



Quality People. Building Solutions.

Comfort Systems USA (Arkansas), Inc.
P.O. Box 16620
LittleRock, AR 72231
Phone 501-834-3320
Fax 501-834-5416

Date: 8/21/2025

Return Request: 9/4/2025

Project: Hot Springs National Park – Rehabilitate Bathhouses – Libbey Bathhouse

Supplier: Powers of Arkansas

Manufacturer: Siemens

Submittal: Controls

Submittal Number: 230900.001

Spec Section: 230900

Drawing # and Installation Location: M1.1

ARCHITECT

Quinn Evans Architects
219-1/2 N. Main Street
Ann Arbor, Michigan 48104
(734)663-5888

GENERAL CONTRACTOR

Tepa, LLC
2345 Grand Blvd, Suite 700
Kansas City, Missouri 64108
(816)708-1110

ENGINEER

IMEG Corp.
1600 Baltimore Street, Suite 300
Kansas City, Missouri 64108
(816)842-8437

MECHANICAL SUBCONTRACTOR

Comfort Systems USA (Arkansas), Inc.
9924 Landers Road
North Little Rock, Arkansas 72117
(501)834-3320

Comments:

CSUSA PROJECT NO.

25-7065

joe@comfortar.com

9924 Landers Road
No. LittleRock, AR 72117



Powers of Arkansas
5440 Northshore Dr
North Little Rock, Arkansas 72118
P: (501) 374-5420

Project: 25CNEB0018 25CNEB0018 Libbey Bathhouse Controls
429 Reserve St
Hot Springs, Arkansas 71901

Submittal #1.0 - Submittal 25CNEB0018

Revision	0	Submittal Manager	Madison Hollingshead (POWERS OF ARKANSAS)
Status	Open	Date Created	Aug 20, 2025
Issue Date	Aug 20, 2025	Spec Section	
Responsible Contractor		Received From	
Received Date		Submit By	
Final Due Date	Oct 21, 2025	Lead Time	
		Type	Control Drawings

Submittal Package

Approvers Joel Dickinson (POWERS OF ARKANSAS), Madison Hollingshead (POWERS OF ARKANSAS)

Ball in Court Joel Dickinson (POWERS OF ARKANSAS), Madison Hollingshead (POWERS OF ARKANSAS)

Distribution

Description

Submittal Workflow

Name	Sent Date	Due Date	Returned Date	Response	Attachments
General Information Attachments					
Andy Chase	Aug 20, 2025	Sep 3, 2025		Pending	
Matt Conrad	Aug 20, 2025	Sep 3, 2025		Pending	
Danny James	Aug 20, 2025	Sep 3, 2025		Pending	
Mark Price	Aug 20, 2025	Sep 3, 2025	Oct 7, 2025	Submitted	25CNEB0018 REHABILITATE LIBBEY BATHHOUSE SUBMITTALS.pdf (Current)
Comment	Ready to submit				
Joel Dickinson	Oct 9, 2025	Oct 21, 2025		Pending	
Madison Hollingshead	Oct 7, 2025	Oct 21, 2025		Pending	



Independent field office for
Siemens Building Technologies

PROJECT #25CNEB0018

For information contact:

JOEL DICKINSON, PM

JOEL.DICKINSON@powers-hvac.com

MARK PRICE, DESIGN

mark.price@powers-hvac.com

**Submittal
For Control Systems For:**

DIRECT DIGITAL CONTROL SYSTEM FOR HVAC

**REHABILITATE LIBBEY
BATHHOUSE**

HOT SPRINGS, AR

Mechanical Contractor:
COMFORT SYSTEMS USA

OCTOEBER 7, 2025

Order Variance		Date:	10/07/25
Job Name:	LibbeyBathhouseControls	Job Number:	25CNEB0018
		Page:	1
Product Number	Product Description	System Quantity	Order Quantity
DELL LAPTOP PER QUOTE	DELL LAPTOP PER QUOTE	1	0
NC-9005	NC-9005 Core License- 5 Device	1	0
PSH600-UPS	Enclosed UPS and interface board	1	0
PXA-ENC19	ENCLOSURE ASSY 19"	1	0
PXA-SB115V192VA	SERVICE BOX 115V, 24VAC, 192VA	1	0
SLX-9000	SLX-9000 Controller	1	0
SMA-9005-1YR-INIT	SMA-9005-1YR-INIT 18 mo SW Maintenance	1	0
TROUGH	Custom made Siemens Panel trough	1	0

TABLE OF CONTENTS

I. TECHNICAL SPECIFICATION SHEETS

II. CONTROL DRAWINGS



Dell Latitude E6540

The most secure and manageable laptop is also the most powerful Latitude. You can count on the Latitude E6540 outstanding reliability for your workforce productivity.

Most secure laptop

Data is your most valuable asset. Protect it with the most secure business laptop on the market. Latitude E6540 guards your data with industry-leading endpoint security solutions that include the most comprehensive encryption, strong authentication and leading-edge malware protection.

Protect data on any device, across external media and in the cloud with Dell Data Protection | Encryption. This comprehensive encryption solution suite enables centralized, remote management of endpoint security. Flexible encryption options range from simplified BitLocker management to the highest level of FIPS 140-2 protection commercially available for system disks with the optional DDP | Hardware Crypto Accelerator. Easily deploy encryption right out of the box with factory installation and simplify compliance with one-touch preset compliance templates.

Ensure only authorized users have access to your data with advanced authentication options including FIPS 201-certified smart card and fingerprint readers and RSA SecurID. Dell Data Protection | Security Tools enables multifactor, single sign-on and preboot authentication along with integrated management with your encryption policies. Only Dell Latitude E6540 provides a FIPS 140-2-certified TPM^{1,2} for secure credential storage. Dell ControlVault adds another layer of hardware security by isolating user passwords and credentials on a separately controlled hardware chip for stronger protection from potentially unsecured operating systems and physical hard drives.

Stop advanced malware in its tracks with Dell Data Protection | Protected Workspace, a proactive approach to malware protection that automatically detects and blocks all malicious behavior in real time — even zero-day attacks. The software is completely unobtrusive to users so employee workflow is uninterrupted.

Most manageable laptop

Easily manage your Latitude fleet with exceptional integrated management capabilities that include Intel® vPro™ technology and exclusive automated tools that plug into Microsoft System Center and Dell KACE.

Remotely manage your Latitude laptops with next-generation Intel® vPro™ technology¹ and update once and everywhere with Dell-unique Intel vPro extensions for remote BIOS management and hard drive wipe, even when systems are powered off.

Save time and eliminate guesswork with Dell automated tools and utilities for deploying, monitoring and updating systems. Collect inventory data, enforce policies, and maintain system health for the lifetime of your Dell Latitude laptops. Integration into Microsoft System Center and Dell KACE appliances offer efficient, centralized and automated management to help you save time and money.

Create a standardized environment and simplify deployments with long lifecycles, Dell ProSupport³, Dell Configuration and Deployment Services, and Dell Imaging Services.

Outstanding reliability and performance

Get more done each day with a high-performance laptop designed to work fast and reliably. From its beefy Intel® Core™ i7 quad-core processor option to its 128-bit graphics processing option and fast boot with performance solid-state hybrid drive (SSHD) or solid-state drive (SSD) options, Latitude E6540 is designed to keep pace with your busy day. Dell also offers essential accessories recommended specifically for your Latitude E6540 to improve productivity whether in the office or on the go.

Swappable batteries enable long periods of productivity away from an outlet. Desk productivity is ensured with existing Latitude E-family docking solutions combined with Dell's UltraSharp monitors, wireless keyboard and mouse.

Connect and collaborate in innovative ways with Dell WiGig wireless docking solution, Bluetooth® 4.0, integrated HD webcam and mobile broadband⁴ options.

Travel and work with confidence knowing your Latitude E6540 features a business-rugged design. Its MIL-STD-810G-tested Tri-metal™ chassis, anodized-aluminum exterior and powder-coated base combine for exceptional strength and lasting good looks. Dell Fast Response Free-fall sensor and rubber hard drive isolation help protect data from shocks and vibration. For added comfort and mobility choose Dell's Professional carrying case.

This 15.6" Latitude is small, lightweight (starting at 5.26 lbs.)⁵ in its class and offers your choice of an anti-glare HD or Full-HD display. A backlit keyboard option enables productivity in low-light environments.

Feature	Technical Specification
Processor Options	4th Generation Intel® Core™ up to i7 processors
Operating System Options	Microsoft® Windows® 7 Home Premium 32/64 bit Microsoft® Windows® 7 Professional 32/64 bit Microsoft® Windows® 7 Ultimate 32/64 bit Linux Ubuntu 12.04
Memory ^{7,9} Options	DDR3L SDRAM 1600MHz; 2 slots supporting up to 16GB
Chipset and Intel Responsiveness Technologies	Mobile Intel® QM87 Express Chipset Optional Intel® Rapid Start Technology ⁶ Optional Intel® Smart Response Technology ^{1,12} Optional Intel® Smart Connect Technology ¹³
Graphics ⁸ Options	Intel® Integrated HD Graphics 4600 Optional 128-bit Discrete Graphics with 2GB memory
Display Options	15.6" HD (1366x768) Anti-Glare LED 15.6" FHD (1920x1080) Anti-Glare LED
Storage ⁹ Options	Standard 320GB Hard Disk Drive Up to 1TB Solid State Hybrid drive 500GB FIPS Self-Encrypting Drive ¹ Solid State Drives up to 256GB Encrypted Solid State Drive Dell Fast Response Free Fall Sensor and HDD Isolation (standard on the motherboard)
Optical Drive Options	DVD-ROM, DVD+/-RW
Multimedia Options	High Quality Speakers, stereo global headset jack, integrated noise reducing array microphones Integrated HD video webcam and Dell Webcam Central software
Battery Options	6-cell (60Wh) Lithium Ion battery with ExpressCharge™ 9-cell (97Wh) Lithium Ion battery with ExpressCharge™ 9-cell (87Wh) 3 Year Limited Hardware Warranty ¹⁰ Lithium Ion battery
Power Options	65 ¹ , 90 ¹ or 130 Watt AC Adapter options 90W Auto/Air DC adapter (optional)
Connectivity	10/100/1000 Gigabit Ethernet Wireless LAN and WiMAX Options: Intel® Centrino® Advanced-N 6235 + Bluetooth® 4.0 Intel® Centrino® Ultimate-N 6300 Dell Wireless 1506 (802.11g/n 1x1) Mobile Broadband¹¹ & GPS Options: Dell Wireless™ 5570 ¹¹ HSPA+ (42Mbps) Mini Card
Ports, Slots & Chassis	Stereo global headset jack, Memory card reader, Docking connector, VGA, HDMI, USB3.0 (4) Network connector (RJ-45), SIM card connector, 1 full (WWAN) and two half (WLAN, DDPE ¹) card slots Optional ¹ SmartCard Reader/Contactless Smartcard Reader/Fingerprint Reader with 54mm Express Card Optional ¹ SmartCard Reader/Contactless Smartcard Reader/FIPS certified Fingerprint Reader with 54mm Express Card Kensington slot
Input Device Options	Dual pointing keyboard: standard or backlit, Multi-touch Touchpad
Dimensions & Weight ⁵	Width: 379.00 mm (14.92 inches) Height: 33.4mm (1.31 inches) Depth: 250.50 mm (9.86 inches) Starting weight: 5.2lbs / 2.36kg
Recommended Accessories	In the office: Dell UltraSharp monitors; MDS14 Dual monitor Stand Keyboard: Dell KM632 wireless keyboard & mouse combo; Dell KB813 Smartcard keyboard On the go: Dell Professional carrying case; Dell WM514 wireless mouse
Regulatory and Environmental Compliance	Regulatory Model: P29F, Regulatory Type: P29F001 ENERGY STAR 5.2 (Windows OS) EPEAT Registered. For specific country participation and rating, please see www.epeat.net BFR/PVC free ¹⁵
Systems Management	Intel® vPro™ Technology's advanced management features (optional, requires Intel WiFi® Link WLAN)
Warranty & Support Services	Limited Hardware Warranty ¹⁰ ; Standard 3-year On Site Service after Remote Diagnosis ¹⁴ . Optional 3 year Dell ProSupport offers premium support from expert technicians and 24x7 global availability ¹⁴ . 4 year and 5 year service and support options ³ .
Configuration Services ³	Factory Image load. BIOS Customization. Hardware Customization, Asset Tagging and Reporting.

Discover the most secure and manageable laptop at Dell.com/Latitude

1. Some items will be available post-RTS. Offering may also vary by country and by configuration. For complete details, refer to the Technical Guidebook available on dell.com.

2. Offering not available in select countries, in particular: China or Russia. WiFi enabled connection required. System must be on or in sleep mode with application running to update.

3. Availability and terms of Dell Services vary by region. For more information, visit www.dell.com/servicesdescriptions.

4. Offering available in select countries.

5. Based on preliminary Dell lab testing. Weights vary depending on configuration and manufacturing variability.

6. Intel Rapid Start requires a Solid-State Drive (SSD) or properly configured HDD + SSD

7. A 64-bit operating system is required to support 4GB or more of system memory.

8. Significant system memory may be used to support graphics, depending on system memory size and other factors

9. GB means 1 billion bytes and TB equals 1 trillion bytes; actual capacity varies with preloaded material and operating environment and will be less.

10. Limited Hardware Warranty: For copy of Ltd Hardware Warranty, write Dell USA LP, Attn: Warranties, One Dell Way, Round Rock, TX 78682 or see www.dell.com/warranty.

11. Mobile Broadband: Subject to wireless provider's broadband subscription and coverage area; additional charges apply.

12. Intel Smart Response Technology requires a 32GB SSD setup as secondary storage device.

13. Intel Smart Connect requires an SSD or mSATA drive and either Intel WLAN or DW1550 WLAN. System must be on or in sleep mode with application running to update.

14. Onsite Service after Remote Diagnosis: Remote Diagnosis is determination by online/phone technician of cause of issue; may involve customer access to inside of system and multiple or extended sessions. If issue is covered by Limited Hardware Warranty (www.dell.com/warranty) and not resolved remotely, technician and/or part will be dispatched, usually within 1 business day following completion of Remote Diagnosis. Availability varies. Other conditions apply.

15. Dell Latitude laptops are brominated flame retardant free (BFR-free) and polyvinyl chloride free (PVC-free); meeting the definition of BFR-/PVC-free as set forth in the INEMI Position Statement on the 'Definition of Low-Halogen Electronics (BFR-/CFR-/PVC-free)'. Plastic parts contain less than 1,000 ppm (0.1%) of bromine (if the Br source is from BFRs) and less than 1,000 ppm (0.1%) of chlorine (if the Cl source is from CFRs or PVC or PVC copolymers). All printed circuit board (PCB) and substrate laminates contain bromine/chlorine total less than 1,500 ppm (0.15%) with a maximum chlorine of 900 ppm (0.09%) and maximum bromine being 900 ppm (0.09%).

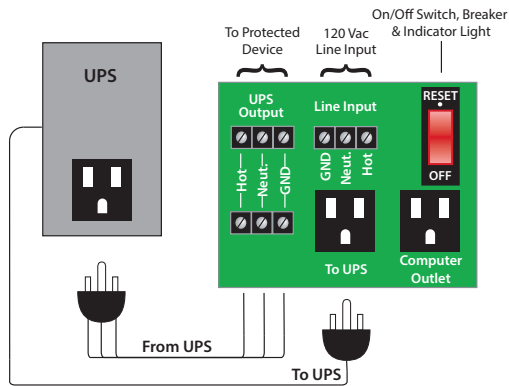




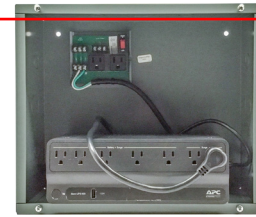
UNINTERRUPTIBLE POWER SUPPLY KIT

PSH600-UPS

Kit Consisting of Enclosed Power Control Center Model PSH2RB10 (10 Amp Switch / Circuit Breaker, Two (2) 120 Vac Outlets, Terminals, 120 Vac Input) with a 600 VA UPS. (No Status Contacts)



Shown
Without
Cover



Shown
With
Cover



SPECIFICATIONS

UPS

UPS: 600VA

Backup Time: 2.5 Min. @ Full 600 VA Load
10.2 Min. @ 1/2 Load

Input: 120 Vac, 12 Amp

Output: 120 Vac, 4.6 Amp

Max Load: 330 Watt

Frequency: 50/60 Hz

Temperature Rating of UPS: 32 to 104° F

UPS Transfer Time: 6ms

Approvals: UL Listed, UL1778

Weight: 8.4 lbs.

PSH2RB10

Operating Temperature: -30 to 140° F

Humidity Range: 5 to 95% (noncondensing)

Main Breaker ON/OFF: Switch / Breaker (10 Amp)

Approvals: UL Listed, UL916, C-UL, CE, RoHS

Dimensions: 12.000" x 14.000" x 6.000"
Metal Housing with Screw Cover

Weight: 12 lbs.

Shipping Weight:

23.3 lbs.

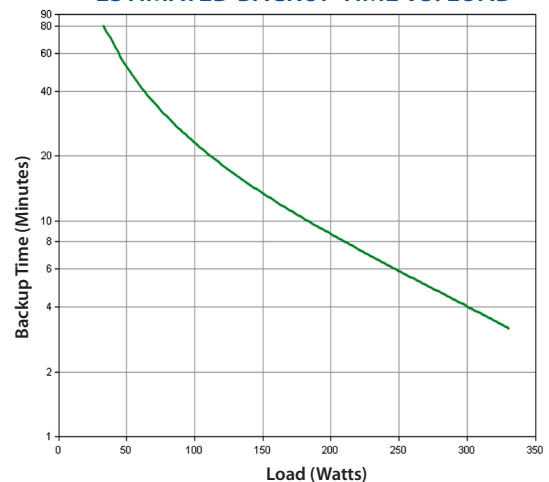
Product Weight:

20.5 lbs.

Notes:

- To order without UPS, so that any other commercial UPS with appropriate ratings and within housing space limitations may be used, see model PSH2RB10.
- To order interface board for replacement or for separate use, order model PSM2RB10.
- Average battery life: 3-5 years depending on the number of discharge cycles and environmental temperature

ESTIMATED BACKUP TIME VS. LOAD



PX Series Enclosures and Accessories



Figure 1. New PX Series Enclosures.

Enclosures

Description

PX series enclosures house both electronic and pneumatic components. The enclosures include a perforated backplane for mounting of the PXC series controllers, Power Modular Equipment Controllers, Point Expansion Modules or other electronic or pneumatic components.

Features

- Three sizes available to match installation needs.
- Sturdy construction accommodates secure conduit fittings and protects components against incidental contact and falling dirt.
- Multiple knockouts along top, sides and bottom.
- Perforated backplane extends wall-to-wall for mounting of additional equipment.
- DIN rail(s) for mounting of components.
- Spacious interior for easy routing and termination of wiring.
- Hinged door, key lock, wire tie bars, PXA series service boxes
- UL Smoke Control Listing is available on the 19" and 34" models.
- UL 916 rating is available on the 18" enclosure
- 18" enclosure pull-box type, utility cabinet for low cost installations (see Figure 2).



Figure 2. Complete 18" Enclosure Assembly.

Accessories

Service Boxes

Description

PXA series service boxes include all of the parts necessary for installation inside a 19 inch or 34 inch PX Series Enclosure Assemblies. The 192VA service box can also be used within existing MEC enclosures. The 384VA service box may only be installed in the 34 inch PX Series Enclosure.



Figure 3. SB115V384VA service box .

Features

- Four service boxes are available to step-down line voltage to 24Vac for use by electronic components.
 - Service boxes are sized for:
 - 115V to 24V at 192VA
 - 115V to 24V at 384VA
 - 230V to 24V at 192VA
 - 230V to 24V at 384VA
 - 384VA models mount inside the 34" enclosures.
 - 192VA models mount inside the 19" and 34" enclosures.
 - Two sidewall kits cover exposed circuits for use in other NEMA Type 1 enclosures such as motor control cabinets.
 - Each service box includes an on/off circuit breaker for the transformer, transient protection on both primary and secondary sides, two NEC Class 1 power limited terminations for components inside the enclosure and one NEC Class 2 termination for external components such as TX-I/O Bus expansion or actuators.
 - The 115V models provide an un-switched duplex outlet to power peripheral devices such as modems, trunk interfaces and Portable Operator's Terminals.
- UL864 Smoke Control rated when used in PXA Series Enclosure 19" or 34" or within existing MEC enclosures.

DIN Replacement Kit (PXA-DIN16KIT)

The DIN Replacement Kit can be used when additional 16" DIN rail is required.

This kit contains:

- Four 16" (406 mm) DIN rails for use when extra rails are needed
- Twelve Screws

Wire Tie Bar Kit (PXA-TIEBARKIT)

The Wire Tie Bar kit can be used when addition tie bars are needed to secure wiring within the enclosure.

This kit contains:

- Four 4.5" (114 mm) tie bars
- Four 9.5" (241 mm) tie bars
- Screws and cable ties

USB Modem Kit (PXA-USBMODEMKIT)

USB Modem kit contains everything needed for dial up modem connection using the USB Host port of the PXC Modular controller.

This kit contains:

- Sportsters Modem 56k BPS Dialup
- USB to RS232 Adapter
- Surge Suppressor Analog Telephone Line
- DB25M/F Right-Angle Adapter
- IBM 6' PC Cable DB9F to DB25M

USB to RS232 Adapter (PXA-USBADAPTER)

USB to RS232 Adapter converts USB Host signals (Type A male connector) to RS232 signals (DB9 male connector).

This adapter may be used for connection to a RS232 printer. It is part of the PXA-USBMODEMKIT.

Specifications

Specifications	PXA-ENC18	PXA-ENC19	PXA-ENC34
UL Listed NEMA Type 1 Enclosure	X	X	X
Pull-box style	X		
Hinged Door with lock		X	X
Ambient Operating Environment			
+32°F to +120°F (0°C to +49°C) 93% RH (Non-condensing)	X	X	X
Agency Listing			
UL864 UUKL		X	X
ULC-C100 UUKL7		X	X
UL 916 PAZX		X	X
UL 508A	X		
Agency Compliance			
FCC Compliance	X	X	X
Australian EMC Framework	X	X	X
European EMC Directive (CE)	X	X	X
European Low Voltage Directive (LVD)	X	X	X
Dimensions	18"H × 14"W × 6"D (457.2 mm × 355.6 mm × 152.4 mm)	19"H × 22"W × 5.75"D (482.6 mm × 558.8 mm × 146.05 mm)	34"H × 22"W × 5.75"D (863.6 mm × 558.8 mm × 146.05 mm)
Mounting Surface			
Building Wall	X	X	X
Structural Member	X	X	X
Input Power Requirement			
Input Power Requirement	115V Service Boxes	230V Service Boxes	
	115Vac +/- 15% @ 60 Hz +/- 5%, from 15 or 20A circuit breaker	230Vac +/- 15% @ 50/60 Hz +/- 5%, from 10A circuit breaker	
Current	2A for 192VA, 4A for 384VA, 2A for 115Vac Service Outlets	1A for 192VA, 2A for 384VA	

Ordering Information

Enclosure Range

Description	Product Number
18" PX Series Enclosure	PXA-ENC18
19" PX Series Enclosure	PXA-ENC19
34" PX Series Enclosure	PXA-ENC34

Accessories

Service Box 115V, 24 Vac, 192 VA	PXA-SB115V192VA
Service Box 230V, 24 Vac, 192 VA	PXA-SB230V192VA
Service Box 115V, 24 Vac, 384 VA	PXA-SB115V384VA
Service Box 230V, 24 Vac, 384 VA	PXA-SB230V384VA
Service Box Sidewall Kit, 192 VA	PXA-SW192VA
Service Box Sidewall Kit, 384 VA	PXA-SW384VA
Replacement door for 19" PX series enclosure	PXA-ENC19.REPL.DR
Replacement door for 34" PX series enclosure	PXA-ENC34.REPL.DR

Information in this document is based on specifications believed correct at the time of publication. The right is reserved to make changes as design improvements are introduced. APOGEE and Insight are registered trademarks of Siemens Building Technologies, Inc. Other product or company names mentioned herein may be the trademarks of their respective owners. © 2007 Siemens Building Technologies, Inc.

PX Series Service Box Assemblies

Product Description

The PX Series Service Box Assemblies transform 115 Vac or 230 Vac to 24 Vac that power HVAC control components. The 192 VA service boxes mount directly inside a 19 inch or 34 inch PX Series Enclosure or as a replacement in older MEC Enclosures. The 384 VA service boxes provide additional power for larger systems and mount only in the 34 inch PX Series Enclosure. The service boxes are Smoke Control and Energy Management listed when installed per this instruction.

The service box assemblies consist of:

- Chassis for mounting inside enclosure
- Transformer for converting either 115 Vac or 230 Vac to 24 Vac sized for either 192 VA or 384 VA
- ON/OFF Circuit breaker for transformer
- Two Class 1 power limited 24 Vac outputs including one terminal for earth ground for use inside enclosure only
- One Class 2 output with circuit breaker to distribute up to 96 VA for use outside the enclosure
- Duplex Service Outlet (115 Vac models only)
- Wire cover for field connections

Product Numbers

PXA-SB115V192VA	Service Box 115V, 24 Vac, 50/60 Hz, 192 VA
PXA-SB115V384VA	Service Box 115V, 24 Vac, 50/60 Hz, 384 VA
PXA-SB230V192VA	Service Box 230V, 24 Vac, 50/60 Hz, 192 VA
PXA-SB230V384VA	Service Box 230V, 24 Vac, 50/60 Hz, 384 VA

Warning/Caution Notations

WARNING:		Personal injury/loss of life may occur if you do not perform a procedure as specified.
-----------------	---	--

CAUTION:



Equipment damage or loss of data may occur if you do not perform a procedure as specified.

Required Tools and Materials

- Medium Phillips screwdriver
- 11/32-inch nut driver
- 7/16-inch nut driver

Expected Installation Time

15 Minutes

Prerequisites

- Enclosure(s) installed.
- AC power brought to enclosure(s) and power turned OFF at the circuit breaker.
- If using optional TX-I/O Bus (not available on all hardware), it is pulled between enclosures using single 2 twisted pair (TP) or two 1 TP wire tied together. See TX-I/O Bus steps for maximum length by wire gauge.

Smoke Control Application Requirements

UL864 and NFPA92A compliant installations require the 115V or 230V PX Series Service Box Assembly installed inside the 19 inch or 34 inch PX Series Enclosure Assembly (PXA-ENC19 or PXA-ENC34). For more information, see *PX Series Enclosure Assemblies Installation Instructions* (553-130).

For smoke control installations, the 24 Vac Actuator Output is a supplementary circuit intended for general HVAC equipment only. It can not power smoke control devices.

Optional: See the Field Purchasing Guide for ordering the relay required for Smoke Control listing if a TX-I/O Bus is powered from multiple service boxes. (TX-I/O Bus not available on all hardware.)

RIB2401C UL864 Listed Relay, SPDT 24 Vac 10A

Energy Management Applications

For energy management installations the service box may be installed in any NEMA Type 1 enclosure if the optional side wall kit is installed (PXA-SW192VA or PXA-SW384VA). For more information, see *PX Series Service Box Sidewall Kit Installation Instructions* (553-135).

Optional: for TX-I/O Bus powered from multiple service boxes, use UL Listed relay RIB2401C. For more information, see manufacturer installation instructions.

Instructions



WARNING:

This installation should only be done by a qualified electrician.



WARNING:

Turn off AC power to the MEC enclosure at a circuit breaker panel.

1. Be sure the AC power to the enclosure is OFF at the circuit breaker panel.
2. Place the service box in the right side of the enclosure. See Figure 1 and Figure 3.
3. Fasten the service box inside the enclosure with the three locknuts (two on top and one on the bottom).
4. Connect the green/yellow wire at the marked earth ground lug on the enclosure.



CAUTION:

The green wire grounds the transformer secondary neutral. This is required whenever the primary side is greater than 150 Vac, required by local code or if used to power TX-I/O Modules.

5. If required connect the green wire at the marked earth ground lug on the enclosure. Otherwise tape back the green wire terminal.
6. Do one of the following:
 - **115 Vac models:** Connect the AC hot (black wire) and AC neutral (white wire) with wire nuts.
 - **230 Vac models:** Screw the AC hot (black wire) and AC neutral (white wire) to the terminal block.

7. Fasten wire cover to the top of the service box.

For hardware without a TX-I/O Bus or TX-I/O Bus not extending between enclosures, skip to step 8, otherwise choose Option 1 or Option 2 below:

Option 1: If powering both enclosures from a single service box, continue with the following:

- a. Connect a twisted pair of TX-I/O Bus cable from the service box 24 Vac (~) and (⊥) terminals of the Class 2 output connector to the corresponding pins of TXS1.12F4, TXB1.P1, or TXS1.EF4 in the other enclosure.
- b. Connect the second twisted pair between the CS and CD terminals of the TXS1.12F4, TXB1.P1, or TXS1.EF4 in each enclosure.

Option 2: If using multiple service boxes to power a TX-I/O Bus, continue with the following:



CAUTION:

DO NOT connect the 24 Vac (~) terminals between the multiple service boxes.

- a. Do the steps for a single service box except do not connect the 24 Vac (~) wire and CS wire.
- b. Screw relay onto the enclosure backplane.
- c. Connect the relay coil 24 Vac terminal to the service box 24 Vac (~) terminal.
- d. Connect the relay coil neutral terminal to the service box neutral (⊥) terminal.
- e. Connect the CS wire entering and/or leaving enclosure to the relay contact common terminal.
- f. Connect the CS wire inside enclosure to the relay contact normally open terminal (NO).
8. If present, fasten wires from the component power connectors to connectors on the side of the service box. See Figure 2 and Figure 4.
9. Restore power to the enclosure at the circuit breaker panel.

The installation is now complete.

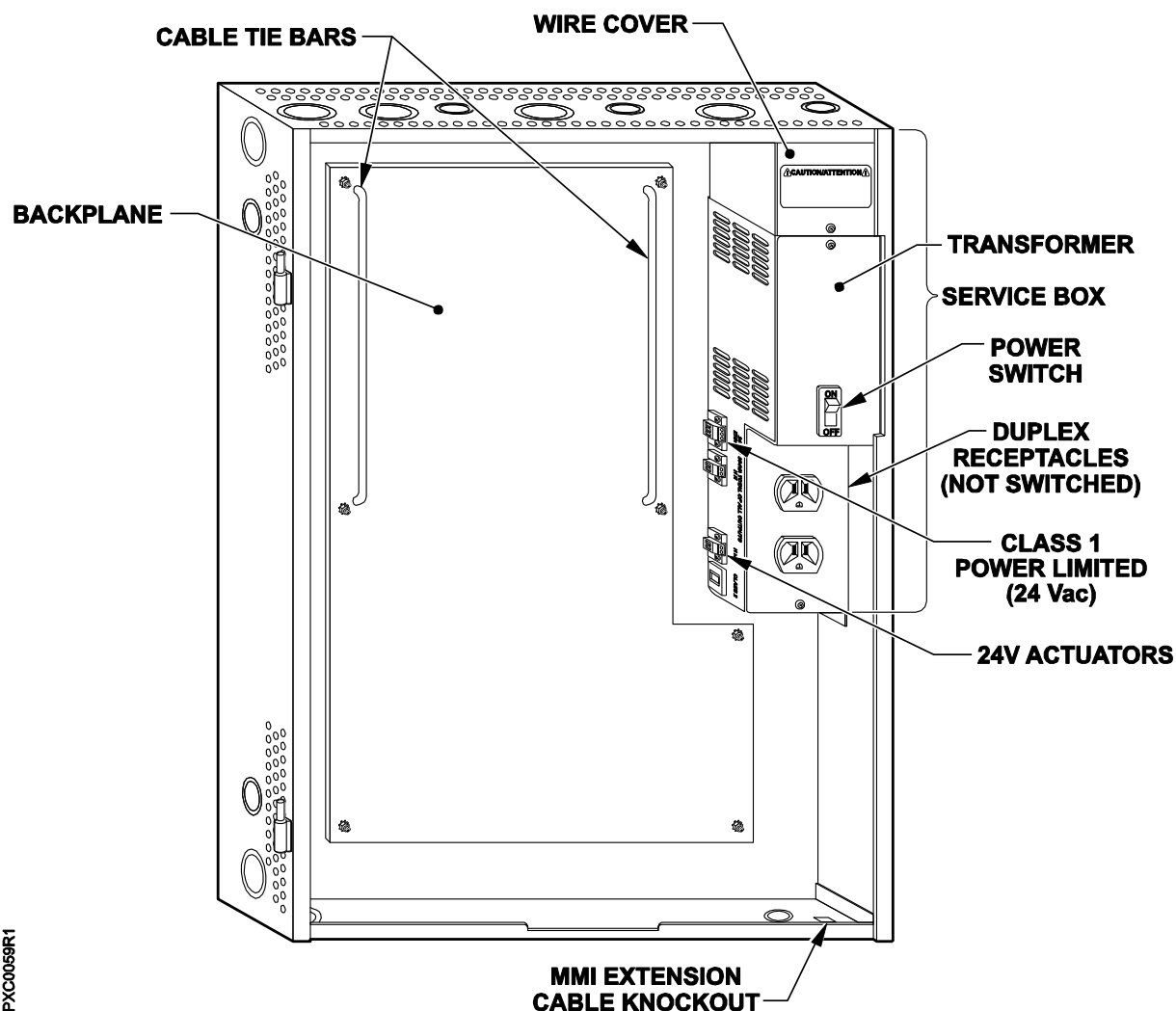


Figure 1. Placement of the 384 VA Service Box in a 34 inch PX Series Enclosure.

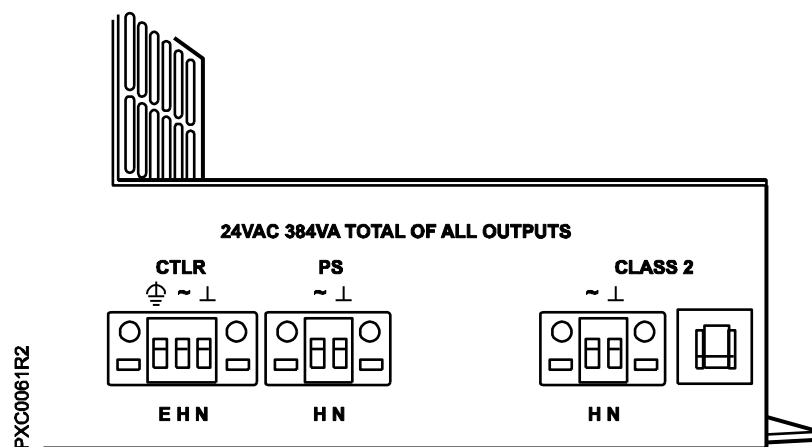


Figure 2. 384 VA Service Box Connections¹.

1. 384VA model connectors will fit one 12 gauge and one 14 gauge wire or three 14 gauge or smaller wires.

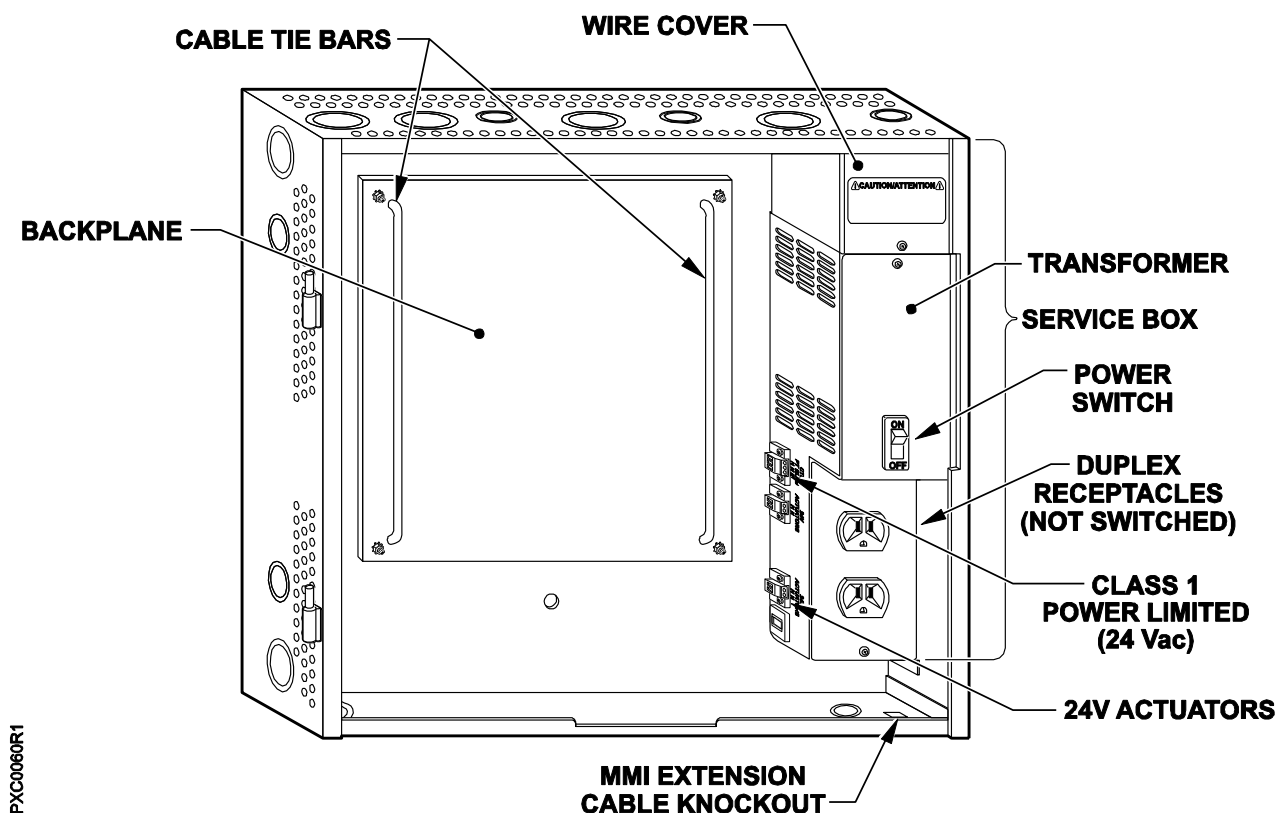


Figure 3. Placement of the 192 VA Service Box in a 19 inch PX Series Enclosure.

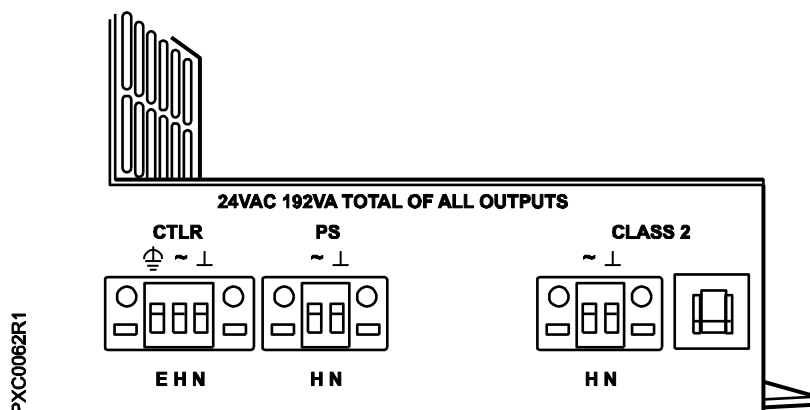


Figure 4. 192 VA Service Box Connections².

2. 192VA model connectors will fit one 12 gauge wire, one 14 and one 16 gauge wire or three 16 gauge or smaller wires.

Information in this publication is based on current specifications. The company reserves the right to make changes in specifications and models as design improvements are introduced. Other product or company names mentioned herein may be the trademarks of their respective owners. © 2009 Siemens Building Technologies, Inc.

SLX 9000 Data Sheet

1 | Title Page



SLX 9000 is the evolution of the SLX controller platform, innovating on the SLX 8000's global design and extending its ability to flex and scale with current and future needs of smart building/smart industrial process deployments. The SLX 9000 controller operates with Niagara 4.1.3, the latest version of the Niagara Framework®.

- Runs Niagara 4.13 and later
- Quad Core processor
- Global Capacity Licensing and Upgrade Capability
- Double amount of RAM and storage
- Faster start up and station load time
- Responsive UI



2 | Features

With improved performance, the SLX 9000 introduces onboard storage and microSD backup, eliminating the need for a backup port. Additionally, this new device provides the following features:

Expandability with Modular Hardware Design

The SLX 9000 Controller and optional modules are designed for easy mounting on a 35mm-wide DIN rail.

Up to four optional modules directly attach to the controller for additional communications ports, including types for LonWorks®, IO R modules, RS232 and RS485 networks.

The modular design of the SLX 9000 controller makes it easy to install, integrate and deploy. Tool-less installation with expansion capability reduces installation complexity and improves flexibility. Systems integrators can focus on engineering solutions, not assembling components.

Connectivity Profiles with Encryption

The SLX 9000 is available in both wired and wireless models, supporting open protocol communication through wired or wireless modes. By default, the SLX 9000 is equipped with a wireless interface featuring a configurable radio that can be set as an access point or client and a 1x1 antenna supporting a/b/g/n/ac Wi-Fi standards. The wired model, available upon request, uses an Ethernet connection for data transfer. The wireless model ensures secure data transmission over Wi-Fi, with optional WPAPSK or WPA2PSK encryption for enhanced security.

3 | Functions

3.1 | Product Definition

The SLX® 9000 is a compact, embedded IoT (Internet of Things) controller and server platform for connecting multiple and diverse devices and sub-systems. With internet connectivity and web-serving capability, the SLX 9000 controller provides integrated control, supervision, data logging, alarming, scheduling and network management. It streams data and rich graphical displays to a standard web browser via an Ethernet or wireless LAN, as well as remotely over the internet.

The licensing model for the SLX 9000 controller is simplified and features standard drivers, along with optional IO and field bus expansion modules for ultimate flexibility and expandability. The SLX 9000 controller operates with Niagara 4, the latest version of the Niagara Framework®, for optimum performance. Released in tandem, the new SLX 9000 controller supports Niagara 4.13 and later versions; the SLX 9000 will not run any previous releases of N4.

In larger facilities, multi-building applications and large-scale control system integrations, Niagara 4 Supervisors can be used with SLX controllers to aggregate information, including alarms, and historical and real-time data, to create a single, unified application.

4 | Technical data

4.1 | Hardware Specifications

Hardware Aspect	Specification
Mounting	DIN rail-mount
Power	Requires 24VAC rated at 24VA minimum or 24VDC rated at 1A (24W) minimum
Processor	Quad Core 1.6Ghz NXP iMX8M+
Operating System	Ubuntu Core 20 Linux
Memory	2GB LPDDR4 SDRAM 4Mbit FRAM
Storage	8GB (eMMC) 8GB removable microSD (optional)

SLX 9000 Hardware Technical Specifications

4.2 | Conformance

Standards, directives and approvals	
Product standards	EN 60730-1 and EN 62368-1; CCC; SRRC
EU conformity (CE)	CE EN 61326-1; 1999/5/EC R&TTE Directive
Electromagnetic compatibility (EMC)	RCM; FCC Part 15 Subpart B, Class B; FCC Part 15 Subpart C;
UL/cUL approbation (US / Canada)	UL 916
CSA certification	C-UL listed to Canadian Standards Association (CSA) C22.2 No. 205-M1983 “Signal Equipment”
Environmental compatibility	RoHS
Encryption	FIPS 140-2

4.3 | Environmental compatibility

CAUTION! Ambient conditions must be within these ranges:

Ambient Conditions	
Operating Temperature	-20°C to 60°C (-4°F to 140°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Relative Humidity Range	5% to 95% non-condensing.
Pollution Degree	2
Shipping and vibration:	ASTM D4169, Assurance Level II
MTTF	10 years+
Supply (mains) voltage allowable voltage fluctuation	+/- 10%

4.4 | Connectivity Profiles

- Native Wi-Fi capability (WAP or Client) A, B, G or N networks
- Two 10/100/1000 Mb Ethernet ports
- Two isolated RS485 ports
- Optional LON FTT10, RS485 & RS232 expansion

	SLX 9000 non-wireless	SLX 9000 wireless model
Accessories	(2) electrically isolated RS-485 ports 485 with selectable bias and termination.	(2) electrically isolated RS-485 ports 485 with selectable bias and termination.
	Optional LON FTT10, RS485 & RS232 expansion.	Optional LON FTT10, RS485 & RS232 expansion
Direct Data Access	1 USB type C (Serial Shell)	1 USB type C (Serial Shell)
Networking	(2)10/100/1000 Ethernet Ports	(2)10/100/1000 Ethernet Ports
		Radio Configuration: Configurable as Off, WAP, or Client Wi-Fi Standards: Dual-band 802.11ac (Wi-Fi 5), 802.11ax (Wi-Fi 6) Antenna: 1x1 802.11 a/b/g/n/ac Security: WPA-PSK, WPA2-PSK NOTICE! For wireless model only.

SLX 9000 Connectivity Table

4.5 | Encryption

- All communications encrypted by default.
- Meets the FIPS 140-2 federal standard.
- Supports TLS 1.3.
- Sensitive data is encrypted on disk at rest.
- Optional WPAPSK/WPA2PSK encryption.

5 | Product documentation

Title	Document ID:
SLX 9000 Mounting and Wiring Installation Guide	A6V15372358_en_a
SLX 9000 User Guide	A6V15372363_en_a

6 | Ordering Information for SLX 9000 and related accessories

Orderable Part Number	Product Description	SSN (Siemens serial number for product)
→ SLX-9000	Individual SLX 9000 Controller, microSD card, two 10/100/1000 Mb Ethernet ports, two isolated RS-485 serial ports. Requires NC-9XXX core software and SMA-9XXX software maintenance.	S55374-C310
SLX-9000-Demo	SLX-9000 controller, with Demo 500 device license microSD card, two 10/100/1000 Mb Ethernet ports, two RS-485 serial port and all available Tridium drivers. License will renew annually with the receipt of the annual support fee. Requires Niagara 4 release 4.13 or higher. Hardware Accessories are not included. See Hardware Options for Wall Power supply and expansion modules.	S55374-C312
→ NC-9005	SLX 9000 5 Device Core Software Only & 250 Points. Includes standard open drivers. Supports up to 5 devices or 250 points. Requires Niagara 4.13 or higher.	P55374-C212
NC-9010	SLX 9000 10 Device Core Software Only & 500 Points. Includes standard open drivers. Supports up to 10 devices or 500 points. Requires Niagara 4.13 or higher.	P55374-C213
NC-9025	SLX 9000 25 Device Core Software Only & 1250 Points. Includes standard open drivers. Supports up to 25 devices or 1250 points. Requires Niagara 4.13 or higher.	P55374-C214
NC-9100	SLX 9000 100 Device Core Software Only & 5000 Points. Includes standard open drivers. Supports up to 100 devices or 5000	P55374-C215

	points. Requires Niagara 4.13 or higher.	
NC-9200	SLX 9000 200 Device Core Software Only & 10000 Points. Includes standard open drivers. Supports up to 200 devices or 10000 points. Requires Niagara 4.13 or higher.	P55374-C216
NC-9XXX-DEMO	SLX 9000 Demo with 500 Device Core. Includes all available Tridium drivers. Requires Niagara 4.13 or higher. License will renew annually with the receipt of the annual support fee.	P55374-C217
SMA-9005-1YR	SLX 9005 - 1 year maintenance	P55374-C218
→ SMA-9005-1YR-INIT	SLX 9005 - Initial 18-month maintenance must be purchased in conjunction with initial Core software. Optional 3- or 5-year maintenance may be substituted.	P55374-C219
SMA-9005-3YR	SLX 9005 - 3 year maintenance	P55374-C220
SMA-9005-5YR	SLX 9005 - 5 year maintenance	P55374-C221
SMA-9010-1YR	SLX 9010 - 1 year maintenance	P55374-C222
SMA-9010-1YR-INIT	SLX 9010 - Initial 18-month maintenance must be purchased in conjunction with initial Core software. Optional 3- or 5-year maintenance may be substituted.	P55374-C223
SMA-9010-3YR	SLX 9010 - 3 year maintenance	P55374-C224
SMA-9010-5YR	SLX 9010 - 5 year maintenance	P55374-C225
SMA-9025-1YR	SLX 9025 - 1 year maintenance	P55374-C226
SMA-9025-1YR-INIT	SLX 9025 - Initial 18-month maintenance must be purchased in conjunction with initial Core software. Optional 3- or 5-year maintenance may be substituted.	P55374-C227
SMA-9025-3YR	SLX 9025 - 3 year maintenance	P55374-C228
SMA-9025-5YR	SLX 9025 - 5 year maintenance	P55374-C229
SMA-9100-1YR	SLX 9100 - 1 year maintenance	P55374-C230

SMA-9100-1YR-INIT	SLX 9100 - Initial 18-month maintenance must be purchased in conjunction with initial Core software. Optional 3- or 5-year maintenance may be substituted.	P55374-C231
SMA-9100-3YR	SLX 9100 - 3 year maintenance	P55374-C232
SMA-9100-5YR	SLX 9100 - 5 year maintenance	P55374-C233
SMA-9200-1YR	SLX 9200 - 1 year maintenance	P55374-C234
SMA-9200-1YR-INIT	SLX 9200 - Initial 18-month maintenance must be purchased in conjunction with initial Core software. Optional 3- or 5-year maintenance may be substituted.	P55374-C235
SMA-9200-3YR	SLX 9200 - 3 year maintenance	P55374-C236
SMA-9200-5YR	SLX 9200 - 5 year maintenance	P55374-C237
DEVICE-10	Up to 10 devices/500 point upgrade (can be purchased during initial licensing)	P55374-C111
DEVICE-25	Up to 25 devices/1,250 point upgrade (can be purchased during initial licensing)	P55374-C112
DEVICE-50	Up to 50 devices/2,500 point upgrade (can be purchased during initial licensing)	P55374-C113
IO-R-16	Optional 16 point IO RS485 module designed for use with the SLX 8000 & 9000. Includes 8 Universal Inputs, 4 Form A Relay Outputs and 4 0-10 VDC Analog Outputs	S55374-C265
IO-R-34	Optional 34 point IO RS485 module designed for use with the SLX 8000 & 9000. Includes 16 Universal Inputs, 10 Form A Relay Outputs and 8 0-10 VDC Analog Outputs	S55374-C266
NPB-8000-2X-485	SLX 8000 & 9000 controllers — add on dual port RS-485 module	S55374-C242
NPB-8000-LON	SLX 8000 & 9000 controllers — add on single port LON FTT10A module	S55374-C241

NPB-8000-232	SLX 8000 & 9000 controllers — add on single port RS-232 module	S55374-C243
WPM-8000	Universal power supply for SLX 8000 & 9000 controllers	S55841-T102

SLX 9000 ordering information

6.1 | Software Ordering and Maintenance Information

Every SLX 9000 is available with a Niagara 4.13 or higher software license and Tridium's standard drivers. Purchase of a software maintenance agreement (SMA) is required with initial SLX 9000 licensing. The initial SMA is for 18 months, with extended agreements of 3 years and 5 years available.

NOTICE! If a Software Maintenance Agreement is not in effect for any period, the price of maintenance for the next period for which it is purchased will be priced at a cost equal to the maintenance fee for the period(s) for which maintenance was not purchased, up to a maximum of 5 years, plus the maintenance fee for the next year.

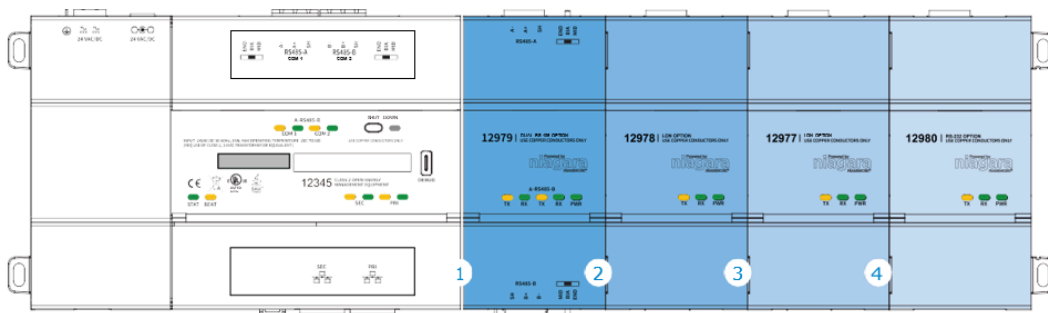
NOTICE! Please use the Orderable Part Number for ordering through Customer Service or SAP. Include SSN number to help identify the product.

6.2 | Expansion Module and IO Configurations

Expandability is dependent on the type of expansion module used.

MAXIMUM EXPANSION (MODULES SUPPORTED)	MAXIMUM IO (MODULES SUPPORTED)*	MAXIMUM NIAGARA ENTERPRISE SECURITY (MODULES SUPPORTED)*
NPB-8000-LON (4)	IO-R-16 (16)*	T-SEC-R2R*
NPB-8000-232 (4)	IO-R-34 (8)*	T-SEC-RIO*
NPB-8000-2X-485 (2)		

*16 total each or combined



Max IO Modules

Maximum Combinations

		232 or LON	232 or LON	EXPANSION 4
	232 or LON	232 or LON	232 or LON	EXPANSION 3
485 485	485 485	232 or LON	232 or LON	EXPANSION 2
485 485	485 485	485 485	232 or LON	EXPANSION 1
Baseboard:				485 485

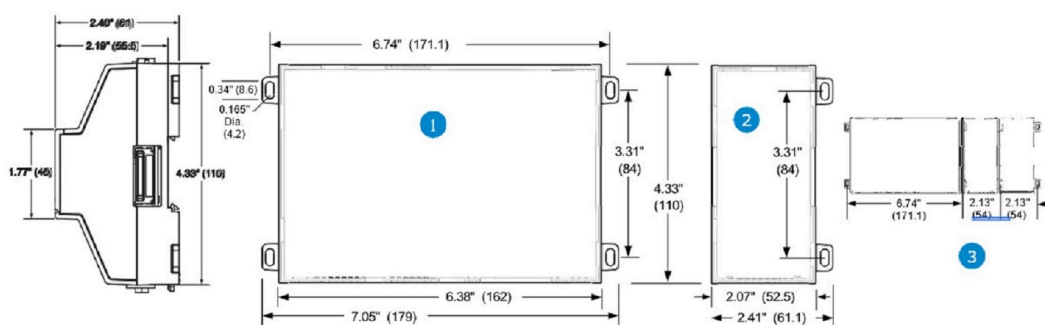
Expansion modules SLX 9000



7 | Dimensions

7.1 | SLX® 9000 CONTROLLER MOUNTING & DIMENSIONS

1. For the SLX 9000 controller, allow at least 1.5" (38mm) clearance around all sides and minimum 3" (76mm) at bottom for optional Wi-Fi antenna.
2. Regarding expansion modules, up to four (4) may be used. See "Expansion Module and IO Configurations".
3. Distances between center of tabs from one unit to another unit.



SLX 9000 mounting and dimensions

Compatible with (DIN43880) enclosures

Suitable for mounting to a panel or to an EN50022 standard 35mm rail

Vizio stencils available upon request

LIBBEY BATHHOUSE CONTROLS

HOT SPRINGS, AR

ENGINEERING FIRM:
IMEG CORP

MECHANICAL CONTRACTOR:
COMFORT SYSTEMS USA



DWG	DESCRIPTION
	GENERAL
000	Cover Sheet
LEG	Riser Diagram
	Legend & Abbreviations
	CONTROL DRAWINGS
001	AHU SYSTEM
003	JACE PANEL

REVISION HISTORY				SIEMENS POWERS OF ARKANSAS Controls	5440 Northshore DR N Little Rock, AR 72118 Phone: Fax:	LibbeyBathhouseControls Hot Springs, AR					25CNEB0018	
1	10/7/2025	MAP	SUMBITTAL									
						ENGINEER MAP	DRAFTER MAP	CHECKED BY JAD	INITIAL RELEASE 09/28/25	LAST EDIT DATE 10/07/25		
						Cvrsheet						

CONTROL SYMBOL	CONTROL SYMBOL DESCRIPTION
AC	AIR COMPRESSOR
AD	AIR DRYER
ADXR	ACTUATOR DXR
AE	ACTUATOR ELECTRIC
AEM	APOGEE ETHERNET MICROSERVER
AF	AIR FILTER
AFS	AIR FLOW STATION
AOP	ANALOG OUTPUT, PNEUMATIC
AP	ACTUATOR PNEUMATIC
APS	AUX. POWER SUPPLY
AT	AUTOMATIC TRAP
ATD	AUTO TANK DRAIN
ATEC	ACTUATOR TEC
AZM	AUTOZERO MODULE
BCU	BUS COUPLING UNIT
BELL	BELL
BIM	BUS INTERFACE MODULE
BOIL	BOILER
BRT	BRIGHTNESS
BRTT	BRIGHTNESS AND TEMPERATURE
BTN	BUTTON
CBL	CABLES
CKV	CHECK VALVE
CM	CONSTRUCTION MATERIALS
CP	COMPONENT PANEL
CPU	CENTRAL PROCESSING UNIT
CRT	CATHODE RAY TUBE
CS	CURRENT SWITCH
CT	CURRENT TRANSDUCER
CTTE	CO2 TEMP TRANSMITTER ELEC
CVC	CONSTANT VOLUME CONTROLLER
D	DAMPER
DDC	DUAL DUCT CONTROLLER
DEM	DEMAND ENERGY MONITOR
DP	DEW POINT TRANSMITTER
DPR	DIFFERENTIAL PRESS. REGULATOR
DPS	DIFFERENTIAL PRESSURE SWITCH
DPTE	DIFF. PRESS. TRANSMITTER ELEC.
DPTP	DIFFERENTIAL PRESSURE PNEUMATIC
DPU	DIGITAL POINT UNIT
DXR	TERMINAL EQUIPMENT CONTROLLER
EC	ENTHALPY COMPARATOR
EP	ELECTRO-PNEUMATIC VALVE
ES	END SWITCH
ET	ENTHALPY TRANSMITTER
EXP	EXPANSION PANEL
FAN	FAN
FHC	FUME HOOD CONTROLLER
FM	FLOW MTR. (FLOW METER STATION)
FMS	FIRE MGMT. SYSTEM
FS	FLOW SWITCH
FTP	FLOW TRANSMITTER PNEU.
G	GAUGE
GD	GAS DETECTOR
H	HYGROSTATS
HE	HUMIDIFIER ELECTRIC

CONTROL SYMBOL	CONTROL SYMBOL DESCRIPTION
HHC	HAND-HELD OPERATOR'S TERMINAL
HL	HIGH LIMIT
HMI	GAMMA TOUCH PANEL
HOA	HAND-OFF-AUTO SWITCH
HORN	HORN
HPC	HEAT PUMP CONTROLLER
HTD	HIGH TEMPERATURE DETECTOR
HTE	HUMIDITY TRANSMITTER ELECTRIC
HTP	HUMIDITY TRANSMITTER PNEUMATIC
INT	INTERCOM
KWM	ELECTRIC KILOWATT METER
LA	LIGHT ACTUATOR
LC	LIMIT CONTROLLER (LIMITEM)
LLS	LIQUID LEVEL SWITCH
LLT	LIQUID LEVEL TRANS.
LPR	POWER SUPPLY 24VAC/24VDC
LTDE	LOW TEMP. DETECTOR ELECTRIC
LTDP	LOW TEMP. DETECTOR PNEUMATIC
LUI	LOCAL USER INTERFACE
MBC	MODULAR BUILDING CONTROLLER
MDM	MODEM
ME	ELECTRONIC ACTUATOR
MEC	MODULAR EQUIPMENT CONTROLLER
MG	MAGNEHELIC GAUGE
MPU	MULTI-POINT UNIT
MS	MOTOR STARTER
OCC	OCCUPANCY
OCCB	OCCUPANCY AND BRIGHTNESS
OBS	OBSOLETE
ODP	OPERATOR DATA PANEL
P	PUMP
PA	PULSE ACCUMULATOR
PCT	PROGRAMMABLE CLOCK TIMER
PE	PRESSURE ELECTRIC SWITCH
PL	PILOT LIGHT
PM	POWER MONITOR
PNL	PANEL
PPM	POINT PICKUP MODULE
PRC	PRESSURE REG. CONTROLLER
PRV	PRESSURE REDUCING VALVE
PS	POSITIONING SWITCH
PSE	POSITION SENSOR ELECTRIC
PST	PULL STATION
PT	PITOT TUBE
PTE	PRESSURE TRANSMITTER ELECTRIC
PTP	PRESSURE TRANSMITTER PNEUMATIC
PTR	PRINTER
PV	PILOT VALVE
PXCC	PX COMPACT CONTROLLER
PXCM	PXC-MODULAR CONTROLLER
PXG3	BACNET ROUTER ETHERNETIP-MS/TP
RBC	REMOTE BUILDING CONTROLLER
RC	RECEIVER CONTROLLER

CONTROL SYMBOL	CONTROL SYMBOL DESCRIPTION
RCU	REMOTE CONTROL UNIT
RE	RELAY ELECTRIC
RP	RELAY PNEUMATIC
RS	RESTRICTOR
RV	RELIEF VALVE
S/W	SOFTWARE
SA	SHADE ACTUATOR
SC	STEP CONTROLLER
SCU	STAND ALONE CONTROL UNIT
SD	SMOKE DETECTOR
SE	SWITCH ELECTRIC
SIO	SLX IO MODULES
SLX	APOGEE SLX CONTROLLER
SPKR	SPEAKER
SPP	STATIC PRESSURE PROBE
SPR	STATIC PRESSURE REGULATOR
SV	SOLENOID VALVE
SW	SWITCH PNEUMATIC
T	ROOM THERMOSTAT, PNEUMATIC
TBC	TERMINAL BOX CONTROLLER
TC	TEMPERATURE CONTROLLER(S200)
TCU	TERMINAL CONTROL UNIT
TDR	TIME DELAY RELAY
TE	THERMOSTAT, ELECTRIC
TEC	TERMINAL EQUIPMENT CONTROLLER
TH	THERMOMETER
TI	TRUNK INTERFACE
TIE	TRUNK ISOLATOR EXTENDER
TIU	TELCOM INTERFACE UNIT
TMR	TIMER, TIME CLOCK
TTE	TEMPERATURE TRANSMITTER ELECTRIC
TTP	TEMPERATURE TRANSMITTER PNEUMATIC
TXIO	TX-I/O FAMILY CONTROLLER MODULES
UC	UNITARY CONTROLLER
UCC	UNIT CONDITIONER CONTROLLER
UVC	UNIT VENT CONTROLLER
V	VALVE
V*	VALVE SERVICE PARTS
VA	TEC VALVE ACTUATOR
VAC	VARIABLE AIR VOLUME CONTROLLER
VB	VIBRATION ISOLATOR
VTE	VELOCITY TRANSMITTER ELECTRICAL
W	WELL
WST	WEATHER STATION
XDR	TRANSDUCER
XFMR	TRANSFORMER

DDC ELECTRICAL POINT

PTNAME

0|00|0|00|00

TRUNK NUMBER

CABINET NUMBER

LAN TRUNK

DROP NUMBER

POINT NUMBER

DDC PNEUMATIC POINT

PTNAME

0|00|0|00|00

TRUNK NUMBER

CABINET NUMBER

LAN TRUNK

DROP NUMBER

POINT NUMBER

\$

AOP

S

R

TO CONTROL DEVICE

□

ELECTRICAL TERMINATION

○

PNEUMATIC TERMINATION

△

NOTE OR REVISION

DETAIL XX

STANDARD DDC TERMINATION

DETAIL XX

PAGE REFERENCE

APOGEE: PII - EXAMPLE

LOGICAL POINT NAME - AH1LTD

0.10.3.10.27

DETAIL 5A

DETAIL MC

BLN NUMBER

CABINET NUMBER

FLN TRUNK

DROP NUMBER

POINT NUMBER

READ AS " SEE PAGE 5A FOR MORE DETAIL "

DIGITAL INPUT

APOGEE: ETHERNET - EXAMPLE

LOGICAL POINT NAME - AH1LTD

0001:3.10.27

DETAIL 5A

DETAIL MC

REFERENCE NUMBER

NODE NUMBER

FLN TRUNK

DROP NUMBER

POINT NUMBER

READ AS " SEE PAGE 5A FOR MORE DETAIL "

DIGITAL INPUT

REVISION HISTORY

SIEMENS

5440 Northshore DR
N Little Rock, AR 72118

POWERS OF ARKANSAS

PHONE:
FAX:

LibbeyBathhouseControls

Hot Springs, AR

ENGINEER

DRAFTER

CHECKED BY

INITIAL RELEASE

LAST EDIT DATE

MAP

MAP

JAD

10/07/25

Legend & Abbreviations

25CNEB0018

LEG

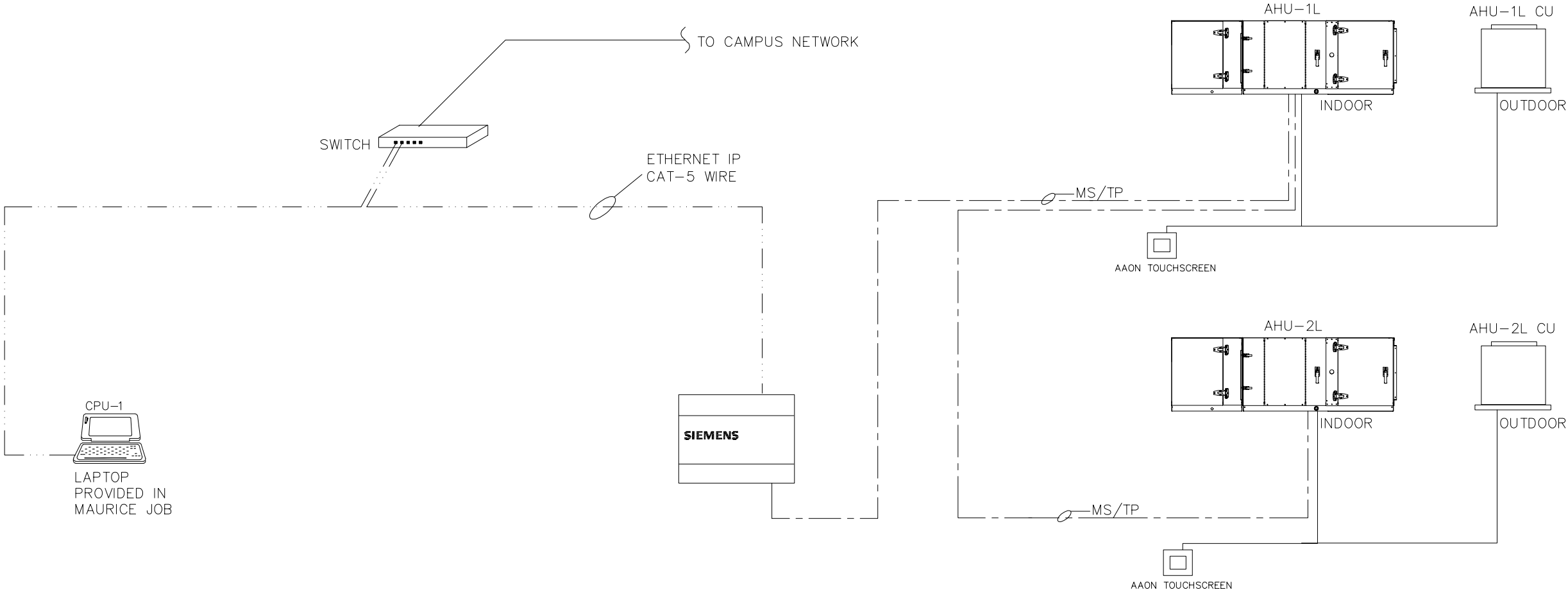
© COPYRIGHT 1994-2025 POWERS OF ARKANSAS ALL RIGHTS RESERVED

V:\JOBS\25CNEB0018\MDT\Legend.dwg

Control Device	Qty	Product Number	Manufacturer	Document Number	Description
Field Mounted Devices					
CPU	1	1	DELL LAPTOP PER QUOTE	DELL MARKETING LP	LAPTOP
			DELL LAPTOP PER QUOTE		

INSTALLATION NOTES:

- 1
- DIAGRAM IS A GRAPHICAL REPRESENTATION AND IS FOR REFERENCE ONLY. FOR FINAL LAYOUT SEE SYSTEM PROFILE.
- 2
- ETHERNET CONNECTIONS TO NEW DEVICES SHALL BE COORDINATED WITH THE DATA CONTRACTOR.
- 3
- ALL FIELD LEVEL DEVICES ARE TO BE DAISY CHAIN CONFIGURATION AT THE COMMUNICATION TRUNK.



1
000 NETWORK DIAGRAM

REVISION HISTORY

SIEMENS

Controls Division
5440 Northshore DR
N Little Rock, AR 72118

POWERS OF ARKANSAS
WWW.POWERSAR.COM

Phone:
Fax:

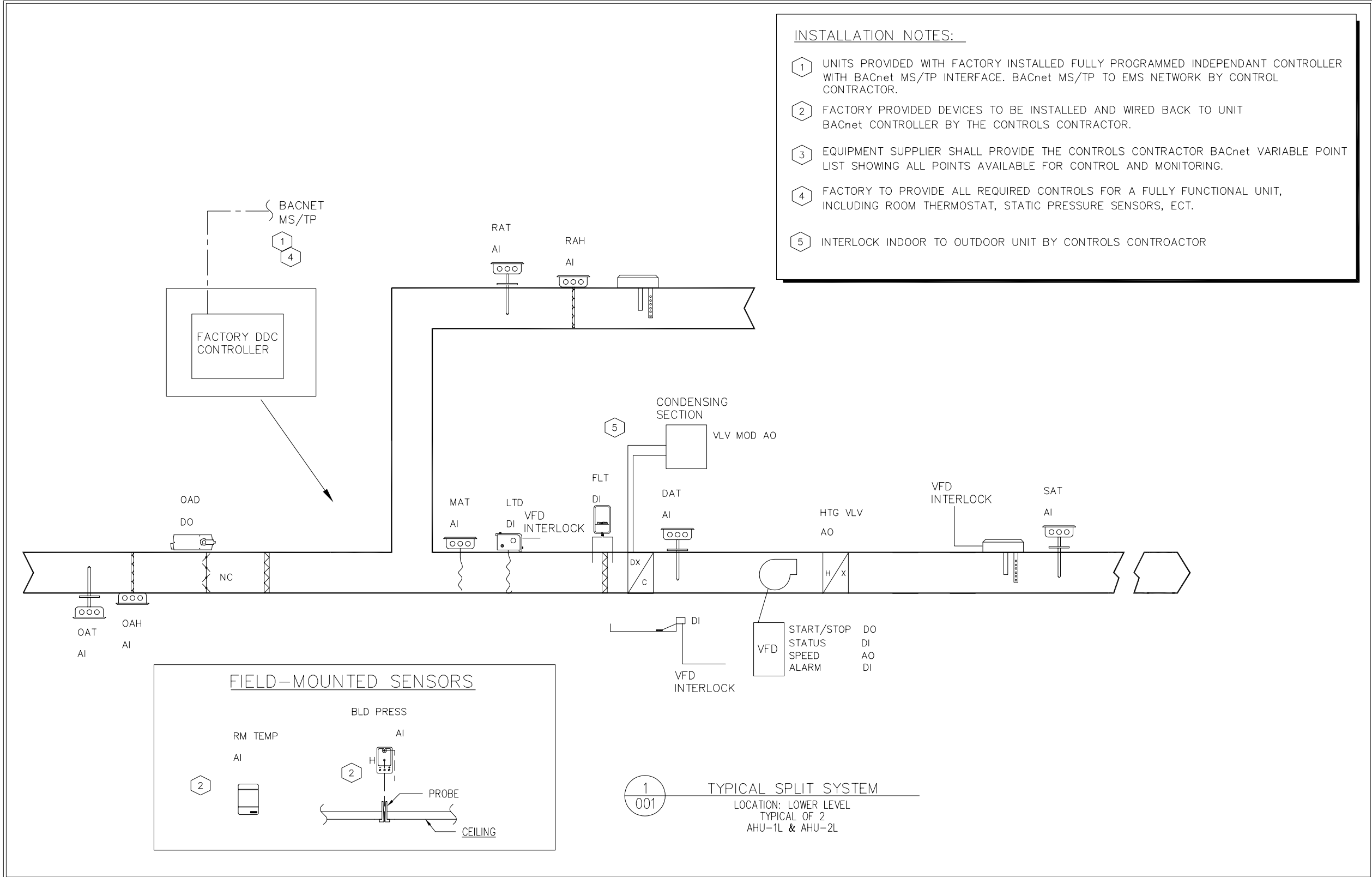
LibbeyBathhouseControls
Hot Springs, AR

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
MAP	MAP	JAD	09/28/25	10/07/25

Riser Diagram

25CNEB0018
0

000



REVISION HISTORY		SIEMENS	Controls Division 5440 Northshore DR N Little Rock, AR 72118	LibbeyBathhouseControls Hot Springs, AR					25CNEB0018
				ENGINEER MAP	DRAFTER MAP	CHECKED BY JAD	INITIAL RELEASE 09/28/25	LAST EDIT DATE 10/07/25	001
				AHU SYSTEM					
		POWERS OF ARKANSAS www.powersar.com	Phone: Fax:						

THE FOLLOWING SEQUENCE TO BE ACCOMPLISHED BY THE UNIT MANUFACTURER INSTALLED CONTROLLER

SEQUENCE OF OPERATION:

WHEN AHU IS INDEXED TO RUN THE FOLLOWING SHALL OCCUR:

SUPPLY FAN SHALL BE ENABLED TO RUN.

SUPPLY AIR TEMPERATURE CONTROL:

- THE SUPPLY AIR TEMPERATURE WILL BE CONTROLLED TO MAINTAIN THE SPACE COOLING SETPOINT OF 80DEG F (ADJ) AND HEATING SETPOINT OF 65DEG F (ADJ). THE DX COOLING COIL & ELECTIC HEATING COIL SCR IN SEQUENCE SO THAT SIMULTANEOUS COOLING & HEAT ARE NOT POSSIBLE EXEPT IN DEHUMIDIFICATION MODE.
- THE MAXIMUM ALLOWABLE RETURN AIR HUMIDITY SETPOINT SHALL BE 60% (ADJ). IF THE RETUR AIR HUMIDITY IS GREATER THAN SETPOINT, RESET DISCHARGE AIR TEMPERATURE TO 52DEG F UNTIL RETURN AIR HUMIDITY IS 5% LESS THAN MAXIMUM SETPOINT FOR 10 MINUTES (ADJ).

COOLING COIL OPERATION:

BAS SHALL MODULATE THERMAL EXPANSION VALVE AS REQUIRED TO MAINTAIN THE COOLING TEMPERATURE SET POINT.

HEATING COIL OPERATION:

THE SCR CONTROLLER WILL BE MODULATED TO MAINTAIN THE SPACE HEATING SETPOINT.

ALARMS, INTERLOCKS, AND SAFETIES:

WHEN FIRE ALARM CONTROL PANEL INDICATES AN ALARM CONDITION, AHU SHALL BE SHUT DOWN.

THE FOLLOWING CONDITIONS SHALL SHUT DOWN THE AHU AND SHALL INDICATE AN ALARM CONDITION AT THE BAS WORKSTATION:

- SHOULD ANY ONE FOOT SECTION OF THE MANUAL RESET LOW LIMIT TEMPERATURE SWITCH #1 SENSE AIR TEMP <34°F (ADJ.), IF MULTIPLE FREEZE STATS ARE REQUIRED, WIRE ALL TO A COMMON RESET SWITCH.
- WHEN THE DRAIN PAN OVERFLOW FLOAT SWITCH IS ACTIVATED.

THE FOLLOWING CONDITIONS SHALL INDICATE AN ALARM AT THE FMCS, HOWEVER AHU SHALL CONTINUE TO OPERATE:

- AN ALARM IS INDICATED AT ANY SUPPLY FAN VFD
- DIFFERENTIAL PRESSURE TRANSDUCER ACROSS FILTER BANK EXCEEDS 1.5 INCHES W.G. (ADJ.)
- SHOULD ANY ONE FOOT SECTION OF THE AUTO RESET LOW LIMIT TEMPERATURE SWITCH #2 SENSE AIR TEMPERATURE <38°F (ADJ.) THE FOLLOWING SHALL OCCUR:
 - THE RETURN AIR DAMPER SHALL FULLY OPEN
 - THE OUTSIDE AIR DAMPER SHALL FULLY CLOSE
 - THIS ACTION SHALL OCCUR INDEPENDENT OF THE BAS AHU CONTROLLER. ONCE THE LOW LIMIT TEMPERATURE SWITCH #2 AIR TEMPERATURE RISES ABOVE SET POINT, OPERATION OF THE OUTSIDE AIR, RELIEF AIR, AND RETURN AIR DAMPERS SHALL BE RESTORED. HOWEVER, THE ALARM SHALL CONTINUE UNTIL ACKNOWLEDGED AND MANUALLY RESET BY THE BAS OPERATOR
- SEND AN ALARM TO THE BAS OPERATOR INTERFACE IF THE DISCHARGE AIR TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT.

WHENEVER AHU IS SHUT DOWN THE FOLLOWING SHALL OCCUR:

- THE OUTSIDE AIR DAMPER SHALL FULLY CLOSE.
- SUPPLY FAN VFD SHALL BE DE-ENERGIZED.

REVISION HISTORY

SIEMENS

5440 Northshore DR
N Little Rock, AR 72118

POWERS OF ARKANSAS

PHONE:
FAX:

LibbeyBathhouseControls
Hot Springs, AR

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
MAP	MAP	JAD		10/07/25

AHU SYSTEM

25CNEB0018

002

