

1- The button **Clear** erases all the lines in the list view.



2.3. Tab “Parameters”

Here you can edit the “ini” file that saves the working parameters of the interface. This file is made of four sections (between brackets).

➤ **[MultiQC]**

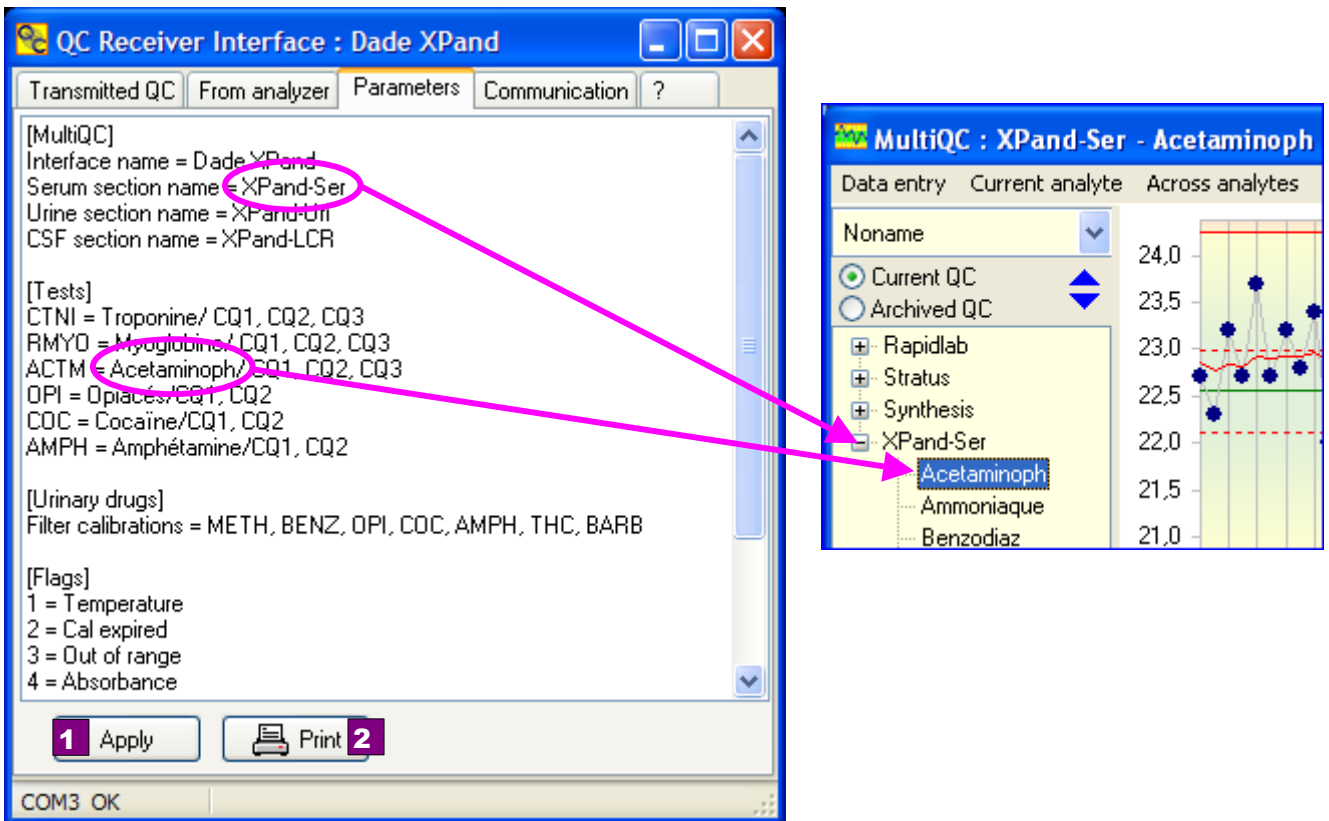
You must only edit the right part of the =

- Interface name is the name that is shown in the Windows taskbar and in the additional sub-menu that is created in MultiQC. If you install several Dimension interfaces on the same computer, you must give them different names (e.g. **Xpand 1**, **Xpand 2**, **Xpand 3**) to be able to identify them in the Windows taskbar.

- Five kinds of sample are accepted by Dimension analysers : Blood, plasma, serum, urine and CSF. MultiQC will sort analytes in its tree view by kind of sample, merging the three first ones into a unique one :

Serum (in MultiQC) = blood + plasma + serum (in Dimension)

The names of the three resulting sections are “Serum”, “Urine” and “Other”, but can be easily changed.



➤ **[Tests]**

Each line is made of three items of information

- Names before ‘=’ are the identifiers of tests in the Dimension analyser
- Names after ‘=’ are the names of tests in MultiQC.
- Optional series of identifiers after the ‘/’ are the identifiers which must be assigned to QC materials when they are assayed in patient mode (not case sensitive). The first one will become level 1 in MultiQC and so on. QC. These identifiers are not necessary if control materials are always assayed following the QC protocol of the analyser.

Example 1 : RMYO = Myoglobine

- Test RMYO of the Dimension analyser will be named “Myoglobine” in MultiQC
- Only myoglobine QC samples assayed selecting a sample fluid (SerumQC1, 2, 3) are allowed.

Example 2 : CTNI = Troponin / QC1, QC2, QC3

- Test CTNI of the Dimension analyser will be named “Troponine” in MultiQC
- Troponine QC samples can also be assayed like patient samples if they are identified with the reserved names “QC1”, “QC2” or “QC3”. The results will be respectively plotted in charts 1, 2 and 3 of MultiQC.

➤ [Urinary drugs]

The logic of information technology specialists at Dade-Behring is amazing. To calibrate qualitative urinary drug methods we are requested to launch a urine calibrator assay identified as “serum quality control level 3”. MultiQC works with the normal logic of human beings. The program will display these calibration assay results in the third chart of a newly created analyte Serum/Drug. To prevent MultiQC from being jammed by those non-existent analytes, you can register the relevant identifiers in the section [Filter calibrations](#) =. You must only edit the right part of the =

➤ [Flags]

Flags coming with QC results are transmitted to MultiQC to be displayed as comments. The raw identifiers of analytical errors are not very informative. They can be turned into user-friendly captions thanks to a translation table.

1- Do not forget to click on the button [Apply](#) after updating parameters.

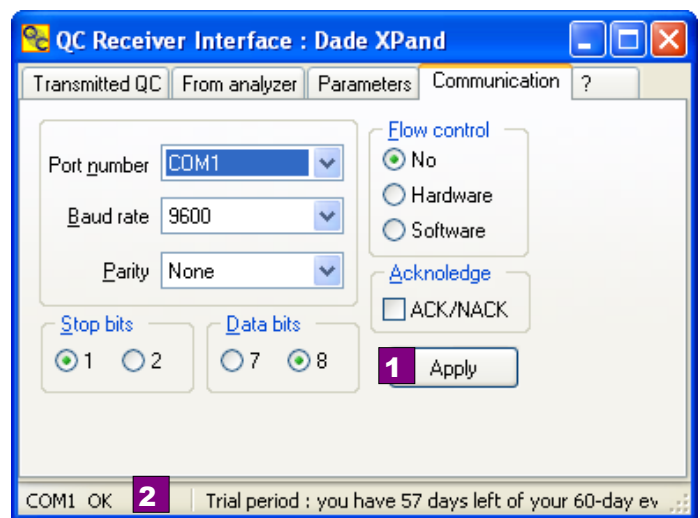
2- You can print parameters with the button [Print](#).

2.4. Tab “Communication”

Enter the communication parameters of the serial port connected to the analyser.

1- Do not forget to click on the button [Apply](#) after updating parameters.

2- Look at the status bar to check if the serial connection is OK.

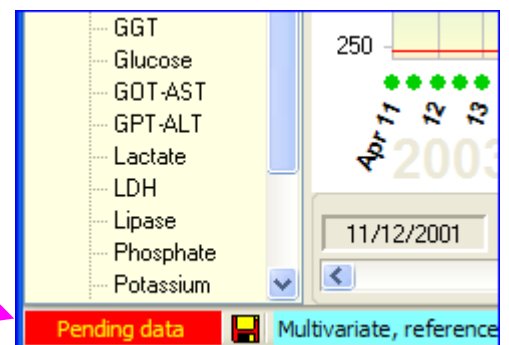


3. Data processing by MultiQC

3.1. Reception of data by MultiQC

Received QC data are piled up in the pending queue of MultiQC waiting for validation. As soon as one result has been transmitted, two warnings are activated:

- The icon QCDimension blinks blue/orange in the Windows taskbar (only Windows XP).
- When MultiQC is active, the left panel of the status bar blinks red/yellow.



3.2. Assembling QC vectors

In multi-level QC, materials are sequentially assayed by the analyser. For each analyte it is necessary to lump together the different QC levels in a unique vector. This is made on a time interval basis. QC levels are associated in the same QC vector if the time interval between the assays is less than the limit entered in MultiQC :

- Menu : Maintenance→Configuration
- Tab : General
- Field : Max time interval between levels (default 5 minutes)

When rebuilding a QC vector with separate QC values, the final time is the time of the earliest QC value.

Do not start validation before all the QC levels have been received

3.3. Validating QC data

Click on the yellow/red blinking panel of MultiQC (shortcut F4) and proceed as indicated in the user manual section 5.4.

If the name of an analyte is unknown by MultiQC, a new analyte is automatically created with default parameters. Later, you will have to enter the appropriate parameters through the main menu [Maintenance→Analytes](#).

4. Installation

4.1. Installation of interfaces

Download the main software MultiQC at www.multiqc.com and install the package. The version of MultiQC must be 6.1.0.0 or later (the number of version is visible in the “About” box : main menu ? → [About](#)).

Download QCDimA at www.multiqc.com and install the package. To comply with the User Access Control of Windows 7, the program files are installed in the folder :

C:\Program files\MultiQC6\DimensionA

and the data files are installed in a different folder that depends on the version of Windows :

Win XP = *C:\Documents and Settings\All Users\Application Data\MultiQC6\DimensionA*

Vista or Win 7 = *C:\ProgramData\MultiQC6\DimensionA*

By default, Windows hides the folders [C:\Documents and Settings\All Users\Application Data\](#) and [C:\ProgramData](#). To display these folders in the Windows Explorer you must check the box *< Tool menu -> Folder options -> View tab -> Show hidden files and folders >*.

If you want to connect a second Dimension analyser to the same QC computer you must download a second interface named QCDimB at www.multiqc.com and proceed likewise. The interfaces QCDimA and QCDimB are identical except the GUIDs (global unique identifiers) thanks to which MultiQC can recognize each one.

4.2. Connecting analyser and computer

➤ [Soft and hard spying](#)

Dimension analysers have only one output socket. If this unique serial port is taken by the LIS, it is necessary to “spy” the data which are exchanged between the analyser and the LIS.

- You may proceed to a soft spying using an additional software that enables to share a serial port between two applications : <http://www.multiqc.com/CnxArchitecture.pdf>
- If you are not afraid by handling a soldering iron you may choose hard spying as explained below.

➤ **QC receiver interface**

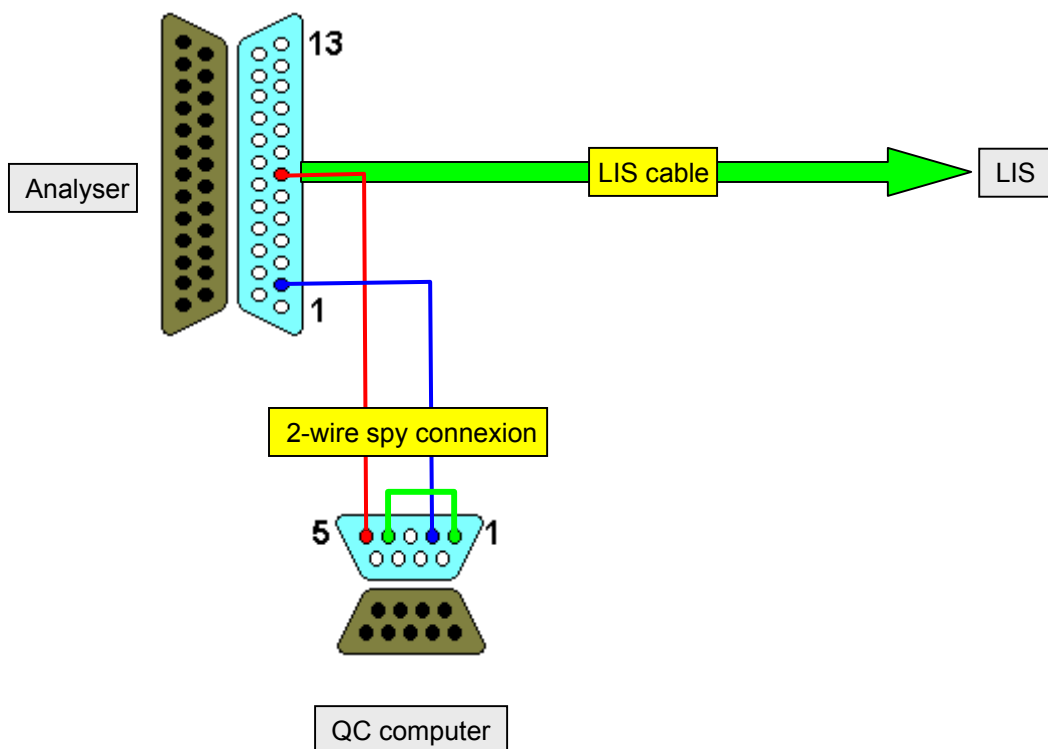
Edit the communications parameters in the **Communication** panel of the QC receiver interface so that they match the parameters of the analyser

➤ **Connection cable**

If the output socket of the analyser is free of other connection:

- Connect the analyser and the QC computer with a DTE cable (pins 2 and 3 not crossed).
- Check the box **ACK/NACK** of the tab **Communication**.
- Set the connexion of the Dimension to **Unidirectional**.

When the output socket of the analyser is taken by a connexion to the LIS, 2 additional wires must be soldered on the DB25 female connector of the LIS cable, plugged into the DB25 male connector of the analyser.



It might be more practical for temporary tests to build a short extension cord (female DB25 / male DB25) with the 2-wire derivation soldered on the female DB25 connector. Thus the derivation can be easily inserted in or removed from the main LIS cable which does not need to be modified.

