



**DIFFCOUNT III™  
MODEL 10-312P  
DIFFERENTIAL CELL COUNTERS**

**INSPECTION**

Carefully unpack and examine your new unit for any accidental shipping damage. If damaged, contact the carrier for claim filing instructions. Save all packing materials until all claims are settled.

**DESCRIPTION**

DIFFCOUNT III is the world's finest product line of differential cell counters, providing a fast and reliable means for tallying various leukocyte categories and converting each cell category into percentage of total count. All cell counting categories and the TOTAL cell count are shown simultaneously, each on its own display. DIFFCOUNT III is easy to use. All models feature soft-touch keys, a calculator-type keyboard designed for operator comfort, and easily changed key assignments.

**OPERATION**

Check the electrical specification of the wall power adaptor. It must be the same as your local power (i.e., 110 or 220 AC), to provide an output of 9 volts AC at 200 mA to the DIFFCOUNT III.

**POWER ON/OFF SWITCH**

Switch power to the ON position. The power switch is located on the rear panel, next to the power input socket. All channels should display zeros and the word TOTAL should appear on the display. If your DIFFCOUNT will not turn on, check your electrical outlet. If there is power at the outlet, then inspect the instrument fuse. (Fuse=1Amp. Slow- Blow type).

**CLEAR KEY**

Before beginning a new count, the contents of the memory must be erased. By pressing the CLEAR key, the operator clears the memory and prepares the unit for the next specimen count.

## COUNTING KEYS

Each time a counting key is pressed, the corresponding display is increased by one and a "click" will be heard. An "alert tone" also will be given for each 100 cells counted.

## DECREMENT FUNCTION

To subtract one count from any channel, hold down the COUNT key and press the key for the channel you wish to decrease.

## PERCENT KEY

By pressing the PERCENT (%) key the percentage of counted cells appears on each channel display. The percentages are given in rounded integers, whose aggregate is always 100%. Adding a count or pressing the TOTAL key resets the unit back to counting mode. REMEMBER: Although an arrow appears to the left of a display channel when only two (2) significant digits are shown, the actual channel counts entered in the memory will be included in converting counts to percentage of total.

## PERCENT CALCULATION

To arrive at a two-digit percentage calculation for each channel, the DIFFCOUNT (1) divides each counter channel by the total count and multiplies it by 100, then (2) rounds to the nearest integer, and (3) corrects the two highest channel counts to force the grand total to 100.

## WBC CALCULATION

By pressing the WBC key, a WBC value in the range 1.0 - 99.9 may be entered. Press the WBC key twice to calculate the absolute value for each channel. Two (2) significant digits per channel are displayed.

## PRINT [SEND] KEY

The model 312P allows the user to output the differential data (i.e., percent and absolute) to any serial printer. By pressing the [SEND] key the data will be output to the printer. The user must have connected the printer and DIFFCOUNT unit via the provided cable. Also, the printer baud rate must be set to 9600 bauds. The word length = 8 data bits, and parity should be set to no parity. A sample of the printer form is shown in the enclosed drawing (Figure 1). The user can also create one or more worksheets by first pressing the CLEAR key then pressing the PRINT key one time for each sheet. The sequence number will be reset to one when the power is turned on. Sequence numbers will be generated in the range of 01 to 99.

NOTE: The jumper plug for printer format option includes:

- OFF (un-jumpered) = EPSON
- ON (jumpered) = OKIDATA format

See jumper diagram below.

## NON-TOTAL KEY

DIFFCOUNT III units are factory-set with the UPPER RIGHT key as NON-TOTALIZING. This feature is an option. If you wish to change all keys to count into the grand total, refer to the following instructions: Unplug the unit and turn it over. Remove the four retaining screws and remove the case top, being careful not to damage the LCD ribbon cable. Remove the jumper plug at location <NT1> (see diagram). All keys will now add into the TOTAL COUNT. This unit is equipped with a second 'non-tot' channel designated <NT2> and this may be enabled by adding a jumper plug at location <NT2>. The <NT2> key (channel) is located just to the left of the <NT1> key (channel).

## LOCK-OUT FUNCTION

At each 100 cells, additional counts are locked out. The LOCK-OUT function may be disabled by removing the four retaining screws and removing the case top, locate PJ1, and placing a jumper plug over the two pins labeled <LOCK>. The unit comes with a jumper plug offset (over only one pin) at <LOCK>. Up to 999 counts may be entered into each individual channel after which the channel goes into <LOCK> mode.

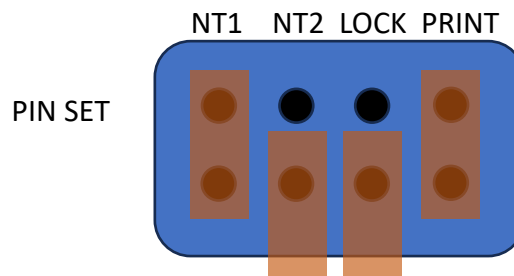
Toggle the power switch to reset the LOCK-OUT function.

## JUMPER DIAGRAM:

Pins are located on middle, right side of board, above CONTRAST Control.

The below configuration shows an example of jumpers (brown rectangle) placed on:

- <NT1> Shown jumpered to enable NON-TOTALIZING of upper right channel.
- <NT2> Shown un-jumpered disabling second NON-TOTALIZING channel.
- <LOCK> Shown un-jumpered enabling the 100 TOTAL COUNT LOCK-OUT.
- <PRINT> Shown jumpered to select OKIDATA format.



## KEY ASSIGNMENT OVERLAY

A versatile key assignment overlay is furnished with each new DIFFCOUNT III. The overlay allows the operator to pencil in a preferred key arrangement and is useful when several users share the same instrument. Additional overlays may be ordered.

## **MAINTENANCE**

To clean the case, use only mild detergents and water. Acetone or other harsh agents may cause damage to the plastic case, black accent pieces and overlay.

## **CAUTION**

Wash the exterior of latex or rubber gloves before using them near the DIFFCOUNT. The white powder in the gloves can damage switch contact. The presence of white powder will void the warranty on any unit being returned for key switch problems.

## **WARRANTY**

Modulus Data Systems, Inc., warrants the DIFFCOUNT against defects in manufacturing workmanship or materials), for a period of twelve (12) months from the date of receipt by the user. The units will be repaired or replaced without charge provided it has received normal and proper usage according to the instructions provided on this card. This warranty is void if the unit is operated at a voltage level other than the level specified on the instrument label attached to the outer case. Further, this warranty is also void if tampered or serviced by unauthorized personnel. The user is required to complete the warranty validation card and return it within ten days after receiving the product.

## **SERVICE IN THE UNITED STATES**

FILL OUT A SERVICE REQUEST FORM ONLINE using the link on our contact page:  
<https://modulusdatasystems.com/contact-us/>

DESCRIBE THE PROBLEM very specifically on the online form. Many problems are intermittent and may not be identified without this information. If we have questions, we will reach out to the point of contact for more information.

Package the unit securely, ship prepaid and insure for \$500. We are not responsible for units lost or damaged in the mail.

Units in warranty will be repaired and returned to the address on the purchase order at no charge. Out-of-warranty service is billed at shop rate plus return shipping costs.

## **SERVICE OUTSIDE THE UNITED STATES**

1. CONTACT THE DEALER who sold you the unit. Your dealer is to provide warranty service to you.
2. DO NOT SHIP DIRECTLY to the manufacturer. Lack of proper identification can result in high customs charges and possible loss of the unit.

**SPECIFICATIONS**

**DIMENSIONS**

Width: 6 in. (15 cm); Depth 9 in. (23 cm); Height: 2 ¼ in. (6 cm)

**ELECTRICAL**

110-125 VAC, 50-60 Hz, 5 watts Max.

220-250 VAC, 56-60 Hz (Optional power adaptor)

**TEMPERATURE**

32-120 Degrees F (0-49 Degrees C)

**ADDITIONAL ACCESSORIES AND PARTS**

10-008 Extra key assignment overlays for 10-308. Three (3) per pack.

10-012 Extra key assignment overlays for 10-312. Three (3) per pack.

Power adaptors, including 220 Volt UK or European.

**FIGURE 1:**

SEQ # 12

Manual Differential and WBC

Patient ID \_\_\_\_\_  
 Date \_\_\_\_\_ Time \_\_\_\_\_  
 Tech ID \_\_\_\_\_ Dr. \_\_\_\_\_

Test Name	Percentage	Absolute Count [x1000]
SEGMENTED CELLS	60.0	6.78
BAND CELLS	6.0	0.67
LYMPHOCYTES	20.0	2.26
MONOCYTES	5.0	0.56
EOSINOPHILS	3.0	0.33
BASOPHILS	1.0	0.11
ATYPICAL LYMPHOCYTES	1.0	0.11
METAMYELOCYTES	1.0	0.11
MYELOCYTES		
PROMYELOCYTES	2.0	0.22
IMMATURE CELLS	1.0	0.11
NUCLEATED RBC	1.0	0.11
Total Cells Counted	100	
Total White Blood Cells	11.3	

Comments \_\_\_\_\_

Exhibit I Results Sheet

Manual Differential Worklist

Sequence Number	Patient Identification	Date:
01	_____	_____
02	_____	_____
03	_____	_____
04	_____	_____
05	_____	_____
06	_____	_____
07	_____	_____
08	_____	_____
09	_____	_____
10	_____	_____
11	_____	_____
12	_____	_____
13	_____	_____
14	_____	_____
15	_____	_____
16	_____	_____
17	_____	_____
18	_____	_____
19	_____	_____
20	_____	_____
21	_____	_____
22	_____	_____
23	_____	_____
24	_____	_____
25	_____	_____

Exhibit II Worksheet