



390187AC  
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# CEQ<sup>TM</sup> 8800

## Genetic Analysis System

### Pre-Installation Guide

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# Table of Contents

<b>Table of Contents</b> .....	iii
<b>Overview</b> .....	1
<b>Pre-Installation Check List</b> .....	1
<b>Requirements</b> .....	2
Tabletop Space .....	2
Ventilation .....	2
<b>System Specifications</b> .....	4
<b>Consumable Materials Required</b> .....	7
Sequence Analysis .....	7
Fragment Analysis .....	8
<b>Materials Required but not Supplied</b> .....	10
Optional Materials .....	10
<b>Training Plan</b> .....	10
<b>Technical Support</b> .....	11
Notes .....	12



## Overview

This guide provides the information necessary to prepare a laboratory for the installation of the CEQ™ 8800 Genetic Analysis System (CEQ System) *prior* to its delivery to the laboratory. It also provides information concerning the post-installation training of users of the system.

## Pre-Installation Check List

The following is a summarized list of the items that must be addressed prior to installation. Mark each item as it is completed. When these prerequisites have been met, contact your local Beckman Coulter representative to schedule the installation.

- Appropriate table or bench (see “*Tabletop Space*” below)
- Suitable laboratory environment (see “*Table 1* on page 4)
- Suitable power source (see “*Table 1* on page 4)
- Consumable items (see “*Table 2* on page 7)
- Customer supplied equipment and materials (“*Table 2* on page 7)
- Training prerequisites met (“*Training Plan*” on page 10)

<b>Instrument Serial Number:</b>	
<b>Software Version:</b>	
<b>Firmware Version:</b>	
<b>Dealer Name:</b>	
<b>Dealer Phone Number:</b>	

# Requirements

## Tabletop Space

The CEQ System is comprised of the DNA analysis instrument, an IBM PC (tower), a monitor, keyboard, mouse and an optional printer. Figure 1 shows the overall system. Figure 2 shows the footprint and dimensions of the DNA analysis instrument. Use this information along with the “weight” entry in Table 1 to select an appropriate table or bench for the system.



**CAUTION** Ensure that the system is placed on a surface that is level and strong enough to support in excess of 200 lbs.

## Ventilation

To provide adequate ventilation and convenient access to cabling, allow for ten inches on the left side (facing instrument) of the instrument as well as at the rear of the IBM PC and the printer. All other sides of the equipment should have a six inch clear space to ensure proper ventilation (see Figure 2 for the system dimensions).

**Figure 1: CEQ System Components**

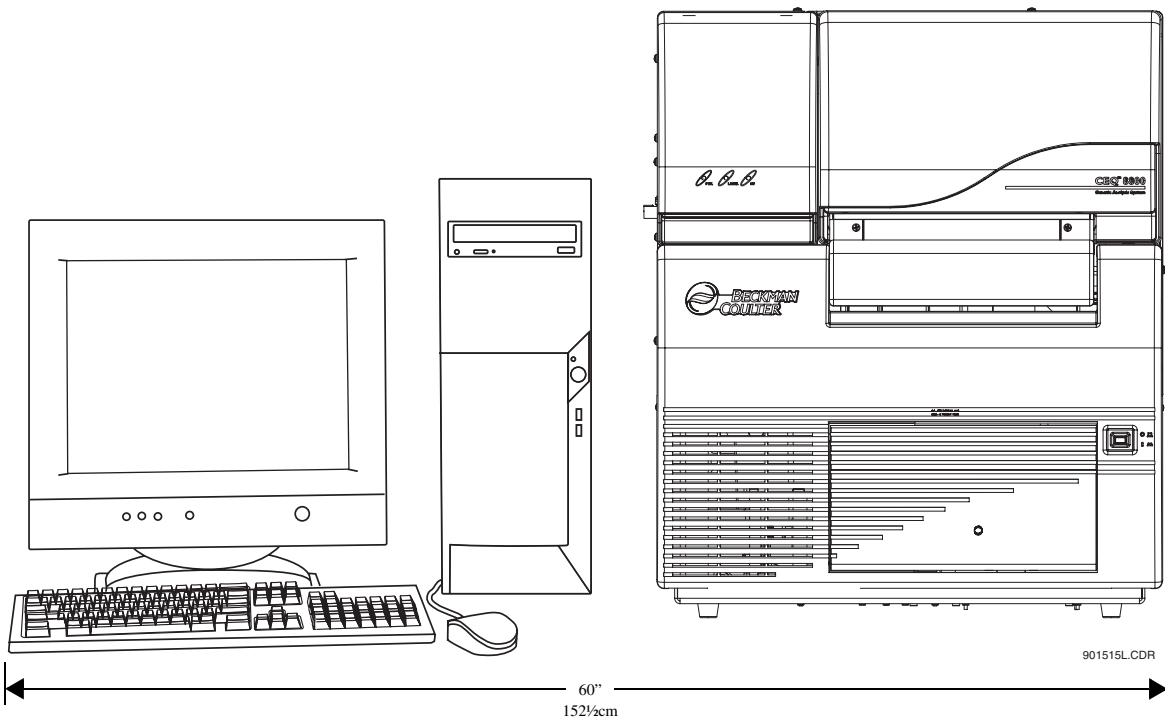
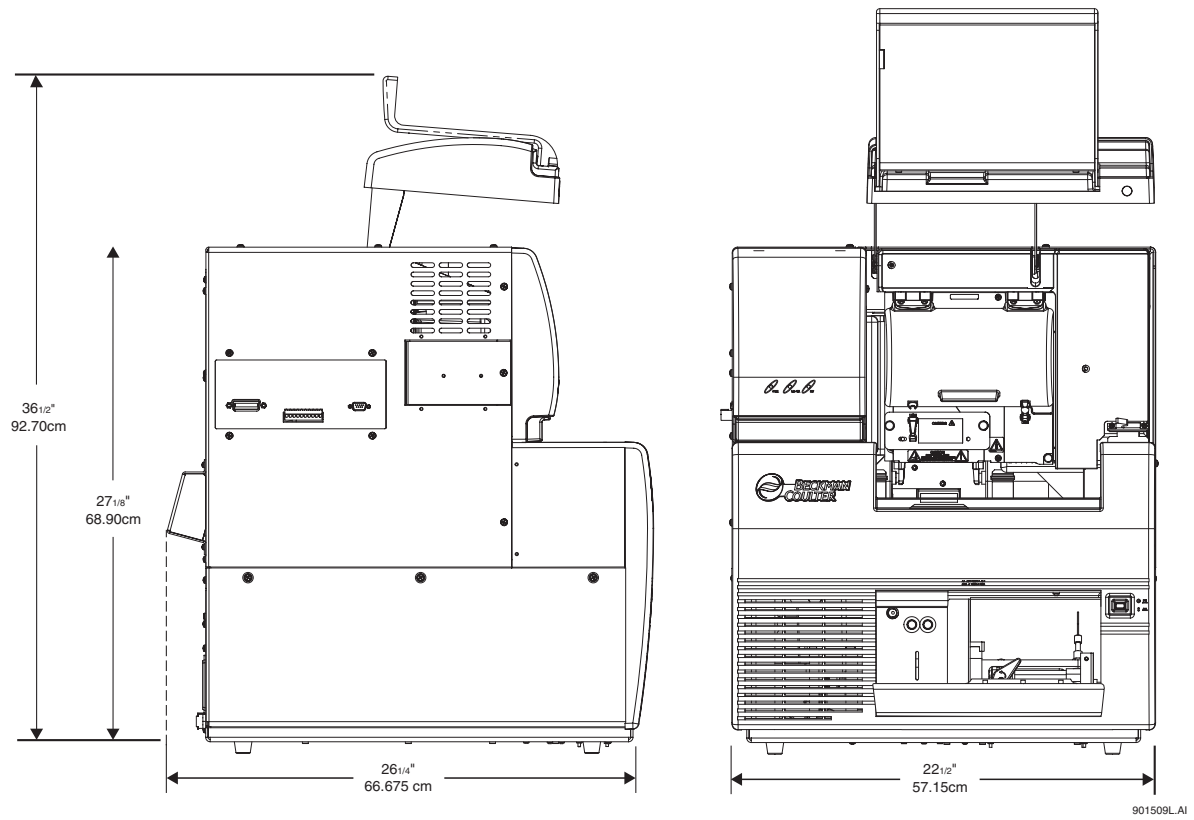


Figure 2: System Footprint and Dimensions






# System Specifications

Table 1 lists the specifications of the CEQ System. Use this information to prepare the environment where the system will be located.

**!** **CAUTION** The CEQ System is designed for indoor use only.

**Table 1: System Specifications**

Item	Description
Weight (CEQ)	81.8 Kg (180 lbs)
Power Requirements	 <u><b>CAUTION</b></u> The supply voltage must not exceed 10% of nominal.
CEQ	100-240VAC, 5.0A, 50/60Hz
PC (typical)	6.0A, 50/60Hz
Monitor (17" typical)	1.8A, 50/60Hz
Fuses (CEQ)	6.3A Time Delay; 20mm (2 ea.); 200-240VAC
Maximum Heat Dissipation (to room)	
CEQ	400W (1365 BTUs/Hour)
PC and Monitor	936W (3194 BTUs/Hour)
Ambient Operating Temperature Range	15-30°C (59-86°F)
Humidity Restrictions	<85% (non-condensing) @ 30°C (86°F)
Altitude Restrictions	up to 2000m (6,562ft)
PC (Tower) Minimum Specifications	Beckman certified controller. For specific features, contact your local Beckman Coulter, Inc. Sales and Service office.
Installation Category	Category II
Pollution Degree	2
Laser Category	Class 1  <u><b>WARNING</b></u>  This instrument uses a "Class 3B" laser. The laser is housed in a sealed container. During normal operation of the system, laser light is not accessible to the user. Therefore, overall laser classification of the sequencer is "Class 1."



**EMI Effect on CEQ™ (2000 Series / 8000 Series) Performance and Recommended Mitigations**

Under the test conditions specified by the European normative electromagnetic compatibility standard EN 61326-1, the CEQ instrument may exhibit temporary degradations in performance in accordance with the table below.

Because the environmental circumstances contributing to the problem can vary, several different mitigation techniques have been provided that should help eliminate or reduce the interference.

Test Condition	Effect on Performance	Mitigation
<p><b>Radio Frequency Field Interference (RFI)</b> System exposed to electromagnetic field strengths of greater than or equal to 3 V / m at multiple frequency bands.</p>	<p>May cause temporary degradation of base calling accuracy. In some cases, significant noise will appear in the measured results. Will return to normal performance once exposure is removed.</p>	<ul style="list-style-type: none"> <li>• Re-run sample.</li> <li>• Move location of the product by several meters.</li> <li>• Change the orientation of the equipment by 90 degrees.</li> <li>• Avoid using transmitters or cellular phones within 1 meter of the equipment.</li> <li>• Review the temperatures in the run log for any anomalies and re-run as necessary.</li> </ul>
	<p>May cause temporary loss of capillary temperature control resulting in lower than expected capillary temperature. Affect will be documented in the run log. Will return to normal performance once exposure is removed.</p>	
	<p>May cause temporary loss of capillary temperature control resulting in run not being initiated because temperature cannot reach desired level.</p>	

**! CAUTION** The CEQ system requires four grounded electrical receptacles. The power line to the laboratory should be connected directly from a main power line transformer of a power source that is known to be clear of erratic power loads, spikes and electromagnetic interference.

Power lines used with this system must have an adequate reserve capacity to allow for start-up loads and the additional equipment of this system. Beckman Coulter recommends that the normal loading not exceed 50% of the nominal capacity of the power lines.



*Installation of the CEQ 8800 PC controller onto a local network is not required for the system to operate. Installation, support and administration of local networks or internet connections are the responsibility of the user. Network and internet connections can expose the system to security risks, potential loss of data and possible system damage caused by hackers, software viruses or other external factors. It is the users responsibility to ensure that appropriate security measures, anti-virus software, firewalls and procedures have been implemented.*

## Consumable Materials Required

### Sequence Analysis

*Table 2* provides a list of the required consumable items for performing sequence analysis using the CEQ System.

**Table 2: Required Consumable Materials for Sequence Analysis**

Item	P/N	QTY <sup>a</sup>	Description
DTCS Kit (DNA Sequencing RXN Kit)  <i>or</i>	608000	1	Dye Terminator Cycle Sequencing Kit for 96 reactions. Includes: <ul style="list-style-type: none"> <li>• DNA polymerase</li> <li>• CEQ Dye Terminators (ddUTP, ddGTP, ddCTP, ddATP)</li> <li>• dNTP Mix Solution</li> <li>• Sequencing Reaction Buffer</li> <li>• pUC18 Control Template</li> <li>• -47 Sequencing Primer</li> <li>• Glycogen</li> <li>• Mineral Oil</li> <li>• Sample Loading Solution (SLS)</li> </ul>
DTCS Quick Start Kit	608120	1	Dye Terminator Cycle Sequencing Kit for 96 reactions in a single tube containing: <ul style="list-style-type: none"> <li>• DNA polymerase</li> <li>• CEQ Dye Terminators (ddUTP, ddGTP, ddCTP, ddATP)</li> <li>• dNTP Mix Solution</li> <li>• Sequencing Reaction Buffer</li> <li>• pUC18 Control Template</li> <li>• -47 Sequencing Primer</li> <li>• Glycogen</li> <li>• Mineral Oil</li> <li>• Sample Loading Solution (SLS)</li> </ul>
CEQ Separation Gel LPA 1	391438	1	20 mL of gel in CEQ 8800 compatible container. Sufficient to run two 96 well plates.
CEQ Separation Buffer	608012	1	Each container has a screw top and pour tip. The container has enough buffer (30 mL) to fill a CEQ System 96-well, flat bottom Buffer Plate. (Each well being $\frac{3}{4}$ full.) 4/Pack
DNA Separation Capillary Array 33-75B	608087	1	Eight capillaries, 75 $\mu$ m i.d., 33 cm long, 200 o.d. complete with electrode block and detector array fitting. Ready for installation into CEQ 8800.
Buffer Plates	609844	Box	Package of 100 flat-bottom polystyrene plates, nonsterile, without lids. Required for use as the CEQ 8800 Separation Buffer Plate.

**Table 2: Required Consumable Materials for Sequence Analysis**

Item	P/N	QTY <sup>a</sup>	Description
Sample Plates	609801	Box	Package of 25 V-bottom thermal cycler-compatible polypropylene plates with 200 µL volume capacity. Required for use as the CEQ 8800 sample plate. 25 Plates/Box

a. Contact your local Beckman Coulter representative for specific consumable material requirements based on your application and frequency of use.

## **Fragment Analysis**

*Table 3* provides a list of the required consumable items for the performing fragment analysis using the CEQ System.

**Table 3: Required Consumable Materials for Fragment Analysis**

Item	P/N	QTY <sup>a</sup>	Description
DNA Separation Capillary Array 33-75B	608087	1	Eight capillaries, 75 µm i.d., 33 cm long, 200 o.d. complete with electrode block and detector array fitting. Ready for installation into CEQ 8800.
CEQ Separation Gel LPA 1	391438	1	20 mL of gel in CEQ 8800 compatible container. Sufficient to run two 96 well plates.
CEQ Separation Buffer	608012	1	Each container has a screw top and pour tip. The container has enough buffer (30 mL) to fill a CEQ System 96-well, flat bottom Buffer Plate. (Each well being ¾ full.) 4/Pack
CEQ DNA Size Standard Kit - 80	608395	1	Contains fragments of 13 and 80 nucleotides designed to accommodate a wide range of sizes for multiplexed and poolplexed SNP fragments.
CEQ DNA Size Standard Kit - 400	608098	1	DNA size standard for analysis of fragments up to 400 nucleotides. Includes: <ul style="list-style-type: none"> <li>• Mineral Oil</li> <li>• DNA fragments of the following sizes labeled with CEQ WellRED fluorescent dye: 60, 70, 80, 90, 100, 120, 140, 160, 180, 190, 200, 220, 240, 260, 280, 300, 320, 340, 360, 380, 400, and 420 nucleotides</li> </ul> Sufficient for 96 fragment analysis separations.

**Table 3: Required Consumable Materials for Fragment Analysis**

Item	P/N	QTY <sup>a</sup>	Description
CEQ DNA Size Standard Kit - 600	608095	1	DNA size standard for analysis of fragments up to 600 nucleotides. Includes: <ul style="list-style-type: none"> <li>• Mineral Oil</li> <li>• DNA fragments of the following sizes labeled with CEQ WellRED fluorescent dye: 60, 70, 80, 90, 100, 120, 140, 160, 180, 190, 200, 220, 240, 260, 280, 300, 320, 340, 360, 380, 400, 420, 440, 460, 480, 500, 520, 540, 560, 580, 600, 620, and 640 nucleotides</li> </ul> Sufficient for 96 fragment analysis separations.
CEQ SNP-Primer Extension Kit.	390280	1	Includes: <ul style="list-style-type: none"> <li>• DNA Polymerase</li> <li>• CEQ dye-labeled terminators (ddUTP, ddGTP, ddCTP, ddATP)</li> <li>• Reaction buffer</li> <li>• Mineral oil</li> </ul> Sufficient for 96 reactions.
CEQ Sample Loading Solution (SLS)	608082	1	Sample Loading Solution (SLS), 6.0 mL
Buffer Plates	609844	Box	Package of 100 flat-bottom polystyrene plates, nonsterile, without lids. Required for use as the CEQ 8800 Separation Buffer Plate.
Sample Plates	609801	Box	Package of 25 V-bottom thermal cycler-compatible polypropylene plates with 200 µL volume capacity. Required for use as the CEQ 8800 sample plate. 25 Plates/Box

a. Contact your local Beckman Coulter representative for specific consumable material requirements based on your application and frequency of use.

## Materials Required but not Supplied

	Sequence Analysis	Fragment Analysis
Refrigerated microfuge	✓	✓
Molecular Biology Grade: sterile dH <sub>2</sub> O, 95% (v/v) ethanol/dH <sub>2</sub> O, 70% (v/v) ethanol/ dH <sub>2</sub> O	✓	✓
Sterile tubes - 0.5 mL microfuge, 0.2 mL thin wall thermal cycling tubes or plates	✓	✓
Thermal cycler with heated lid	✓	✓
CEQ Sample Loading Solution (SLS)	—	✓
Microduster III AccTech, P/N: 58019-538 (VWR)	✓	✓
Mini Alpha Swab from Texwipe, P/N: TX754B (VWR)	✓	✓
20 mg/mL Glycogen - Boehringer Mannheim Cat. # 901 393	—	✓
3M Sodium Acetate pH5.2 - Sigma, Cat. # S7899	✓	✓
100mM Na <sub>2</sub> -EDTA pH8.0 (500 mM Sigma Cat. # 7889)	✓	—
PCR enzyme and buffer	—	✓
Labeled primers (available from Research Genetics)	—	✓

### Optional Materials

- Aluminum Foil Seal and Sample, P/N 538619
- Thermowell™ Cap Strips - Corning Cat. # 6556 (not supplied by Beckman, Coulter, Inc.)

## Training Plan

Basic training should take place immediately following the installation of the system. The Beckman Coulter Field Engineer will train two users in basic instrument operation, use of the software program and routine maintenance. (Advanced training sessions may be scheduled for an additional fee. Contact your local Beckman Coulter representative for more information.)

To optimize the training session, the following prerequisites have been established for users:

- Experience in the handling of biological samples
- Working knowledge of the Windows® Operating System
- Familiarity with DNA sequencing and/or fragment analysis



**Beckman Coulter Field Engineers do not provide Windows training.**

## **Technical Support**

If you have any questions concerning this document or you need additional information *prior to installation*, contact your local Beckman Coulter representative.

## **Notes**