
PA 800 Plus Pharmaceutical Analysis System

Site Planning Guide



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Introduction

1

This guide is for the site planner, the individual responsible for preparing the facility for the installation of the system.

Note: For safety and regulatory information, refer to the *System Overview Guide*.

Customer Site Planner Responsibilities

Complete the [Site Planning Checklist](#) in consultation with facilities services personnel (electrical, ventilation, and information technology [IT]), and return it to the SCIEX field service employee (FSE) before the completion date. Refer to [Signoff](#).

Note: The FSE will follow up if the checklist is not received prior to the scheduled installation date.

- Verify that adequate space and the required shipping or receiving facilities are available. Refer to [Site Layout](#).
- Provide all required electrical receptacles. Refer to [Electrical Requirements](#).
- Verify that the requirements for ventilation and waste collection are met. Refer to [Ventilation and Waste Collection Requirements](#).
- Verify that the requirements for the operating environment are met. Refer to [Environmental Requirements](#).
- Verify that the requirements for the computer and network are met. Refer to [Computer, Software, and Network Requirements](#).
- Verify that all required solutions and laboratory supplies are available. Refer to [Customer-Supplied Solutions and Equipment](#).
- Verify that up to two operators have been identified for training. Refer to [Customer Preparation Requirements](#).
- When the shipment arrives, inspect the packaging exterior for damage. If there is any damage, then note any issues on the delivery receipt and notify SCIEX immediately.
- Contact SCIEX Customer Service or the local FSE to schedule the installation.

FSE Responsibilities

Note: If the site preparation tasks are not complete when the SCIEX Field Service Employee (FSE) arrives, then the scheduled installation will be postponed.

- Review the checklist and discuss any outstanding issues with the site planner.
- Unpack and set up the CE equipment.
- Verify the performance of the system.

During Installation



WARNING! Lifting Hazard. Make sure that at least four people or a lifting device are available to lift the CE system. Follow established safe lifting procedures. Refer to the *Site Planning Guide* for the weights of system components.

The FSE unpacks the system (with the assistance of customer staff), sets up the system, and then confirms its operation. When the system is installed, the FSE conducts an installation qualification.

Customer Familiarization

During installation, the FSE provides a system and software overview, reviews data, and provides some basic operator familiarization.

Technical Support

SCIEX and its representatives maintain a staff of fully-trained service and technical specialists located throughout the world. They can answer questions about the system or any technical issues that might arise. For more information, visit the SCIEX website at sciex.com.

Site Planning Checklist

2

Customer Information

Contact name			
Organization			
Address			
City			
State/Province/ Region		ZIP code/Postal code	
Country			
Telephone			
E-mail address			

Requirements

Site Layout

Refer to [Site Layout Requirements on page 13](#).

Requirements	Complete	N/A
There is adequate lab space to accommodate the equipment.		—
Additional personnel or lifting equipment are available to help the FSE move the equipment. Four people are recommended.		—
A moveable or fixed bench that meets the physical requirements (dimensions and weight) of the system as listed in Weights and Dimensions . If the bench is fixed, then there is 10.2 cm (4 inches) of clearance on all sides for service access. Make sure that the bench can support the weight of the system. Note: If the bench is moveable, then make sure that the bench is fixed during normal use.		—

Electrical Requirements

Refer to [Electrical Requirements on page 14](#).

Requirement	Complete	N/A
Installation of electrical supplies and fixtures complies with local regulations and safety standards.		—
One branch circuit is provided for the CE components. Three AC mains supply outlets are required. Note: Do not use extension cords.		—
The mains supply voltage does not fluctuate more than $\pm 10\%$ from the nominal voltage.		—

Requirement	Complete	N/A
The mains supply includes a correctly installed protective earth conductor.		—
A qualified electrician has determined the appropriate mains supply configuration based on the system electrical specifications. Refer to System Electrical Specifications .		—

Ventilation and Waste Collection Requirements

Refer to [Ventilation and Waste Collection Requirements on page 15](#).

Requirement	Complete	N/A
Ventilation of the laboratory environment in which the system will be used complies with local regulations and the air exchange rate is appropriate for the work performed.		—
Waste containers are available as required by local regulations.		—

Environmental Requirements

Refer to [Environmental Requirements on page 16](#).

Requirement	Complete	N/A
The altitude does not exceed 2000 m (6562 ft) above sea level.		—
Temperature and humidity requirements have been met.		—

BioSafety Requirements

Refer to [BioSafety Requirements on page 16](#).

Requirement	Complete	N/A
The site is not designated as BioSafety Level 3 (BSL-3) or BioSafety Level 4 (BSL-4).		—

Computer, Network, and Software Requirements

Refer to [Computer, Software, and Network Requirements on page 16](#).

Site Planning Checklist

Requirement	Complete	N/A
(For systems to be used with Empower™ Software) The required software and hardware from Waters is available.	<input type="radio"/>	<input type="radio"/>
(For systems to be used with Empower™ Software) Information about any computers associated with the Empower™ Software is recorded.	<input type="radio"/>	<input type="radio"/>
(For systems to be used with Empower™ Software) The LAC/E acquisition server must have two free USB ports, one for the license key and one for the GPIB interface cable.	<input type="radio"/>	<input type="radio"/>
(For systems to be used with Empower™ Software) If two PA 800 Plus Systems are to be connected to one LAC/E module, the GPIB interface cable has been ordered from SCIEX.	<input type="radio"/>	<input type="radio"/>
A table or bench is provided for the controller, located within 1 m (39 inches) of the system.	<input type="radio"/>	<input type="radio"/>
(Optional) A network printer or a dedicated printer and necessary print drivers are available.	<input type="radio"/>	<input type="radio"/>
(Optional) An active, tested LAN connection is available.	<input type="radio"/>	<input type="radio"/>

Solutions and Equipment Requirements

Refer to [Customer-Supplied Solutions and Equipment on page 18](#).

Requirement	Complete	N/A
All of the required solutions and bottles are available.		—

Customer Preparation

Refer to [Customer Preparation Requirements on page 18](#).

Requirement	Complete	N/A
Up to two customers have been identified for familiarization.		—

Customer Profile

(Optional) To allow the FSE to provide site-specific familiarization, enter the following information.

Site Planning Checklist

Number of operators			
Years of experience with capillary electrophoresis			
Will the system be used with the Empower™ Software?		Yes <input type="radio"/>	No <input type="radio"/>
If known, which detectors will be used?			
PDA	LIF	UV	
Applications to be performed			
(Optional) Other applications			

Comments and Exceptions

--

Signoff

Site planner contact name	
I acknowledge that all of the installation requirements, as specified in this document, have been met.	
Site planner signature	Completion date (yyyy-mm-dd)
FSE name	Return date (yyyy-mm-dd)
FSE e-mail	

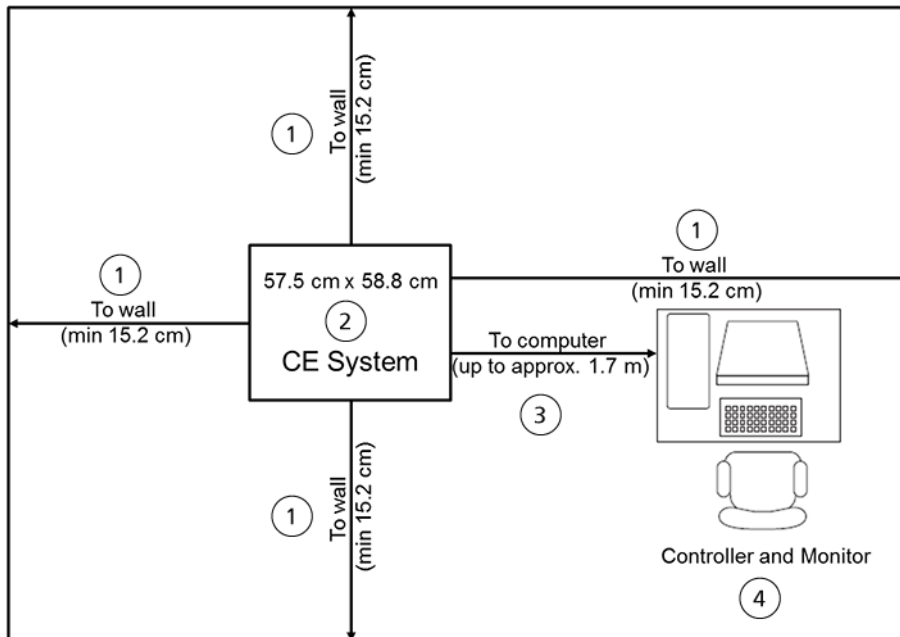
Site Layout Requirements

[Return to checklist.](#)

Laboratory Layout and Clearances

- The location allows at least 15.2 cm (6 inches) on all sides of the system.
- The location is away from heaters or cooling ducts, and not in direct sunlight.
- The location is away from vibrating equipment, such as refrigerators or centrifuges.

Figure A-1 Suggested Laboratory Layout



Site Requirements

Item	Description
1	Distance to wall, minimum 15.2 cm (6 inches)
2	PA 800 Plus System
3	Distance to controller, maximum 1.7 m (67 inches)
4	Controller and monitor

Weights and Dimensions

Refer to the following table for weights and dimensions and make sure that the system can be moved to the installation site. Make sure that the installation site can accommodate the equipment dimensions, weight, and associated clearance.

Equipment	Height	Width	Depth	Weight
PA 800 Plus System	Cover open: 98.6 cm (38.8 inches) Cover closed: 74.2 cm (29.2 inches)	63.5 cm (25 inches)	72.1 cm (28.4 inches)	85.3 kg (188 lbs)

Electrical Requirements

[Return to checklist.](#)



WARNING! Electrical Shock Hazard. Use only qualified personnel for the installation of all of the electrical supplies and fixtures, and make sure that all of the installations adhere to local regulations and safety standards.

- Provide a branch circuit with AC mains supply outlets for the system, the controller, and the monitor.
- Provide a 20 A (minimum) circuit breaker for each system power connector.
- Do not use extension cords.

Mains Supply Connections



WARNING! Electrical Shock Hazard. Make sure that the system can be disconnected from the mains supply outlet in an emergency. Do not block the mains supply outlet.

Mains Supply Fluctuations

The PA 800 Plus System requires consistent voltage between 100 VAC to 240 VAC.

If the voltage changes more than 10% in 24 hours, then use a power conditioner. High or low voltages can adversely affect the electronic components of the equipment.

Protective Earth Conductor



WARNING! Electrical Shock Hazard. Do not intentionally interrupt the protective earth conductor. Any interruption of the protective earth conductor creates an electrical shock hazard.

The mains supply must include a correctly installed protective earth conductor. The protective earth conductor must be installed or inspected by a qualified electrician before the system is connected.

System Electrical Specifications

Note: Specifications are subject to change without notice.

Table A-1 PA 800 Plus Pharmaceutical Analysis System Electrical Specifications

Specification	Value
Nominal input voltage	Instrument: 100 VAC to 240 VAC, auto-ranging
Frequency	50 Hz or 60 Hz
Maximum input current	Instrument: 8 A Controller: 2.8 A Monitor: 1.5 A

Ventilation and Waste Collection Requirements

[Return to checklist.](#)

Ventilation Requirements

Refer to the "Laboratories" chapter in *ASHRAE, 2011 Handbook - HVAC Applications* for recommended laboratory ventilation guidance.

Waste Collection Requirements



WARNING! Biohazard or Toxic Chemical Hazard. Follow local directives when disposing of chemicals, vials and caps, and the remains of the prepared samples, if applicable. They might contain regulated compounds and biohazardous agents.

Environmental Requirements

[Return to checklist.](#)

- Altitude not exceeding 2000 m (6562 feet) above sea level
- An ambient temperature of 15 °C to 30 °C (59 °F to 86 °F)
- Relative humidity from 20% to 60%, non-condensing

BioSafety Requirements

The site must not be designated BioSafety Level 3 (BSL-3) or BioSafety Level 4 (BSL-4). SCIEX does not install, service, or repair SCIEX systems in areas designated BSL-3 or BSL-4.

Computer, Software, and Network Requirements

[Return to checklist.](#)

A computer (also referred to as a "controller") and monitor are supplied with the PA 800 Plus Pharmaceutical Analysis System unless the system is to be used with the Empower™ Software.

Controller Requirements

The controller and monitor are provided with the CE system.

CAUTION: Potential System Damage. Other than security software, do not install any additional software on the controller. Changes to the configured software could void the system warranty and cause the system to stop operating. All operators require read/write access to the C:\32Karat folder.

Printer Requirements

The system can be connected to a network or to a dedicated printer.

LAN Connection

The controller can be connected to the network. For systems using the Empower™ Software, the network requirements are dictated by the Empower™ Software configuration.

Requirements for Waters Empower™ Software Users

To use the system with Empower™ Software the following items are required:

- The LAC/E acquisition server must have a free USB port for the software license key.
- For every LAC/E module attached to the PA 800 Plus System, a free USB port for the interface cable.
- Available from Waters:
 - Empower™ 3 Software (Feature Release 4).
 - 1 LAC/E module for each PA 800 Plus System.

Note: SCIEX recommends one computer for each PA 800 Plus System.

- Empower™ Software license
- If two PA 800 Plus Systems are to be connected to one LAC/E module, a GPIB interface cable is required. Refer to [Customer-Supplied Solutions and Equipment](#).

Empower™ Software Computer Configuration

If Empower™ Software is already installed at the site, indicate the configuration of any computers associated with the installation in the following table. This information can help with troubleshooting.

If the configuration is different than shown in [Computer Specifications for Empower™ Software](#), note any differences in [Comments and Exceptions](#).

Type of Computer	Configuration Details	Number at Site
Empower Personal Workstation or Client Computer, LAC/E ³² Module	Table C-1	
Empower Client Computer or LAC/E Module	Table C-2	
Empower Enterprise and Workgroup Server	Table C-3	
Citrix Server	Table C-4	
UNIX Server	Table C-5	

Site Requirements

Type of Computer	Configuration Details	Number at Site
Linux Server	Table C-6	
Empower File Server	Table C-7	

Customer-Supplied Solutions and Equipment

[Return to checklist.](#)



WARNING! Toxic Chemical Hazard. Refer to the chemical product *Safety Data Sheets* and follow all of the recommended safety procedures when handling, storing, and disposing of chemicals. For health and safety precautions, refer to the *System Overview Guide*.

For Empower™ Software Users

- If two PA 800 Plus Systems are to be connected to one LAC/E module, a GPIB interface cable is required (PN 970736).

General Equipment

- Appropriate personal protective equipment (PPE)
- Lint-free wipes
- Pipettors (2 µL, 10 µL, 20 µL, 100 µL or 200 µL, and 1 mL) and appropriate tips

Reagents

- Double-deionized (DDI) water (MS-grade water filtered through a 0.2 µm filter and with resistance above 18 MΩ)
- 0.1 N HCl (Sigma PN 84428 or equivalent)
- 0.1 N NaOH (SCIEX PN 338424 or equivalent)
- Methanol (Fisher PN A454 or equivalent)

Customer Preparation Requirements

[Return to checklist.](#)

After the system has been installed, an FSE will demonstrate basic system operation to up to two operators.

Operators should be available for the entire training period.

Equipment Safety Categories

B

Description	Category
Equipment pollution degree	Pollution Degree 2

Note: Environments with a Pollution Degree 2 rating include laboratories and sales and commercial areas.

For more information, refer to the International Electrotechnical Commission standards IEC 61010-1 and IEC 60364.

Computer Specifications for Empower™ Software

C

The tables below describe different computer configurations for Empower™ Software.

Note: The information below is taken from the *Waters Empower 3 Installation, Configuration, and Upgrade Guide*, revision B. Specifications may have changed since publication.

Table C-1 Empower Personal Workstation or Client Computer, LAC/E³² Module

Component	Specifications
Operating system	Windows 7 Enterprise or Professional, SP1, 64-bit
	Note: Windows 7, 32-bit is not supported.
	Windows 10 Enterprise or Professional, 64-bit
Oracle	Oracle version 12.1.0.2.0
CPU	Minimum: Intel 2 Duo, E6400 2.13GHz Recommended: Intel Core 2 Duo, E8400 3.0GHz
Random access memory (RAM)	Minimum: 8 GB Recommended: 16 GB
Virtual memory	4 × installed RAM
Hard drive	Minimum: 25 GB Recommended: Actual space recommendations depend on usage for both new installations and upgrades to Empower™ Software. Make sure that there is enough space for raw data files.
Free disk space	<ul style="list-style-type: none"> • 2 GB for Empower™ 3 Software (FR4) • 13 GB for Oracle and Empower database (new installations) • 23 GB for Oracle and Empower database (upgrades) Minimum: 5 GB for projects
DVD drive	Access to a DVD drive required

Table C-1 Empower Personal Workstation or Client Computer, LAC/E³² Module (continued)

Component	Specifications
Monitor resolution	<p>Minimum: 1024 × 768</p> <p>Recommended: 1920 × 1080</p>
Graphics capability	sVGA video at 1024 × 768, 256 colors
Optional control interfaces	<ul style="list-style-type: none"> • Waters Bus Laboratory Acquisition and Control/Environment (busLAC/E) card (BusLAC/E driver 7.0.1.1 automatically installed if busLAC/E card detected during Empower™ Software installation) • 8-port serial hub • Edgeport USB-to-serial converter cable
Application software	Empower™ 3 Software (FR4)
Ethernet adapters	<ul style="list-style-type: none"> • 1 Ethernet adapter for network connectivity • 1 Ethernet adapter to operate Ethernet instruments (not used for PA 800 Plus Systems) • 1 Ethernet adapter for the client <p>Minimum: Greater than 100 Mbps</p> <p>Recommended: 1 Gbps</p>

Table C-2 Empower Client Computers or LAC/E Module

Component	Specifications
Operating system	<p>Windows 7 Enterprise or Professional, SP1, 64-bit</p> <hr/> <p>Note: Windows 7, 32-bit is not supported.</p> <hr/> <p>Windows 10 Enterprise or Professional, 64-bit</p> <p>LAC/E configurations 12, 13, and 14 for Windows 7 only</p> <p>LAC/E configuration 15 for Windows 7 and 10</p>
Oracle	Oracle client version 12.1.0.2.0 for 32-bit
CPU	<p>Minimum: CPU for Windows 7 or 10 Intel 2 Duo, E6400 2.13 GHz</p> <p>Recommended: Intel Core 2 Duo, E8400 3.0 GHz</p>

Computer Specifications for Empower™ Software

Table C-2 Empower Client Computers or LAC/E Module (continued)

Component	Specifications
Random access memory (RAM)	Minimum: 4 GB Recommended: 8 GB
Virtual memory	4 × installed RAM
Hard drive	25 GB
Free disk space	2 GB for Empower™ 3 Software (FR4)
Monitor	Minimum: 1024 × 768 resolution (except for LAC/E modules) Recommended: 1920 × 1080 resolution for client
Graphics capability	sVGA video at 1024 × 768, 256 colors
Optional control interfaces	<ul style="list-style-type: none"> • Waters Bus Laboratory Acquisition and Control/Environment (busLAC/E) card (BusLAC/E driver 7.0.1.1 automatically installed if busLAC/E card detected during Empower™ Software installation) • 8-port serial hub • Edgeport USB-to-serial converter cable
Application software	Empower™ 3 Software (FR4)
Ethernet adapters	<ul style="list-style-type: none"> • 1 Ethernet adapter for network connectivity • 1 Ethernet adapter to operate Ethernet instruments (not used for PA 800 Plus Systems) • 1 Ethernet adapter for the client Minimum: Greater than 100 Mbps Recommended: 1 Gbps

Table C-3 Empower Enterprise and Workgroup Server

Component	Specifications
Operating system	Windows Server 2008 R2 SP1, Enterprise or Standard 64-bit Windows Server 2012 R2, Standard 64-bit
Oracle	Oracle 12.1.0.2.0
CPU	Minimum: 1 × Intel Xeon 1 × E5-2620v3 (4 cores at 1.8 GHz) Recommended: 2 × Intel Xeon E52620 (6 cores at 2.4GHz)

Table C-3 Empower Enterprise and Workgroup Server (continued)

Component	Specifications
Random access memory (RAM)	Minimum: 8 GB Recommended: 24 GB
Virtual memory	4x installed RAM
Free disk space	<ul style="list-style-type: none"> • 1 GB for Empower™ 3 Software (FR4) • 13 GB for Oracle and Empower database (new installations) • 20 GB for Oracle and Empower database (upgrades) <p>Minimum: 5 GB of free disk space to accommodate projects</p> <p>Recommended: Actual space recommendations depend on your usage for both new installations and upgrades to Empower software.</p>
Backup device	Optional, but recommended
Monitor and graphics capability	Required sVGA video at 1024 × 768, 256 colors
Printer	Access to a printer required
Application software	Web browser: Google Chrome 35 or later Recommendation: Waters recommends Google Chrome for use with Waters Database Manager (WDM)
Network interface card	1 Gbps NIC

Table C-4 Citrix Server

Component	Specifications
Operating system	Windows Server 2008 R2 Enterprise or Standard 64-bit Windows Server 2012 R2 Standard 64-bit
Citrix XenApp software	XenApp 7.6 (running in Windows Server 2008 R2 Enterprise or Standard Edition 64-bit) XenApp 7.6 (running in Windows Server 2012 R2 64-bit)
Random access memory (RAM)	Minimum: 2 GB Recommended: 8 GB
Virtual memory	4x installed RAM

Computer Specifications for Empower™ Software

Table C-5 UNIX Server

Component	Specifications
Operating system	Solaris 10 (8/11), patched to 9/11
Hardware	T5240, T4-2, or equivalent
Random access memory (RAM)	Minimum: 8 GB Recommended: 24 GB
Hard drive	4 local hard drives (additional SAN storage recommended)
Virtual memory	4 × installed RAM
DVD drive	Access to a DVD driver
Backup device	Optional, but recommended
Monitor	Not required
Graphics capability	If using a local graphics card, minimum 1024 × 768, 16-bit color
Server software	Solaris 10 (8/11) Oracle RDBMS (Relational Database Management System)12.1.0.2.0
Network interface card	Multiple 1 Gbps NICs, teamed

Table C-6 Linux Server

Component	Specifications
Operating system	Red Hat Enterprise Linux 6.8
CPU	Minimum: 1 × 4 cores at 1.8 GHz Recommended: 2 × 6 cores at 2.4 GHz
Random access memory (RAM)	Minimum: 8 GB Recommended: 24 GB
Virtual memory	4 × installed RAM
Hard drive	4 local hard drives (27 GB total), additional SAN storage recommended
Backup device	Optional, but recommended
Monitor	Not required
Graphics capability	If using a local graphics card, minimum 1024 × 768, 16-bit color is required

Table C-6 Linux Server (continued)

Component	Specifications
Server software	Red Hat Enterprise Linux 6.2 (Oracle RDBMS Relational Database Management System) 12.1.0.2.0
Network interface card	Multiple 1 Gbps NICs

Table C-7 Empower File Server

Component	Specifications
Operating system	Windows Server 2008 R2 SP1, Enterprise, or Standard (64-bit) Windows Server 2012 R2 Standard (64-bit)
Random access memory (RAM)	Minimum: 8 GB Recommended: 16 GB
Virtual memory	4 × installed RAM

Revision History

Revision	Reason for Change	Date
B25806AA	First release. Applies to PA 800 plus Software Version 10.1 (includes 32 Karat™ Software) and PA 800 plus Firmware version 10.1 (incompatible with 9.x)	January 2013
B25806AB	The following section changed subsequent to revision AA: CHAPTER 3, Computer Specifications.	June 2014
RUO-IVD-01-5329-A B25806AC	Applied new template. Re-branded. Changed document name from <i>Preinstallation Manual</i> to <i>Site Planning Guide</i> . Deleted system and computer specifications, they are now included in the <i>System Overview Guide</i> .	March 2018
RUO-IVD-01-5329-B B25806AD	Added requirements for systems to be used with the Empower™ Software. Updated legal page.	February 2020