

Beckman Scintillation Counter (PSC 555, 659, NSC 488, Kell 405)

**Every time you use the Scintillation Counter, you MUST sign the logbook.
Do not put any scintillation vials into racks without lids.
Leave HALT rack in machine – do not remove it for any reason.
When you are done counting, take your vials back to your lab to dispose of them.**

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Setup

1. Turn counter on. Switch is on the left side of the instrument. The counter is usually always on, just hit any key and the screen will be activated.
2. Rack.
 - a. white racks – hold 12 standard size vials
 - b. Blue racks – miniature, holds 18 miniature vials
 - c. Red rack – Halt rack
 - d. Yellow rack – Interrupt rack
3. Cards. There are cards in a pull-out tray on the bottom of the instrument. Locate the black tab in the middle bottom of the instrument.
 - a. Command cards – have a recognition code which is “read” by photosensors. Command cards are used to instruct the instrument on the operation to perform, for ex. Calibrate or automatic count . These cards have a long tab sticking up. Be careful handling them (don’t leave them in the rack and then toss the rack in a drawer); the tab will snap off.
 - b. Rack Number Cards – also have a recognition code which is “read”. These cards are used to indicate the number of the rack providing positive sample identification. The printout will show the rack # and position number within the rack.
4. To install the cards. Select the appropriate rack and card. With the side of the rack with the slots on it facing you, install the Command Card onto the rack by sliding it between the edge-guides of the left-hand slot with the # facing you. Install a Rack Number Card on the rack by sliding it between the edge-guides on the right-hand slot.
5. Halt Rack. This rack has the Halt Card and is placed after the last rack of samples. It does not contain any samples. You have to have a Halt Rack at the end of your samples to stop the counting.
6. Interrupt Rack. This rack has the Interrupt Card and this rack will not be counted during Automatic Count. The Interrupt Rack DOES NOT have a Command Card installed, only a Rack Number Card.
7. Sample Racks. Up to 50 Different User Programs can be stored in the instrument and called up during Automatic Count using the User Number Cards 1 – 50. The first rack of each batch of samples has the appropriate User Number Card installed on it. All racks also need a Rack Number Card installed to provide

positive sample identification. All racks with samples will have User Number Card and a Rack Number Card.

8. Installing the racks. For counting, the racks are placed in the sample changer (the bed of the instrument which transports the samples). The racks are moved in a counter-clockwise motion. The vials are counted when the rack has reached the right rear position where the elevator that moves the vial into the counting chamber is located. Hold the rack so that the molded position numbers are toward you and the cards face away from you. Place the rack on the right side of the sample changer, inserting it at an angle so that the lip on the left end slides under the groove along the middle of the sample changer. After installing the rack, push it away from you, toward the back of the sample changer where the elevator is located. Since the racks are moved in a counter clockwise direction, the second and successive racks are installed progressively toward the front of the instrument.
9. Printer. Should already be on. If the printer is ON LINE, the green light next to the button is lit, should be left on. Make sure there is paper.

Counting Samples

1. Main Menu should be showing on monitor. If it's not, press MAIN MENU.

Automatic Count. A User Program is used to specify the counting parameters.

Different racks of samples can be counted under different User programs.

1. Load your samples as described above. The first Sample Rack must be the rack with the User Number Card installed that corresponds to the User Program you wish to use. During Automatic Count, only the first rack of samples requires a User Number Card. All following racks are counted under the same program, until a new User Number Card or Halt Card is encountered.
2. Sample racks do not have to be full. The instrument skips empty positions and moves on to the next rack.
3. Place the Red HALT rack behind the last rack of samples.
4. Make sure printer is ON and the ON LINE light is lit. Make sure there is paper loaded.
5. Highlight Automatic Counting in the MAIN MENU and press SELECT.
6. Press START.
7. To Stop the run before it reaches the HALT rack, press the two RESET keys simultaneously. This terminates the counting process and the instrument goes to Standby.
8. The STOP COUNT key is used to terminate the counting of the current sample. Counting continues.

Counting a single rack with a User Program

1. At the MAIN MENU, highlight Count Single Rack and press SELECT.
2. You can either select "Any Isotope", "Count for a specified time" (enter time, type #, in min. in highlighted box at bottom of window/Start) or "Select User Program".
3. Highlight Select User Program and press SELECT. A User Program Selection Menu is shown.
4. Select the desired User Program. A summary of the counting time and isotope setting is displayed. To change the counting time, highlight Counting Time and

enter the desired counting time (this counting time is not permanently stored – after the 1 rack is counted, the counting time is reset to the previously stored value.

5. Highlight Count With Program of User and press SELECT. Load your samples and press START.

Setting up User Programs/Edit a User Program

1. Each instrument has 20 – 50 User programs. They come with Default parameters that you have to change for what you need to do. See attached Table 4.1 for an Overview of User Program parameters and the allowable responses.
2. At MAIN MENU, highlight Review and Edit User Program and press SELECT.
3. A list of all available User Programs appear. Highlight your program or a Default Program to set up and edit. Scroll through Next 10 User Programs or Previous 10 User Programs until you find the one you want. Press SELECT.
4. Once a User Program is selected, the Review/Edit Menu is displayed. Editing may be performed in any order. Use the Up/Down Cursor Arrow keys and PREVIOUS MENU key to display the desired menus. If the default or previous entry is acceptable use the Down Cursor key to move to the next prompt. If the value is to be changed, follow the instructions in the Data Entry window (lower right hand side). Press Enter on keypad near #'s and ABC's.
5. Press CANCEL if after editing, you wish to retain the original User Program and return to the Main Menu.
6. When editing is complete and you want to store the program, press MAIN MENU. If any inconsistencies exist, the system returns to the first Review/Edit menu and displays an error message defining the problem and suggesting a correction. The inconsistency must be corrected before the User Program can be stored.

Description of Parameters

1. ID. Provides a descriptive name for the User Program. This name is displayed on the summary screen of the User Program and is printed with the Program Summary. To change the identification, highlight ID. Enter in the desired name up to 15 characters. Not required.
2. Comments. Provides descriptive data that is printed in the program summary. Can be up to 28 characters. Not required.
3. Counting Time. The length of time each sample is counted. To change, highlight Counting Time and enter the desired counting time in minutes.
4. Liquid or Xtal Scintillator.
5. Isotope 1. Sets the counting window for the samples counted based on the settings stored in the Isotope Library for the isotope selected. To change the selected isotope, highlight Isotope 1. The available isotopes are displayed in the Data Entry Window. ^3H , ^{125}I , ^{14}C , ^{35}S , ^{32}P , Manual, Wide. Select the desired isotope from the list.
6. Isotope 2 and Isotope 3. The procedure for setting up Isotope 2 and Isotope 3 is identical to that of Isotope1 except the list of choices includes NONE. For single label studies, choose NONE for Isotope 2. If NONE is selected for Isotope 2, Isotope 3 is not displayed.

The following are parameters you can change, but most basic programs just go with the default settings. If you need to know more, please see Debby.

7. Data Calculation
8. Counting Precision
9. Background/Blank Substraction
10. Quench
11. Lum-Ex Correction
12. 2 Phase Monitor
13. Low Level
14. Low Count Reject
15. Output Formulas