Approach to Instrumentation

Prepared by: Bob Morrison
STLCC-CPLS , Instrumentation Specialist

Original: April 2008, Revised Aug 2014

Approach to Instrumentation; Guidelines

- **Review SOPs (Standard Operating Procedures)**
- **Safety Issues**
- **Analog vs. Digital vs. PC**
- **Get help**

Approach to Instrumentation; SOPs

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  - Visit Users website before you try to use the instrument
  - Jump to a specific instrument from the title page by detecting on the pictures
  - Use Search option if you don't see what you are looking for
  - Review the pictorial SOPs and any Quick Start Guides
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- **Get help**
  - If this is your first time using the instrument, seek help from others who may have experience with the instrument: instructor, staff, classmates
  - Use onboard HELP options or quick start guides
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http://users.stlcc.edu/departments/fvbio

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Plant and Life Sciences
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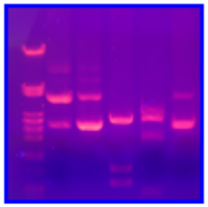


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Cepheid SmartCycler

MJ Research PTC-220

BioRad Model PTC-1148

MJ Research Model PTC-150

Logon: Cepheid/cphd
(delete this before publishing)

Thermal Cyclers
PCR, qPCR

Standard Operating Procedures

BioRad MyCycler

Select Picture to Jump to that Section/device

Stratagene qPCR Mx3005P

HYBAID-PCR, Omn-E

Logon: Admin/3000hanover
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Prepared by: Bob Morrison
FVCC, Instrumentation Specialist
June 2008, Latest Revision Oct 2011

Approach to Instrumentation; Guidelines, Safety

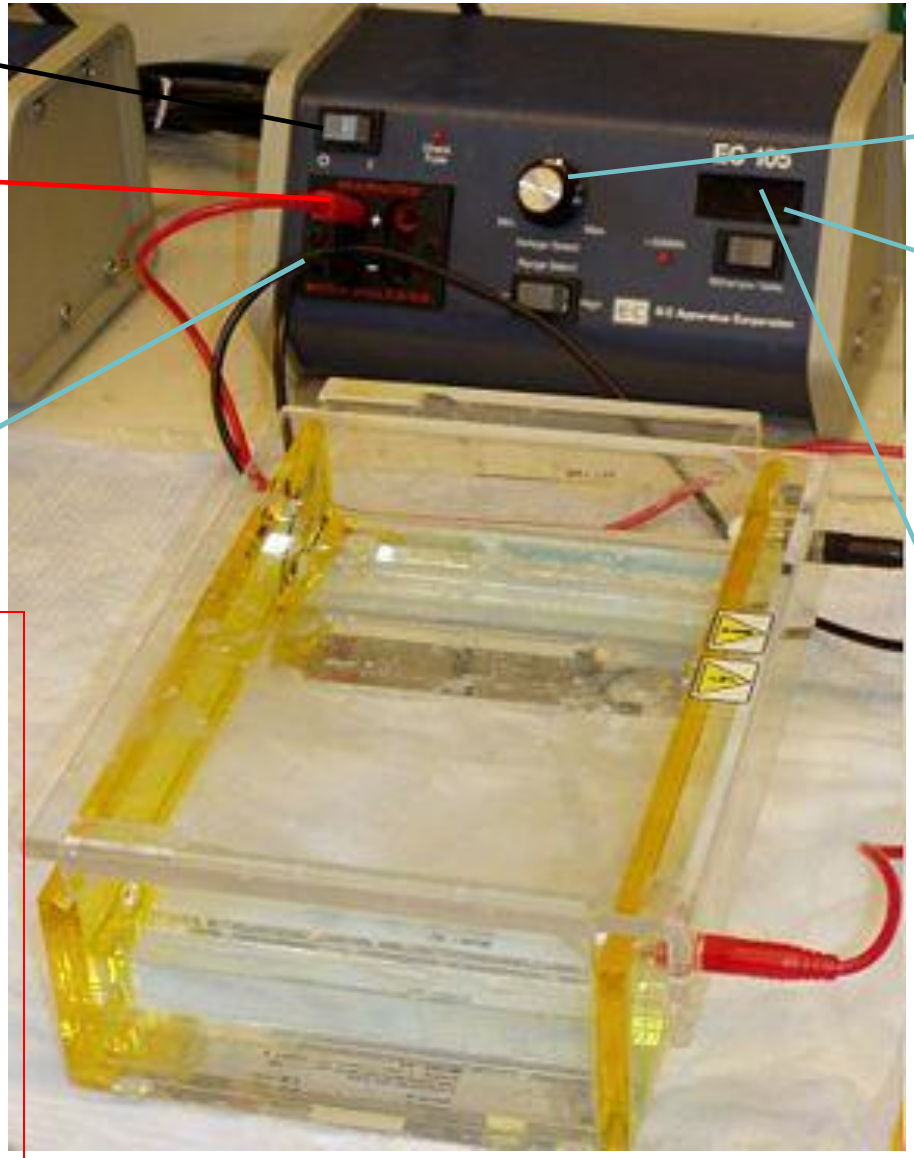
- Look for safety guidelines regarding chemicals or electrical handling before you turn it on

- If the “on” button is not obvious, trace power cord to the instrument and on/off toggle is often nearby. Also look for [|] or “0/1” symbol.

- Check Ready/on (green) lights or any warning (red/amber) lights before proceeding

- Don’t force anything; pushing or twisting harder on knobs, switches, or screen menus is not the answer and may damage the instrument or cause shock.

Electrophoresis : Typical Gel Setup (Safety example)



On/Off

Red (+) Electrical Probe; leads to far or receiving end of plate. If lose or pops out, expose metallic end and expand thin strips.

Black (–) Electrical Probe; leads to well or start end of plate

Voltage or Amps dial control. Typically set to maintain 95 volts during run.

Digital Volt or Amp readout Window

Rocker Switch: Set to constant Volts (or Amps) per lab procedure. Typically 95 Volts DC.

Safety Notes:

1) ***Connect all wiring and probes before turning the unit on.***
2) ***Never touch the probes or power supply box while the device is on.***
3) ***Turn off the device before disconnecting electrical probes.***
4) ***Do not handle the device with wet hands or on wet countertop.***

Electrophoresis: E-gel Basic Operations (SOP and Safety example)

1. **Before putting an E-gel cartridge in the powerbase**, attach the circular end plug of the power adapter cord into the hole in the base and then plug the adapter itself into the 110V outlet. A brief self-test of flashing lights and beeping will occur, then no lights until step 2 is completed.
2. Insert the E-gel cartridge into the base right side first, then press the left side down. There should be an click sound as the cartridge snaps into place and a **steady red light will appear (Ready Mode).** No button pushes are required to reach this state.
3. ***A two minute "pre-run" with the E-Gel comb in place is required before you will load samples into the wells.*** Press and hold either the 15 or 30 min button for a few seconds as the **steady red light** turns into **a flashing green light for the 2-minute run.**
4. At the end of the "pre-run", the flashing green light will turn to flashing red and a rapid beep will sound. Press and release either button to stop the beeps and return to a steady red.
5. Remove the comb from the E-gel cartridge carefully lifting straight out and then clear up any gel residue near the wells.
6. Prepare and load your samples into the wells per the E-gel manual guidelines.
7. For a single-comb gel, press the 15 min button, **a steady blue light will appear for the duration of the run.**
8. For a double-comb gel, press the 30 min button, a **steady green light will appear.**
9. *You may interrupt the run at any time by pressing either button once and then again to restart but you must manually time the remaining portion to avoid overrunning the gel.*
10. At the end of the run periods, the steady light will return to a flashing red light and beeps will sound. Press either button to stop the beeping and return the light to a steady red.
11. Remove the E-gel carefully from the powerbase and you are now ready for the transilluminator and/or other analysis. Bands will diffuse within 20 minutes however!

Thermal Cycler: MyCycler, Basic Operations (Power example)

1. **Plug in the unit to provide power, <u>there is no toggle on/off switch.</u>**
2. **Turn on by pressing the Stand-by key once**
3. **To put into Stand-by mode conserving power, hold down for > 3 sec**
4. **Turn off completely by unplugging the unit, there is no on/off switch.**

STOP key will pause a protocol when running.

Pressing STOP again will terminate the protocol

HELP menus are available

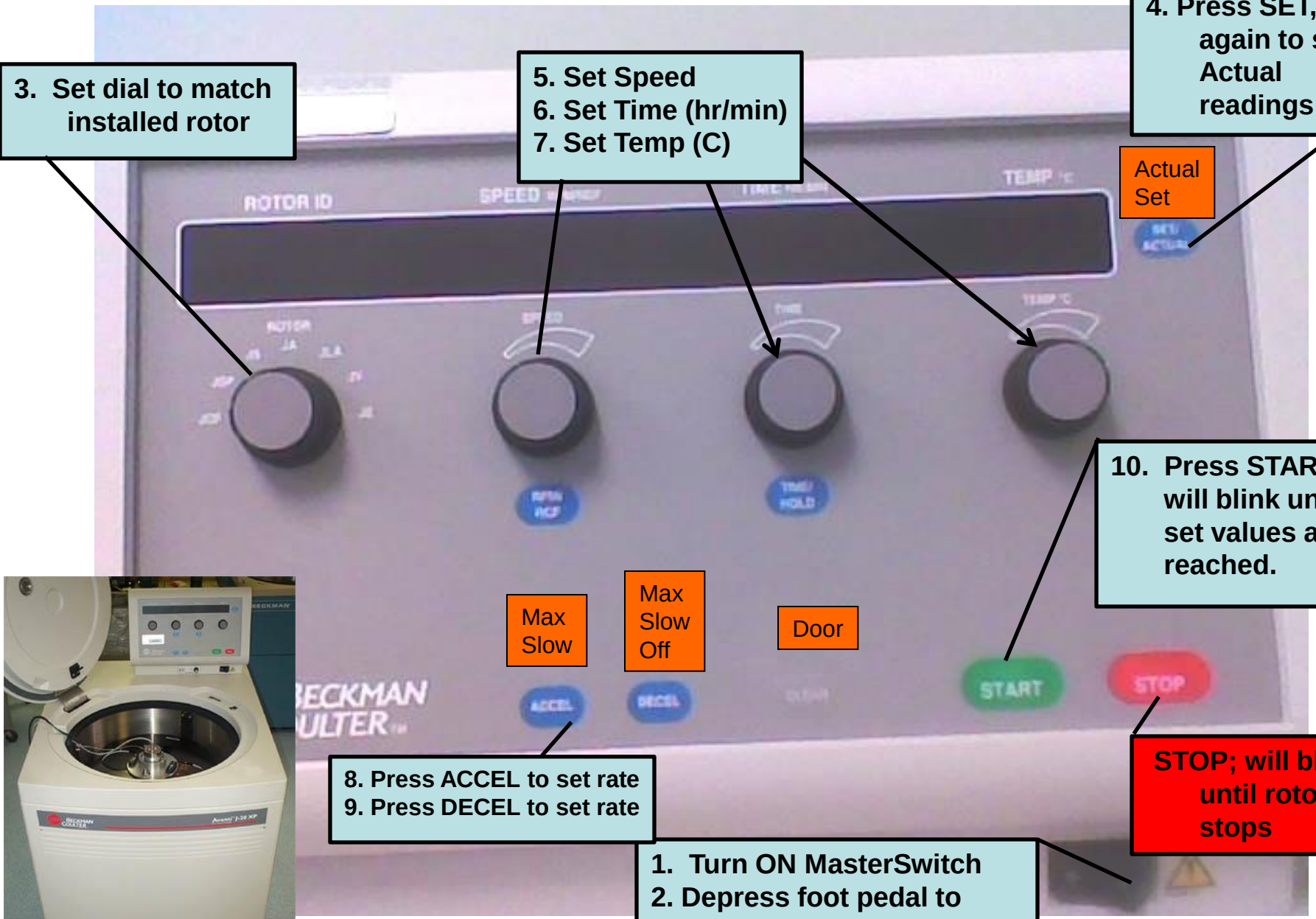
From the HOME/startup screen, select F5-Help to review topics and display an index of features.

Hot link to Bio-Rad MyCycler User Manual … 45 pgs pdf

Approach to Instrumentation; Guidelines

- **Analog vs. Digital vs. PC**
  - Analog : Dials to set and then generally a Start or Run button; follow order in SOP to avoid problems
  - Digital: Small screen with arrows to navigate (like a cellphone), not always a back or return option
  - Avoid SETUP menus unless the SOP directs you to change or set them
  - PC: More complex instruments use PC application, logon with ID/password, select Icon, follow menus

Centrifuge: Floor, Avanti J-20XP, Control Panel @BRDG, (Analog example)



3. Set dial to match installed rotor

5. Set Speed
6. Set Time (hr/min)
7. Set Temp (C)

4. Press SET, press again to see Actual readings

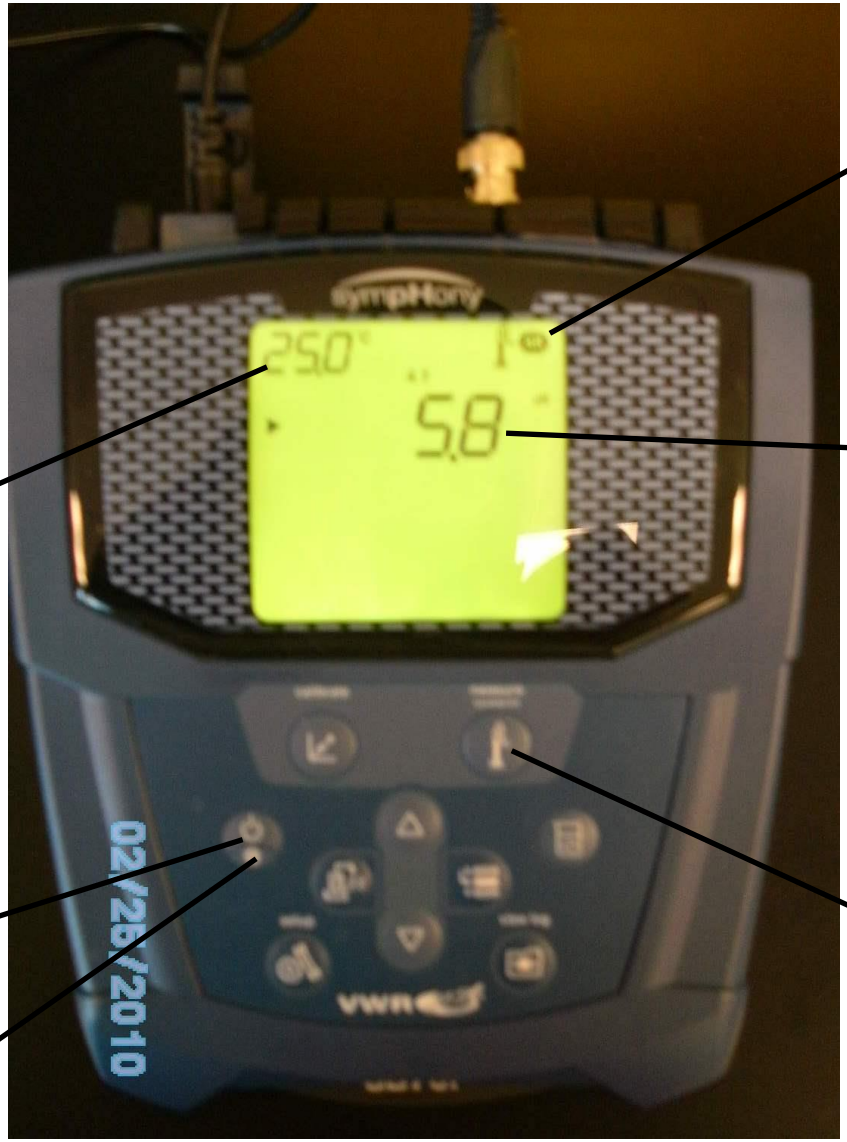
10. Press START; will blink until set values are reached.

8. Press ACCEL to set rate
9. Press DECEL to set rate

STOP; will blink until rotor stops

1. Turn ON MasterSwitch
2. Depress foot pedal to release door and install rotor

pH Meter: VWR Symphony, Automatic Read Mode (Digital Example)



3. System should start in Automatic Read Mode with "AR" blinking

4. Remove probe and insert in your sample

5. Wait until the AR and small pH display stop blinking. This is the Measured pH.

6. Rinse probe with DI water and return to stand

Current Temperature of sample

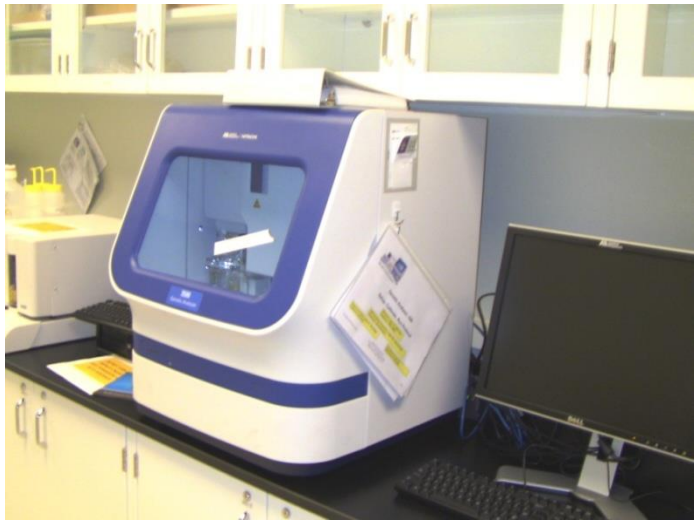
1. Press and hold for 2 sec to turn unit on/off

2. Press bottom of key to turn on or off lighted display

Press once if needed to go to Automatic Read Mode

Genetic Analyzer: ABI Maintenance, Calibration, and Supplies

(PC Driven Instrument)



ABI @BRDG, R126B

Supplies

Windows Logon ID: 3500-User
Password: 3500-USER

Delete LOGON boxes before publishing)

3500 Run/Data Acquisition Logon ID: Administrator
Password: Administrator1

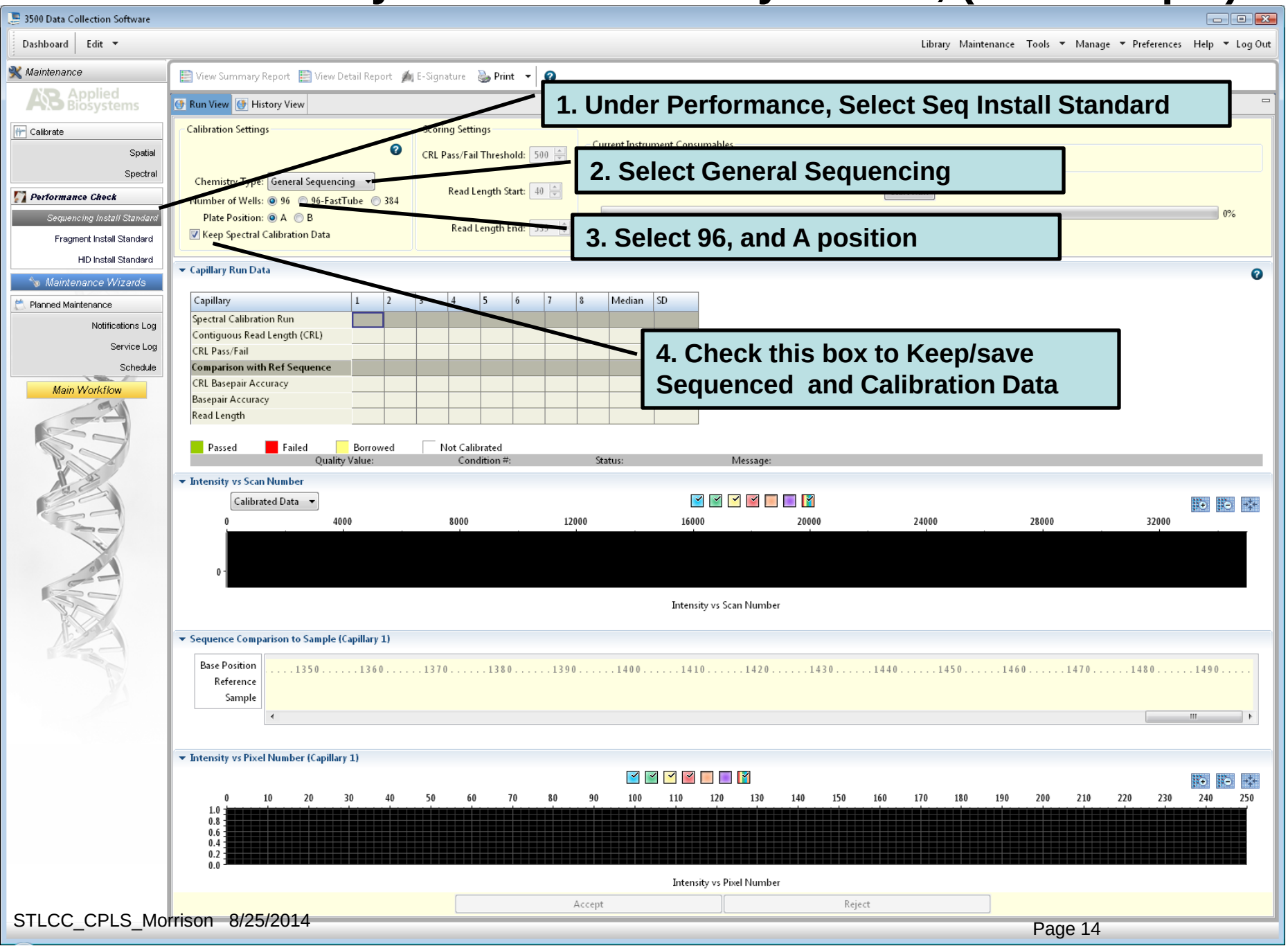
Sequence Analysis Logon ID : SLCC3500
Password: password

Gene Mapping Logon ID :gm
Password: SLCC3500

Link to ABI 3500 User Manual…pdf (18mb)

Prepared by: Bob Morrison
STLCC-CPLS, Instrumentation Specialist
Initiated: Sep 10, Last Update Jan 2012

Genetic Analyzer: Genetic Analyzer ABI, (PC example)



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