



January 17, 2018

**URGENT FIELD SAFETY NOTICE TITLE FSN-30417XL**  
**COULTER® EPICS® XL™ Flow Cytometer with System II Software**  
**COULTER EPICS XL-MCL™ Flow Cytometer with System II Software**

Product	Part Numbers	Software Versions
COULTER® EPICS® XL™ Flow Cytometer (new, reconditioned or refurbished) with System II Software	All	All
COULTER EPICS XL-MCL™ Flow Cytometer (new, reconditioned or refurbished) with System II Software		

Attention Beckman Coulter Customer,

Beckman Coulter is initiating a field action for the product listed above. This letter contains important information that needs your immediate attention.

<b>ISSUE:</b>	As a result of customer complaints and subsequent internal investigations, Beckman Coulter has determined that an internal electronic component on the circuit “Amplifier” boards in the EPICS XL/XL-MCL Flow Cytometry systems may be affected by a manufacturing defect. Each EPICS XL/XL-MCL system contains up to seven (7) of the potentially affected Amplifier boards. All instruments are potentially impacted.
<b>IMPACT:</b>	<p>There may be impact to patient results due to this issue when using the EPICS XL/XL-MCL for any application.</p> <p>This manufacturing defect may result in failures causing signal loss and/or signal drifting as follows:</p> <ul style="list-style-type: none"><li>▪ The failure could present itself as signal loss and/or signal drifting resulting in absence of data or a shift in the population in the data plots.</li><li>▪ Customers have reported sudden loss of signal, intermittent signal loss, sudden upward or downward shift in signal, upward or downward drift in signal over time, fluctuating signal, suboptimal compensation, erroneous results on affected parameters, and/or increased coefficients of variation (CV) of Flow-Check beads (see <a href="#">Attachment 1</a> – FAQ for more details).</li></ul>
<b>ACTIONS:</b>	<p>Implement the following actions for the applications you use * -</p> <ol style="list-style-type: none"><li>1. <u>For All Applications including Laboratory Developed Tests:</u><ol style="list-style-type: none"><li>a. As per the product documentation all data must be reviewed by a laboratory professional prior to the release of reported results from the lab.</li></ol></li></ol>



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- b. Immediately implement the collection of TIME as a parameter and create TIME versus Parameter plots which will allow the monitoring of signal integrity as instructed in [Attachments 2 and 3](#).
  - c. Review data as described below:
    - i. Review of all TIME plots for each parameter.
    - ii. Monitor consistent Forward Scatter, Side Scatter and all fluorescence data over time as shown in [Attachment 3](#).
    - iii. Unexpected fluctuations in the events over time may indicate compromised fluidics, signal integrity or data acquisition conditions.
    - iv. All data must be reviewed prior to the release of any results from the laboratory, via an LIS or any other mechanism.
2. For tetraONE:
- a. As it is not possible to add TIME as a parameter to these protocols, discontinue use of the automated tetraONE application.
  - b. You can continue to use the tetraCHROME reagents with the manual gating instructions provided in the product labeling. Refer to CYTO-STAT tetraCHROME IFU, PN B90108 (for tetraCHROME CD45-FITC/CD4-RD1/CD8-ECD/CD3-PC5, PN 6607013 and tetraCHROME CD45-FITC/CD56-RD1/CD19-ECD/CD3-PC5, PN 6607073).
    - i. Ensure to follow the instructions in the preceding step to add time as a parameter and create the TIME vs Parameter plots.
    - ii. If your laboratory uses Panel Reports, the panels and corresponding panel report templates will need to be constructed as well.
    - iii. Create a separate Data Review TIME Plot protocol for data review including TIME, for the manual tetra application ([Attachment 3](#)).
    - iv. Follow the Data Review instructions in the IFU and respective System Guides, as well as the instructions attached to this notification ([Attachment 4](#)).
3. For stemONE:
- a. By default, the stemONE IVD locked protocols have TIME included as a parameter. There are no additional requirements to create a manual stemONE IVD protocol.
  - b. Create a separate Data Review TIME Plot protocol for data review including TIME, for the stemONE application ([Attachment 3](#)).
  - c. Follow the Data Review instructions in the stemONE System Guide, PN 4277322, Chapter 4 as well as the instructions attached to this notification ([Attachment 5](#)).
4. For Laboratory Developed Tests:  
In addition to the actions described above, follow the instructions in [Attachment 4](#) to:
- a. Ensure that the appearance of the data patterns are reviewed and look for suboptimal compensation.
  - b. Ensure that the pattern appearance matches the statistical data reported.
5. Contact Beckman Coulter Customer Technical Support Center or your local Beckman Coulter Representative if you observe any of the issues described.

	6. Consult with your Medical Director to determine if a retrospective review of results is warranted.
<b>RESOLUTION:</b>	<p>Beckman Coulter discontinued the manufacturing of new EPICS XL/XL-MCL units in 2011. In 2018 we are discontinuing the service support and the supply of spare parts and system-specific reagents/ controls/ assay target values. We will be contacting you regarding available options to completely retire the units which are not actively used and/ or to assess options to migrate your existing flow sample workload to a more modern research or clinical cytometer.</p> <p>* Continue following the above actions for the applications you use, as long as you use your system.</p>

Please share this information with your laboratory staff and retain this notification as part of your laboratory Quality System documentation. If you have forwarded any of the affected product listed above to another laboratory, please provide them a copy of this letter.

**Complete and return the enclosed response form within 10 days so that we are assured you have received this important communication.**

If you have any questions regarding this notice, please contact the Customer Support Hotline at 00353 1407 3082 or [techsupportie@beckman.com](mailto:techsupportie@beckman.com).

We apologize for the inconvenience to your laboratory.

Yours sincerely,



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Enclosed: Vigilance Response Form

## Attachment 1

### Frequently Asked Questions (FAQ)

- 1. What is the impact of the issue?**
  - There may be impact to patient results due to this issue when using the EPICS XL/XL-MCL for any application.
  - Implementation of the actions provided in this letter allow for the detection of signal loss and/or signal drifting that could impact patient results.
- 2. Is my instrument potentially impacted?**
  - There is the potential that it could be impacted.
  - Implementation of the actions provided in this letter allow for detection of signal loss and/or signal drifting that could impact patient results.
- 3. How can I confirm if my instrument has this issue?**
  - This issue may be intermittent.
  - Implementation of the actions provided in this letter allow for the detection of signal loss and/or signal drifting that could impact patient results.
  - Review of these plots, in addition to those used for assay/application result determination, should be part of routine data review, prior to reporting results. Please see additional information in the Attachments.
- 4. If my instrument demonstrates symptoms of this issue after the implementation of the actions in this letter, what are the next steps to resolve the issue?**
  - If your instrument displays the indicated issues contact BEC Customer Support or your local Beckman Coulter Representative for additional guidance and support.
- 5. Where can I find the instructions how to implement the immediate recommendations?**
  - See Attachments 2 through 5 of this communication.
- 6. How can I confirm there is no issue with previous data if TIME parameter was not selected?**
  - Unexpected fluctuations in the events over time may indicate compromised data acquisition conditions (see Special Procedures and Troubleshooting Manual for the EPICS XL/XL-MCL (PN 4237296)) for instructions on handling compromised fluidics or optics conditions).
- 7. How can I get updates on the resolution of this issue?**
  - Beckman Coulter will be contacting you regarding available options for resolution of this issue.

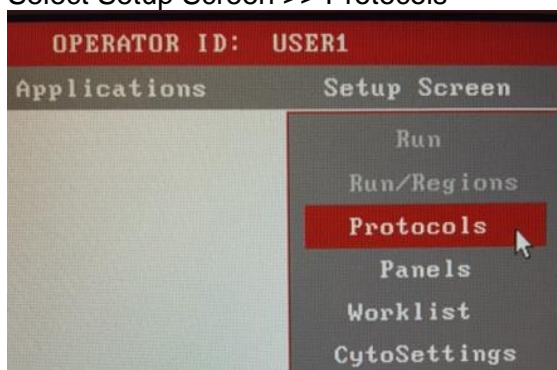
## Attachment 2

### Instructions for Creating TIME Plots in System II Unlocked Protocols

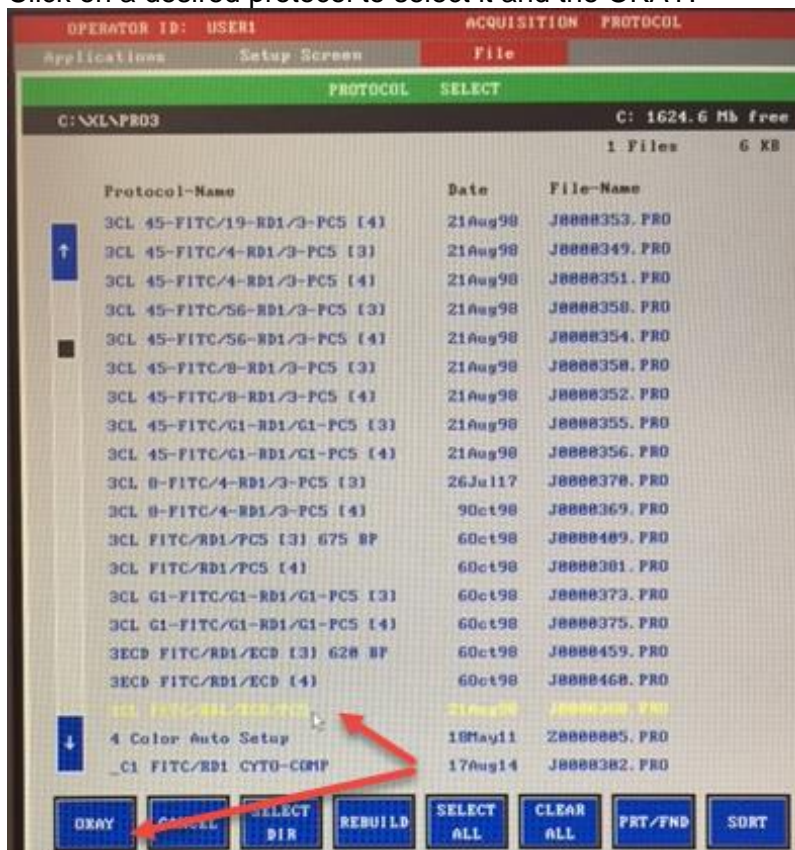
Please refer to COULTER® EPICS® XL Flow Cytometer COULTER EPICS XL-MCL Flow Cytometer SYSTEM II Software Getting Started manual, PN 4237238, Chapter 4, Creating Protocols for additional instructions. The following instructions apply to any unlocked protocol in the System II Software.

#### A. Adding Time Plots to Unlocked Protocols

1. Select Setup Screen >> Protocols



2. Select **File>> Select** to view the Protocols.
3. Click on a desired protocol to select it and the OKAY:



- The protocol will display (this example is a 4 color protocol). Make note of the Signal Sources box at the lower right of the display.

Edit the protocol to ensure that TIME is selected as a parameter for data collection by selecting the "X" next to TIME in the Signal Sources box. Observe that TIME is now listed in the protocol parameters as an added signal to be acquired. (Example in screen shot below is a 4 Color protocol).

SIGNAL SOURCES			
Sensor	Lin	Log	Peak
FS	X	X	X
SS	X	X	X
FL1	X	X	X
FL2	X	X	X
FL3	X	X	X
FL4	X	X	X
TIME	X		
PRISM	X		
RATIO	X	NUM:??	
		DEN:??	
AUX	X	SIG:??	

PARAMETERS	
Signal	User Name
TIME	TIME
FS	FS
SS	SS
FL1 LOG	FL1 LOG
FL2 LOG	FL2 LOG
FL3 LOG	FL3 LOG
FL4 LOG	FL4 LOG

**Erase Hist/Param**

- Select **File >> Save**.

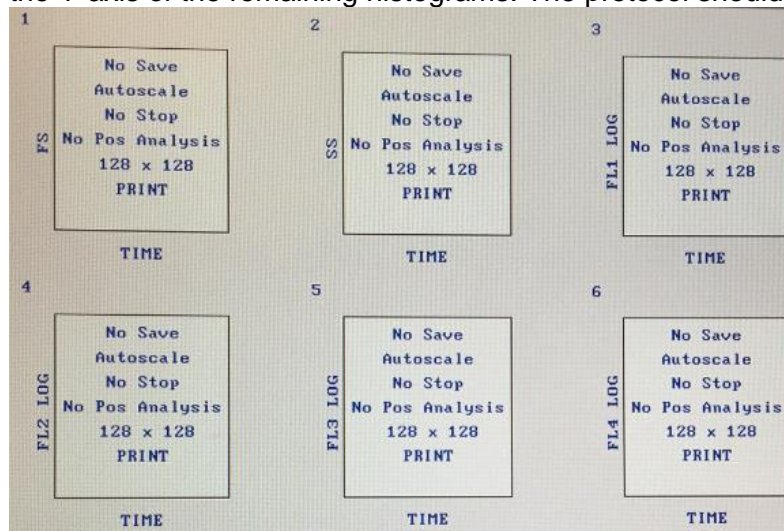
Note: **System II protocols allow a maximum of 8 plots**. If the unlocked protocol just updated cannot accommodate an individual TIME plot for each parameter, a separate Data Review protocol using 2-parameter histograms of TIME versus each parameter (i.e. FS/TIME, SS, TIME, FL1/TIME, FL2/TIME, FL3/TIME, and FL4/TIME) is created per the instructions in Attachment 3.

## Attachment 3

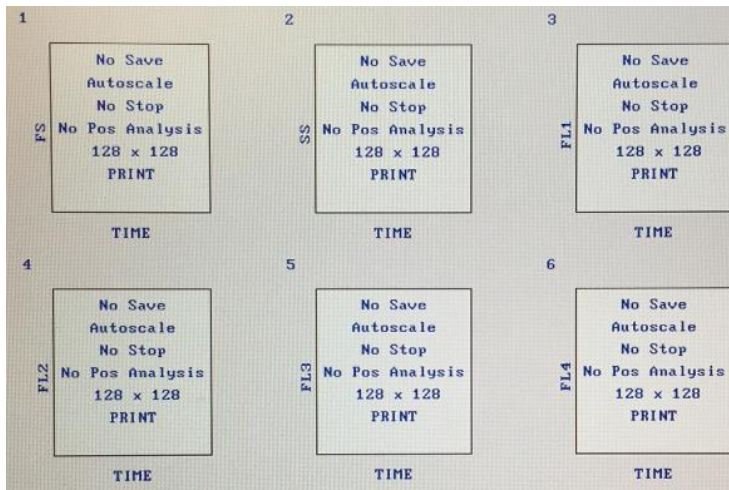
### Instructions for Creating a Data Review Protocol with Time Plots For Listmode Replay Data Review

#### A. Creating a Data Review Protocol with Time Plots

1. Select **Setup Screen >> Protocol**.
2. Either open an existing 4 color (log fluorescence) protocol or create a new 4 color protocol following the instructions beginning in Section 4-2 to create the protocols. Ensure this protocol has the following signals selected:
  - a. FS Lin
  - b. SS Lin
  - c. FL1 Log
  - d. FL2 Log
  - e. FL3 Log
  - f. FL4 Log
  - g. TIME
3. Assign parameters to plot axes:
  - a. Click on TIME in the Parameter box and assign TIME to the X-axis of Plots 1 through Plot 6.
  - b. Click on the next Parameter Signal, for example, FS, and click on the Y-axis of Plot 1.
  - c. Repeat Step 3b to assign the remaining parameters (SS, FL1, FL2, FL3 and FL4) to the Y-axis of the remaining histograms. The protocol should appear as shown below:



4. Select **File >> Save As ...** and enter a name for the protocol: i.e. Data Review Log FL-TIME Plots.
5. If Linear fluorescent signals are selected to be collected, repeat Step 1 through Step 4 selecting FS-Lin, SS-Lin, FL1-Lin, FL2-Lin, FL3-Lin, FL4-Lin and TIME. When saving the protocol, enter a name for the protocol: i.e. Data Review Lin FL-TIME Plots:



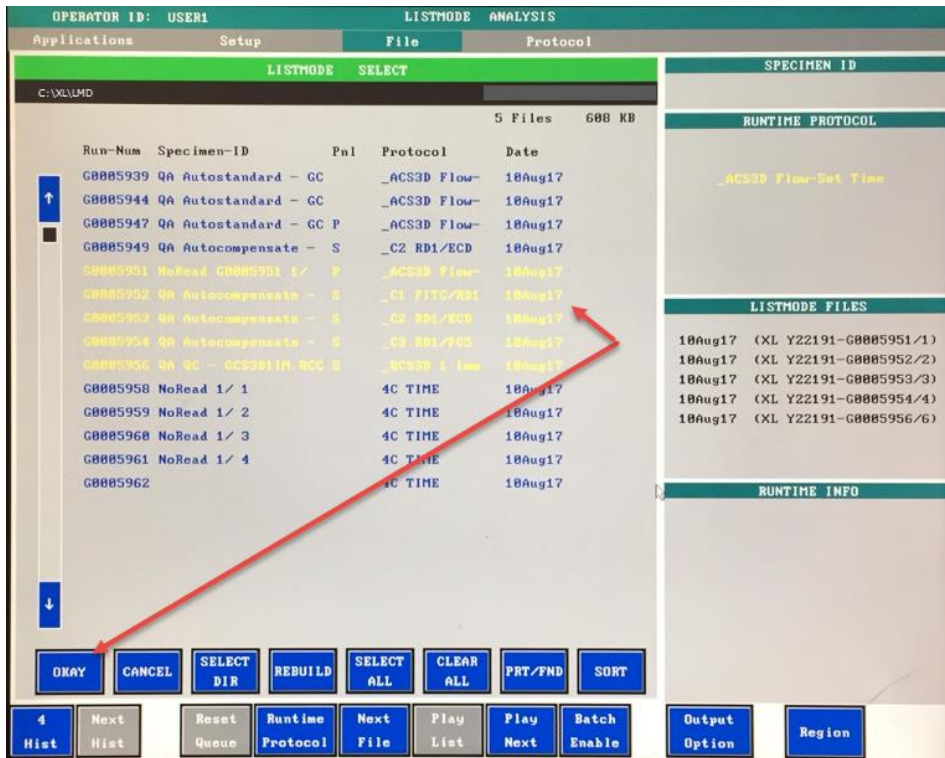
6. If your laboratory uses panels to acquire samples, refer to the COULTER® EPICS® XL Flow Cytometer COULTER EPICS XL-MCL Flow Cytometer SYSTEM II Software Getting Started manual, PN 4237238, Chapter 6, Creating Panels for additional instructions.
7. If your lab uses panel reports, please refer to the COULTER® EPICS® XL Flow Cytometer COULTER EPICS XL-MCL Flow Cytometer SYSTEM II Software Data Management manual, PN 4237237, Chapter 4, Creating Reports for the necessary instructions.
8. Refer to Procedure B of this document for instructions on Listmode Replay using the Data Review using TIME Plots.

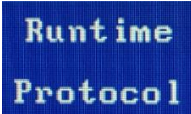
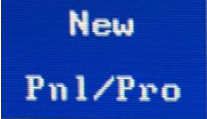

## B. Listmode Replay using the Data Review Protocol with TIME Plots

Refer to COULTER® EPICS® XL Flow Cytometer COULTER EPICS XL-MCL Flow Cytometer SYSTEM II, Instructions for Use Manual, PN 4237297, Chapter 5, Listmode Analysis, for additional instructions regarding Listmode replay in System II software.

- Select **Applications >> Listmode**.
- Select **File >> Select** and click on all desired listmode files for data review, then select **OKAY**:



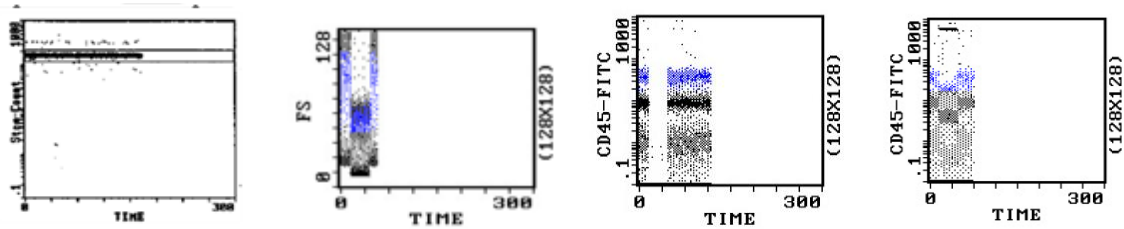


- Click on the  button at the bottom of the screen to toggle to .
- Select **Protocol >> Select** and select the Data Review Protocol (i.e. Data Review Log FL-TIME Plots created in Procedure B of this Attachment) and then select **OKAY**.
- Click on the  to review each listmode file data on each Time versus parameter plot.

**Data review must include the following:**

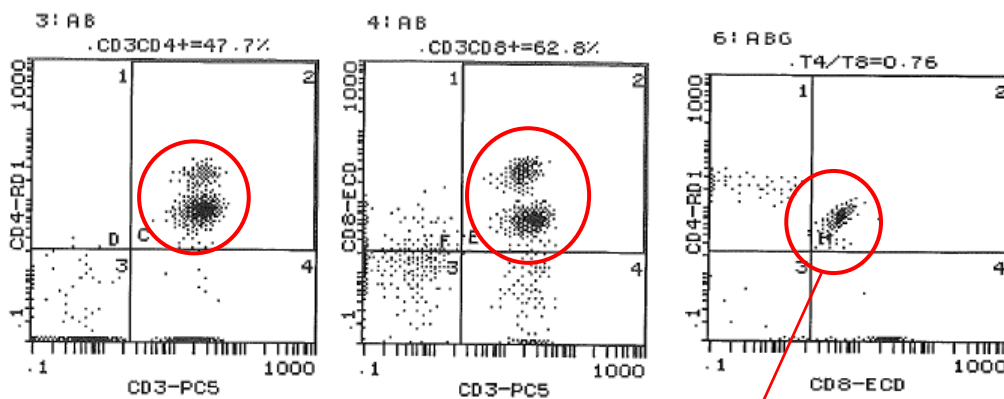
- Review of all TIME plots for each parameter.
- Monitor consistent Forward Scatter, Side Scatter and all fluorescence data over time as shown in the example below.

Examples: Stable Acquisition    Examples: Compromised Acquisition



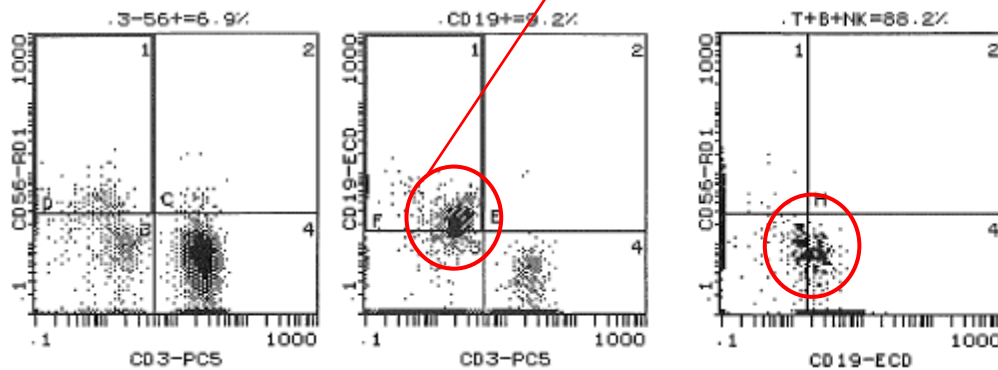
- Unexpected fluctuations in the events over time may indicate compromised data acquisition conditions (see Special Procedures and Troubleshooting Manual for the EPICS XL/XL-MCL (PN 4237296) for instructions on handling compromised fluidics or optics conditions).
- Review the data plots for the application in question. Below are examples of data plots from the tetraONE application demonstrating signal loss:

tetraONE 45/4/8/3



This also demonstrates an example of suboptimal compensation

tetraONE 45-56-19-3

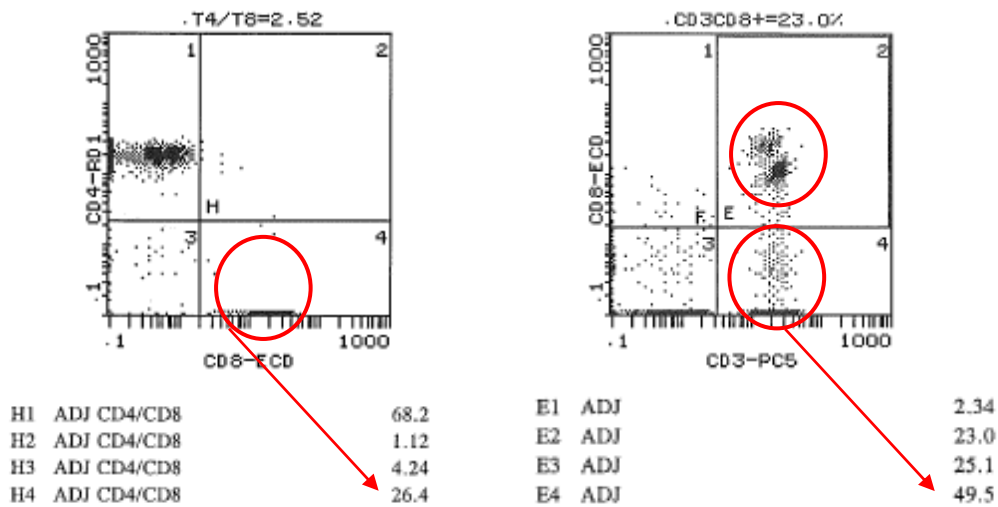


## Attachment 4

### Additional Information for Laboratory Developed Tests

In certain applications, the implementation of the TIME vs Parameter plots may not always result in detection of the failure. Therefore:

- Ensure that the appearance of the data patterns are reviewed, look for suboptimal compensation (as shown on the previous page). In some instances, the finding may be especially subtle. In this case, a similar pattern could be due to a small compensation error. Consider the possibility that this may be an Amplifier board failure.
- Ensure that the pattern appearance matches the statistical data reported. The following are examples of data where the pattern appearance does not match the statistical data reported below the plots, and the population appearance is not appropriate:



- Follow the Data Review instructions in the respective IFU(s) and System Guides, as well as the instructions included in this notification.

## Attachment 5

### Instructions for IVD Locked Protocols stemONE / tetraONE

#### Manual IVD Protocol Creation

These instructions provide guidance for the tetraONE and stemONE locked IVD applications for the purpose of data review with TIME plots.

#### A. stemONE IVD locked protocols

1. By default, the stemONE IVD locked protocols have TIME included as a parameter. There are no additional requirements to create a manual stemONE IVD protocol. Attachment 3 addresses creating a separate Data Review TIME Plot protocol for data review including TIME, for the tetraONE and stemONE applications. Refer to Attachment 3 for instructions on 'Creating a Data Review Protocol with TIME Plots' for data review.
2. For all stemONE listmode data, perform listmode replay using the Data Review Protocol with TIME Plots instructions provided in this document (Attachment 3).

#### B. tetraONE IVD locked protocols

1. Locate the indicated product instructions for use at [www.beckmancoulter.com](http://www.beckmancoulter.com).
2. Scroll down to the option to search by Item/REF/Document Number
3. Enter the following information to locate the tetraCHROME IFU:
  - Item/REF/Document Number: B90108 CYTOSTAT tetraCHROME IFU
  - Document Category: Consumable IFU/CIS/Setting Sheet

The screenshot shows a web interface for searching technical documents. At the top, there are tabs for 'Technical Documents', 'My Technical Documents', 'Safety Data Sheets (SDS/MSDS)', and 'Software Download'. Below these are search options: 'Search By Product', 'Search By Reagents/Calibrators/Controls', 'Search By Item/REF/Document Number' (which is selected and highlighted in blue), 'Search By Lot Number', 'Search By Serial Number', and 'Search By Keyword'. The 'Search By Item/REF/Document Number' section contains three input fields: 'Item/REF/Document Number' with the value 'B90108', 'Document Category' with a dropdown menu showing 'Consumable IFU/CIS/Setting Sheet', and 'Language' with a dropdown menu showing 'English'. A 'Search' button and a 'Search Tips' link are located below the input fields. A red box highlights the three input fields.

4. Follow the CYTOSTAT tetraCHROME reagent IFU for instructions on creating unlocked manual protocols.
5. Ensure TIME is selected as a parameter for data collection in the unlocked tetraCHROME manual protocol(s). The unlocked tetraCHROME protocol(s) will be used for data collection.
6. If your laboratory uses panels to acquire samples, refer to the COULTER® EPICS® XL Flow Cytometer COULTER EPICS XL-MCL Flow Cytometer SYSTEM II Software Getting Started manual, PN 4237238, Chapter 6, Creating Panels for additional instructions.
7. If your lab uses panel reports, please refer to the COULTER® EPICS® XL Flow Cytometer COULTER EPICS XL-MCL Flow Cytometer SYSTEM II Software Data Management manual, PN 4237237, Chapter 4, Creating Reports for the necessary instructions.
8. For all tetra application listmode data, perform listmode replay per the *Listmode Replay using the Data Review Protocol with TIME Plots* instructions provided in this document (Attachment 2).