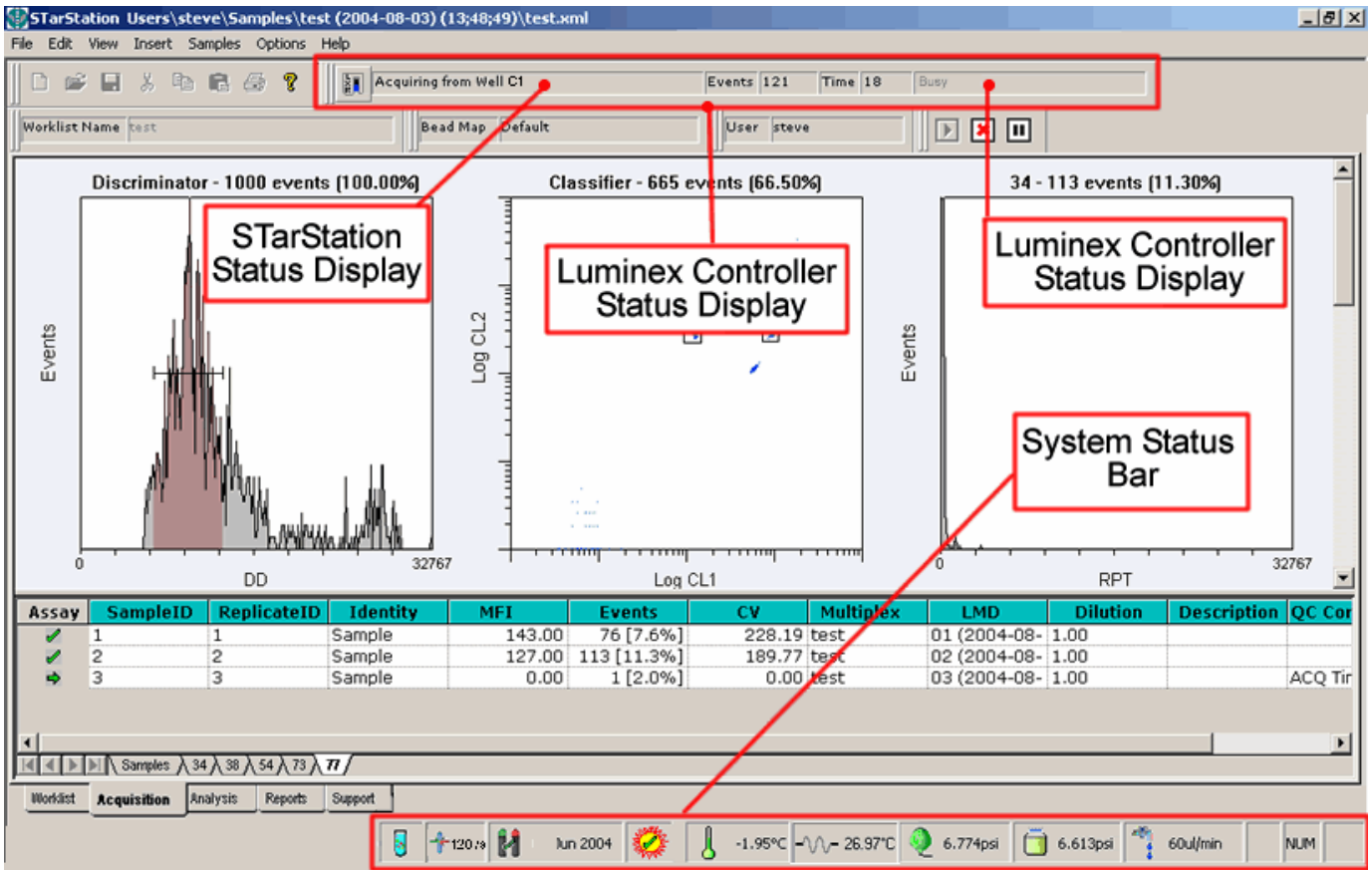


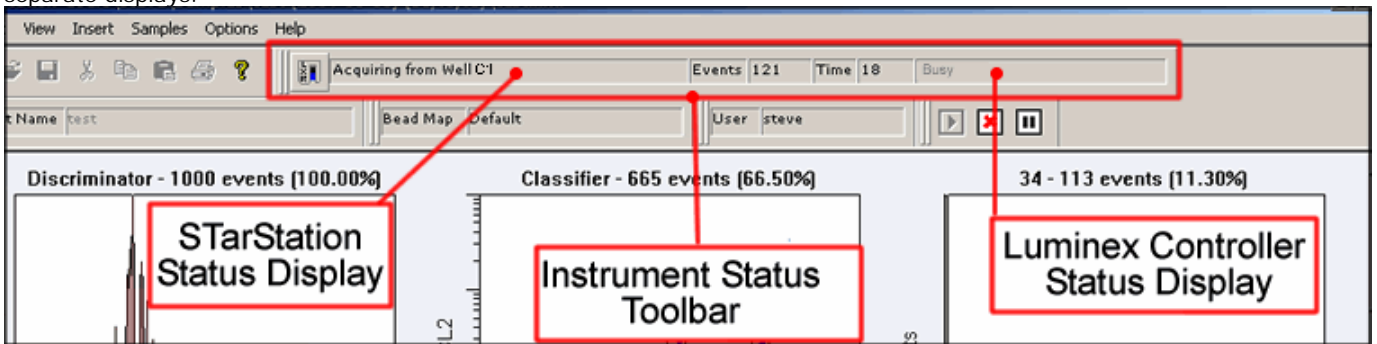
STarSystem Status Indicator Guide (Sheet 1)

STarStation 2.3 software has several status indicators which display the status of the STarSystem cytometer. This document outlines what status indicators are available and provides a guide to the icons and states displayed by the system indicators. The STarStation software interface has four main system status indicators which are outlined in the figure below.



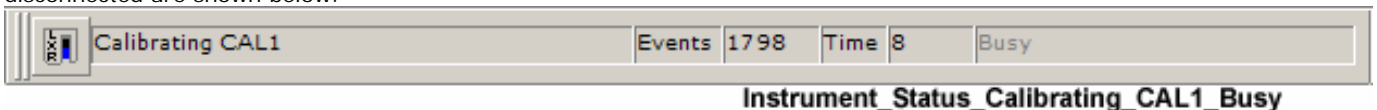
The StarStation Status and Luminex Controller Status displays indicate the current state of the system a guide to the potential state messages displayed by these two indicators is provide in tables 1 and 2 below.

The **Instrument Status Toolbar** displays the status of the **STarStation** software and the Luminex instruments in two separate displays.



Instrument_Status_Toolbar

An example of the Instrument Status Toolbar Status displays during Classification Calibration and when the XY platform is disconnected are shown below.



IMPORTANT: The Luminex system can exist in any of a finite number of states and the system may exist in more than one state simultaneously. Therefore it is entirely normal for multiple state messages to be displayed in the Luminex Controller Status field.

Note. The Ready state is not displayed if the system is in another state.

Adjacent to the STarStation Software Status field are two additional fields.

1) Events – displays the total non singlet discriminated events detected by the DD detector during sample data acquisition for the well currently being processed.

Note: The Event count is reset for subsequent wells. Event information is not displayed in the Event field of the instrument status toolbar during control verification and calibration, event rate information is displayed however on the system status bar.

2) Time – the time field displays the elapsed time in seconds for acquisition, control verification and calibration operations. Note the elapsed time for acquisition is displayed for each well and the timer starts counting from the moment the sample is aspirated from the well and the sample begins to be injected from the sample loop into the cuvette. Typically four seconds elapses before events begin appearing on the acquisition displays and event field. Scripted Control and Calibration operations do not activate the time field.

The STarStation software displays the operation that STarStation is currently performing.

A list of some of the state messages that can be displayed in the STarStation software state display is shown below.

STarStation /STarSystem Status	Message Displayed by STarStation Status Indicator	Notes
Calibrating Reporter	Calibrating RP1	
Calibrating CALL	Calibrating DD	
Calibrating CALL	Calibrating CL1 and CL2	
Reading a Well	Acquiring from Well X	
	Moving Plate to Well X	Starting acquisition of a well, or the user has selected the move to well function in the instrument controls
System Startup	Homing Plate	STarStation initialises the state engine of the system (retracts plate, homes the XY Platform and raises the sample probe) upon startup.
Instrument Control Operation	Probe Up	
Instrument Control Operation	Probe Down	
LXY not switched on or disconnected	LXY Disconnected	
LX100 not switched on or disconnected	LX100 Disconnected	
Both the LXY and LX100 are not switched on or are disconnected	LX100 and XYP Disconnected	
Running on a laptop	Only One serial port. Running analysis only mode	Running STarStation on a laptop or system with no serial communication ports. Require one COM port (can be achieved via a USB to serial adaptor) to run in system control mode
Washing	Washing	
Soaking	Washing	A soak is a "large" wash operation
Sanitizing or Alcohol Flushing	Sanitizing/Alcohol Flush	The system performs the same operations whether conducting a sanitize or Alcohol Flush operations are identical except that t
Verifying Classification Control	CON1	
Verifying Reporter Control	CON2	
Air Pump Engaged	Pressurizing	The system automatically pressurises when performing fluidic operations (Prime, Wash, Soak, Backflush, Acquisition , Calibration etc)
Starting Up/Unresponsive	Initializing Luminex	Usually Indicates a problem starting the LX100 firmware. System may require to be restarted.

STarStation_Software_States

Table 1 STarStation Software State Messages.

STarSystem Status Indicator Guide (Sheet2)

The Luminex Controller Status Display reports the current state of the Luminex Controller. The Luminex Controller is the STarStation component which communicates with the Luminex Library and mediates control of the LX100 cytometer and XY Platform. The Luminex Controller can exist in any of a number of possible states. A list of some of the possible Luminex Controller states is displayed below:

Luminex Controller Status	Notes
Ready	The LX100 is idle and ready to accept commands. The Ready state is not displayed if the system is in another state.
Busy	The machine is in a busy state and cannot be interrupted.
Not Initialised	Indicates that the LXR Library was not correctly initialised. This is usually because either the LX100 or XYP was switched off or was not connected to the PC correctly when STarStation was started.
Pressurizing	The machine is waiting for the system to fully pressurize.
Unconnected	Indicates that the LX100 and/or XYP has not connected to the host computer properly. This usually indicates that the machine was rebooted after the application had properly connected to the system.
Not Ready	The machine is not ready for use. This indicates that the machine is either in its power up state or has encountered a fatal error and has shutdown.
Sample	Indicates a sample empty condition. The entire sample has been injected into the detector.
Warming Laser	The machine is in its warm up state.
Acquiring	Indicates the machine is in the bead detection process. The LX100 is in the process of sampling (this state corresponds with an Acquisition, calibration or control verification command from STarStation).
Sheath	Indicates that the Sheath Buffer optical sensor has detected no sheath fluid in the inlet tubing, indicating that the sheath fluid bottle or SD Reservoir may be empty.

Luminex_Controller_States

Table 2 Luminex Controller State Messages.

The System Status Bar located at the bottom right corner of the software interface is only displayed when STarStation is connected to the System instrumentation. An overview of the different icons and the states they represent is provided in Table 3 below.


During Laser Warmup the System Status bar displays the remaining warmup time.



The image shows a system status bar with various icons and numerical values. A red box highlights the 'System Warmup Status - "Warming"' icon, and another red box highlights the '1653s' value, which is labeled as 'Laser Warmup Time Remaining'.

Laser_Warmup_Time_Remaining

During an Assay reading or System Calibration the microsphere event rate is displayed, this is a very useful diagnostic tool for determining whether the sample probe is clear and aligned correctly.



The image shows a system status bar with various icons and numerical values. A red box highlights the '85/s' value, labeled as 'Event Rate', and another red box highlights the 'Laser Status' icon.

<p>Laser Status</p> <p> Warming Up (1800 seconds)</p> <p> Ready</p> <p> Sleeping (after 4 hours of inactivity)</p>	<p>dCAL Status</p> <p> 0.00°C Within Range (Calibration May Not Be Required)</p> <p> >+3.0 Out of Range (Calibration Recommended)</p>	<p>Air Pressure Status</p> <p> 7.12psi Within Normal Range (6 - 9 psi)</p> <p> 2.53psi Low</p>
<p>Sample Loop Status</p> <p> Sample Loop Empty</p> <p> Sample Loop Not Empty</p> <p> System Not Acquiring</p>	<p>Script Status</p> <p> Script Running</p> <p> Script Not Running Completed / Failed</p> <p> Script Paused</p>	<p>Sheath Pressure Status</p> <p> 7.44psi Sheath Pressure OK Sheath Buffer Volume OK</p> <p> 1.44psi Sheath Pressure Low Sheath Buffer Empty</p>
<p>Calibration Status</p> <p> System Calibrated</p> <p> Previous CAL1 or CAL2 Operation Not Successful (or system has never been calibrated)</p>	<p>Event Rate</p> <p>Displayed during Acquisition, Calibration, QC Script Operation and Control Verification</p> <p> 85/s System Acquiring</p> <p> System Not Acquiring</p>	<p>Sample Injection Rate</p> <p> 60 µ / min</p> <p> 55 µ / min</p> <p> 45 µ / min</p>
<p>Platform Heater Status</p> <p> 23.24°C\23.00°C Platform Heater Activated In Range of Target Temperature</p> <p> 24.57°C\40.00°C Platform Heater Activated Warming To Target Temperature</p> <p> 24.48°C Platform Heater Inactive</p>		

Status_Bar_Icons

Table 3 : System Status Bar indicators and States

The full history of system operations for the current session can be reviewed via the messages tab of the STarStation instrument controls.
 Note: details of the STarSystem Control Verification Status (IS version systems only), Calibration status and current detector voltage settings can also be viewed via the **Status** Tab of the Instrument Controls.