RC Tool Users Guide

Version History
1.0 (KH) Initial Version

Introduction

The RC tool can be found in the rc subdirectory of the qc cvs module. It is used to enter resistivity and capacitance measurements for every LST tube into the QC database. Both the Princeton and the Ohio State groups have decided to measure only the capacitance and to perform the resistivity measurement only in cases when the capacitance measurement indicates a problem.

User Guide

To start the RC tool enter ./rc in the appropriate directory on your Linux box. In the main view enter your name, time and date (use the TODAY button) and select your location. Ignore the "R Auto Fill" check box (it should be unchecked). Any offset of the capacitance meter needs to be entered in the "Cal Offset" field (unless you use the data import mechanism discussed below).

Next open the configuration panel by clicking the CONF button. File IO and Database IO are on by default. The default file name is RC<tube id barcode>.dat. Make sure that the database host is set correctly (the default is babar5.mps.ohio-state.edu using port 10000). Close the configuration panel.

There are several ways to enter data:

a) manual
b) using a bar code scanner
   If you intend to use the barcode scanner select the "SETUP" tab on the main panel and type in the correct device name for your setup. Pushing the SCANNER button will open the scanner device (we assume your scanner is connected to a serial port)
c) using a FLUKE 189 DMM
   If you intend to use the FLUKE 189 DMM to make your C (and R) measurements make sure that the DMM is connected to a serial port and enter the correct device name in the appropriate field in the "SETUP" tab. Click the DMM button to open the device.
d) importing data from a file
   Clicking the IMPORT button opens the "Data Import" dialog. Choose your data file and click PROCESS. This will read the file and send each measurement to the database. The file format is discussed below. The QUIT button allows you to exit this view without processing the file.

Fields

Name your name (required)

Date time and date of test (required)

Location location of test (required)

Tube ID Barcode of LST tube (required)
You can enter this by hand or with the barcode scanner. You can also use the "CONVERT" button to convert a tube Number plus the number of cells (7 or 8) in that tube into a fully qualified barcode. Example: Your tube number is 351 and this tube has 8 cells. You enter 3518 into the tube id field and click the CONVERT button. The EAN13 barcode is calculated and replaces the text in the Tube Id field (it now reads 1000351899994.

C1, C2, C3, C4
Capacitances of each HV segment with respect to the center ground pin. C1 is the leftmost segment when looking at the HV end of the tube. All values are in nFarad.
You can enter the values (AND THE UNITS) by hand, using the FLUKE DMM or with the IMPORT DATA mechanism. When using the DMM you need to push the C1, C2, C3, or C4 button (once the DMM is connected to that segment). The buttons are not used for the manual/import data entry methods.

R1, R2, R3, R4
Resistances of each HV segment with respect to the center ground pin. R1 is the leftmost segment when looking at the HV end of the tube. All values are in MOhms.
You can enter the values (AND THE UNITS) by hand, using the FLUKE DMM or with the IMPORT DATA mechanism. When using the DMM you need to push the R1, R2, R3, or R4 button (once the DMM is connected to that segment). The buttons are not used for the manual/import data entry methods.

Cal Offset calibration offset in nFarad (required, including units)

Save The SAVE button sends the data to the database (and or file). Some consistency checks (and checks for missing fields) are performed.

Previous Measurements
Shows data for previous tubes – after the DB submission

This also works for imported data.

IO Status

Green indicators show which device (if any) is open, if file IO or DB IO is selected and if a connection to the DB has been established (note: it is normal for the DB connection to time out).

Import Data Format

It is possible to enter data from a file. Data for each tube has to be on one line with the fields separated by semi-colons. The file can contain data for more than one tube. Everything will be sent to the database (if DB IO is checked). Only limited checking is done on the input data and it is the responsibility of the issue to correctly format the data.
The import tool expects an ascii file with the following information

Tube id (full barcode or tube number + cells (7 or 8)) ; Cal offset (in nFarad, no units) ; C1 ; C2 ; C3 ; C4 ; R1 (in MOhms, no units) ; R2 ; R3 ; R4

Here is an example that's also in the cvs repository (rctest.dat). The third line shows an example for an incomplete tube barcode (tube 25 with 8 cells). The import tool will convert this to the correct barcode before the data is saved in the database.

1000024899993;0;0.01;0.02;0.03;0.04;999;998;997;996
1000025899992;0;0.05;0.06;0.07;0.08;899;898;897;896
258;0;0.07;0.065;0.055;0.085;799;798;797;796