Schneider Home

System Planning and Wiring Guide

TME13782

June 2024

https://www.se.com/

Schneider Electric

Legal Information

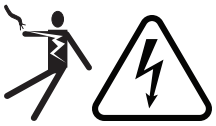
Contact Information

For country-specific details, please contact your local Schneider Electric Sales Representative or visit the Schneider Electric website at: https://www.se.com/.

Safety Information

Important Information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

Stored energy hazard and discharge time

Fire hazard

Hot surface

Protective Earth (grounding) conductor terminal

Refer to the Installation or Operation instructions

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved. For more information, see "Audience" on the facing page.

Audience

This manual is intended for use by qualified personnel installing a Schneider Electric Home Energy Management System involving any of the following components:

- Schneider Inverter (HY8K1NA1)
- Schneider Boost (BAT10K1)
- Schneider Backup Controller (BC200A1NAWM)
- Schneider Pulse CSED (CC18X18M200PCY)
- Schneider Pulse CSED with Backup Controller (CC18X18M200PCZ)
- Schneider Energy Monitor (SEMONITOR)

The qualified personnel have training, knowledge, and experience in:

- Installing electrical equipment.
- Applying all applicable installation codes.
- Analyzing and reducing the hazards involved in performing electrical work.
- Selecting and using Personal Protective Equipment (PPE).

The qualified personnel have also received specific training from the manufacturer on installing and operating the home energy management system.

Contents

Figures

About

Purpose

This manual guides you through planning a Schneider Home energy management system installation.

Related Documents

The following documents may be required to install and operate components in the Schneider Home system.

- *Schneider Inverter Installation Guide (TME12664)*
- *Schneider Boost Installation and Operation Guide (TME12665)*
- *Pulse Backup Controller: Installation and Operation Guide (TME13781)*
- *Schneider Pulse CSED (GEX79652)*
- *Schneider Energy Monitor Installation Guide (TME39049)*

Product Safety Information

READ AND SAVE THESE INSTRUCTIONS - DO NOT DISCARD

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, ARC FLASH, AND FIRE

This document is in addition to, and incorporates by reference, the relevant product manuals for each component in this system. Before installing or operating any component in this system, read all instructions and cautionary markings on the unit, and all appropriate sections of the product-specific documentation (see "Related Documents" on the previous page). Unless specified, information on safety, specifications, installation and operation is as shown in the primary documentation for each product. Ensure you are familiar with that information before proceeding.

Failure to follow these instructions will result in death or serious injury.

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, ARC FLASH, AND FIRE

The Schneider Home system is energized from multiple sources. Before replacing any components in the system, identify, de-energize, lock-out, and tag-out all sources of energy in the system, and wait 5 minutes for circuits to discharge.

Failure to follow these instructions will result in death or serious injury.

⚠⚠ WARNING

HAZARD OF ELECTRIC SHOCK AND FIRE

- Before powering on equipment, verify that all wiring is in good condition and that wire is not undersized. Do not operate any component in this system with damaged or substandard wiring.
- Do not operate any component in this system if it has been damaged in any way.
- Do not disassemble any component in this system except where noted for connecting wiring and cabling.
- Use only the accessories that are recommended by the manufacturer.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

1 Introduction

What's in This Chapter?

Introduction and Components of the System

The Schneider Home system supports power supplementing, energy monitoring, and energy storage technologies. This document can help you decide on the configuration that is most suitable for your needs, and provide high-level guidelines to help you plan and execute your installation.

Note: The information in this manual is supplementary and not intended to be a replacement for the product-specific instructions. For more information, see "Related Documents" on page 8.

Schneider Inverter

Figure 1 Schneider Inverter

The Schneider Inverter is the heart of a Schneider Home energy management system.

As a hybrid inverter, the inverter connects to grid and solar power.If the Schneider Boost battery is installed, the inverter maintains battery charge using grid power. If grid and solar power are unavailable, and a backup control device is installed, energy stored in the battery can be used.

NOTICE
RISK OF EQUIPMENT DAMAGE ▪ A maximum of three Schneider Boost batteries can be installed per energy management system. See the *Schneider Boost Installation and Operation Guide (TME12665)* for details. ▪ Use only the Schneider Boost battery with the Schneider Inverter. Other batteries are not compatible. **Failure to follow these instructions can result in equipment damage.**

For more information, see the product page on se.com.

Schneider Boost

Figure 2 Schneider Boost

The Schneider Boost is a high voltage, Lithium-Iron Phosphate (LFP) battery storage system. It includes an integrated Battery Management System (BMS), black start, and lockable battery disconnect switch. It can be used for residential and commercial battery-based off-grid, grid backup, and grid interactive applications. The Schneider Boost is designed to operate with the Schneider Inverter (HY8K1NA1). When installed together, the battery and inverter can be monitored remotely.

Batteries are available in the following configurations:

- Single battery
- Dual battery — one battery functions as the primary and the other as the secondary
- Triple battery — one battery functions as the primary and the other two as secondaries

The following accessories are available for front-to-back multi-battery installations:

- **Front-to-Back Mounting Kit - 2 Batteries**: BA10KNA2S
- **Front-to-Back Mounting Kit - 3 Batteries**: BA10KNA3S

For more information, see the product page on se.com.

Schneider Backup Controller

For backup power capability, you must have a Backup Control Module in the system, along with the Schneider Inverter and Schneider Boost. The Backup Controller is Schneider's Microgrid Interconnect Device (MID), and works exclusively with our inverter and battery. It provides a way to island a Schneider Electric solar, storage, or hybrid solution from the grid and is a required component for sites desiring backup power.

When the Backup Controller detects a grid outage, it communicates with the inverter to enable backup power mode. When grid power is restored, the Backup Controller detects the grid and communicates with the inverter to synchronize and reconnect.

The Backup Controller is available as a stand-alone product or integrated into the Pulse Combination Service Entrance Device (CSED), as described below.

Pulse CSED

Figure 3 Pulse CSED

The CSED includes an integrated ring meter socket, main service disconnect, and split-bus load center to allow backed-up essential circuits to stay in the main panel, eliminating the need for an essential loads sub panel. The factory-installed Schneider Energy Monitor turns this into a smart panel with home consumption monitoring and load control capabilities. Load control is optional on any branch circuit by installing our control relays.

The Pulse CSED is available in two variants:

- *Schneider Pulse CSED with Backup Control Module* - This version includes a factory-installed MID that works exclusively with Schneider Inverter and Schneider Boost.
- *Schneider Pulse CSED* - This version does not include a built-in MID, but can still be interconnected with almost any external third-party MID and solar/storage system.

For more information on the Pulse CSED, see the product page on se.com.

Pulse Backup Controller

Figure 4 Pulse Backup Controller

The primary function of this product is the MID, and this version of the Backup Controller is selected if you are not doing a panel upgrade with the Pulse CSED. It is a stand-alone, wall-mounted version of the Backup Controller. It also includes a 12-space integrated QO™ breaker panel that can be used for backup or non-backup loads. When configured for backup, it can also be upgraded for load control.

For mroe information on the Backup Controller, see the product page on se.com.

Schneider Energy Monitor

Figure 5 Schneider Energy Monitor

The Schneider Energy Monitor is a home energy monitoring device. It is used to measure the current and voltage in the service mains and renewable energy sources. The device monitors two phases of 120 VAC. For more information, see the product page on se.com.

Rapid Shutdown (PV Systems)

Figure 6 Example Rapid Shutdown Initiator Switch

A Rapid Shutdown (RSD) Initiator Switch and the devices shown in Figure 7 on page 16 are required for systems equipped with Rapid Shutdown, with or without the Schneider Boost battery. When the RSD Initiator Switch is connected to the Pulse Backup Controller, the Backup Controller's integrated RSD inputs must be daisy chained to the inverter RSD inputs.

Note: There are varying types of switches available. Schneider Electric Home Energy Management System uses a 2-wire system for RSD: check that the switch you select meets this requirement.

For more information, see the *Schneider Inverter Installation Guide (TME12664)*.

⚠⚠ WARNING

HAZARD OF ELECTRIC SHOCK, EXPLOSION, ARC FLASH, AND FIRE

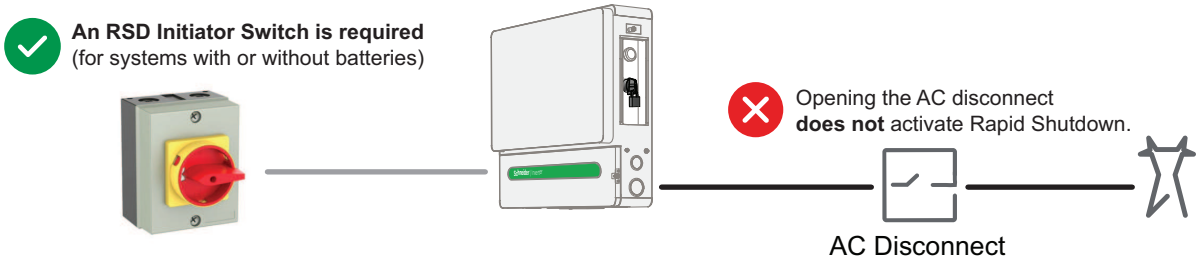
For systems equipped with Rapid Shutdown (RSD):

- A Rapid Shutdown Switch (E-Stop) is required (for systems with or without batteries) in order to provide emergency shutdown functionality.
- Do not use an AC Disconnect in place of a Rapid Shutdown Switch, as it will not initiate rapid shutdown on any Schneider Inverter system, with or without a battery..
- All installations must meet the requirements of the National Electrical Code (NEC), ANSI/NFPA 70 Section 690.12.
- This Photovoltaic Rapid Shutdown System (PVRSS) incorporates one or more pieces of equipment that exercise the rapid shutdown control of PV system conductors required by section 690.12 of the NEC (NFPA 70). Other equipment installed in or on this PV system may adversely affect the operation of this PVRSS. It is the responsibility of the installer to ensure that the completed PV system meets the applicable Rapid Shutdown functional requirements. This equipment must be installed according to the manufacturer's installation instructions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

IMPORTANT: For systems that are not using the Rapid Shutdown function for connected solar panels or Schneider Boost batteries, ensure that a jumper is installed between the positive (pin 4 or 5) and negative (pin 6 or 7) terminals on the RSD terminal block. For pin-out details, see the *Schneider Inverter Installation Guide (TME12664)*.

Figure 7 Rapid Shutdown Switch requirement



Required RSD Devices

The devices below and the connections to the Schneider Inverter are shown in Figure 8 on page 17 and Figure 9 on page 17.

Table 1 Compatible RSD devices

Name	Model	Description
APSmart RSD-S-PLC*	▪ RSD-S-PLC-A ▪ RSD-S-PLC-B	Single PV module Rapid Shutdown device (see Single PV module Rapid Shutdown device (RSD-S-PLC) on page 17)
APSmart RSD-D*	▪ RSD-D-15-1000 ▪ RSD-D-20-1000 ▪ RSD-D-25-1000 ▪ RSD-D-15-1500 ▪ RSD-D-20-1500 ▪ RSD-D-25-1500	Dual PV module Rapid Shutdown device (see Dual PV module Rapid Shutdown device (RSD-D) on page 17)

* For the latest information and installation guides, go to https://apsmartglobal.com/.

Figure 8 Single PV module Rapid Shutdown device (RSD-S-PLC)

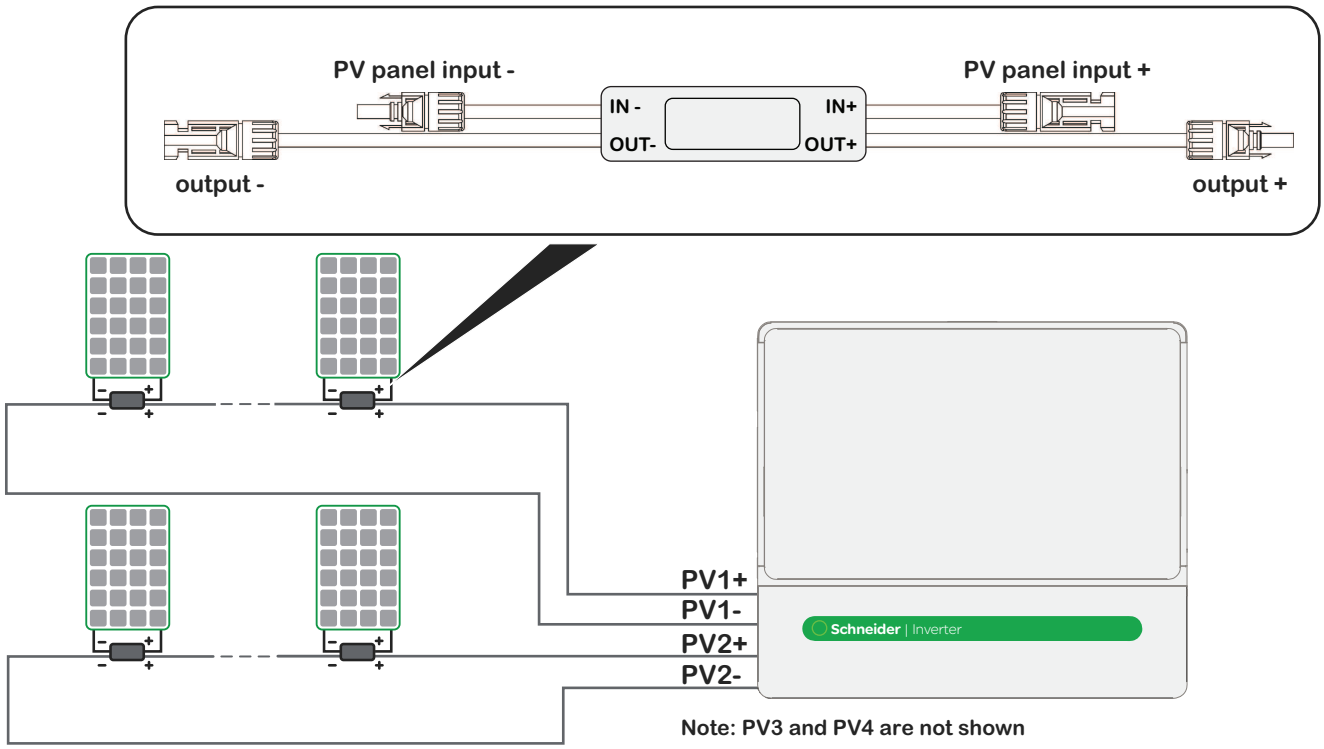
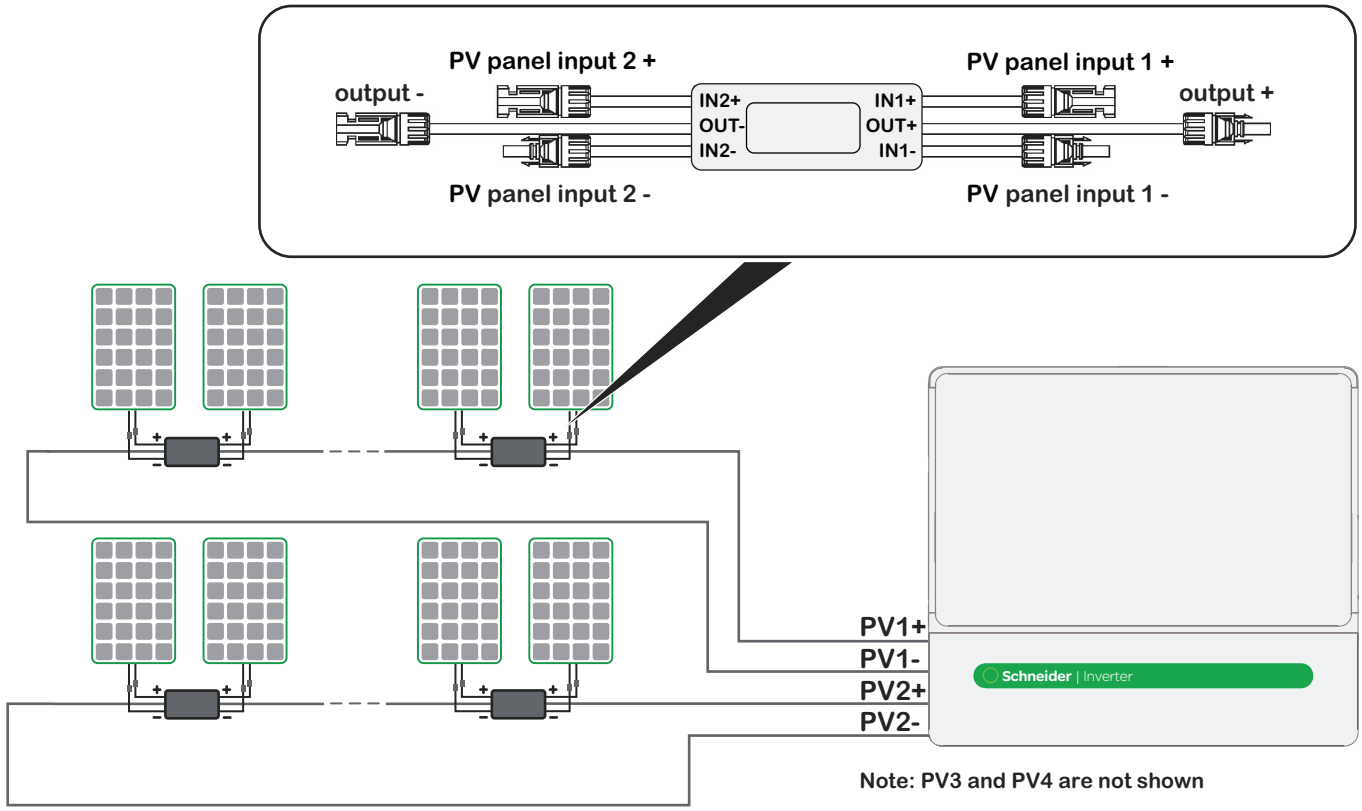


Figure 9 Dual PV module Rapid Shutdown device (RSD-D)



Note: The RSD-D output voltage will be the sum of the two connected panels.

2 Required Training and Software

What's in This Chapter?

Installer Training

The following installer training is mandatory before installing the Schneider Inverter, Schneider Boost, and the Pulse Backup Controller. For all other Schneider Home products, this training is recommended, but not mandatory.

1. Go to: https://shop.se.com/us/en/schneiderhome/partners
2. Click **Become A Partner** > **Join Today**.
3. Fill out the online registration form and click **Submit**.
4. Check your email for a link to the online training.

Commissioning Apps

Depending on the products you are commissioning, you will need to download different apps. See the required apps in the table below.

	eSetup for Configuration app	Sense Pro Square D app
Products to Commission	▪ Schneider Inverter ▪ Schneider Boost ▪ Backup Controller	▪ Pulse CSED ▪ Schneider Energy Monitor ▪ Wiser Control Relays
Training and Certification	Schneider Home Certification training is required to enable the commissioning features in the eSetup app.	N/A
Required Apps	Download the eSetup app. Links: Apple App Store | Google Play	Download the Sense Pro Square D™ app. Links: Apple App Store | Google Play
Account Login	Log in to the eSetup app using your mySchneider account email ID and password.	N/A
Required Firmware	Download the latest firmware for the Schneider Inverter in the eSetup app. Tap **Settings > Firmware Manager**.[1]	N/A

eSetup™

Download eSetup to commission your energy management system.

IMPORTANT: If you have not completed the **Schneider Home Installer Certification**, complete the free online course by following the steps in"Installer Training" above.

[1]Make sure to download the firmware before heading to the installation site in case of connectivity issues.

Note: Complete the Schneider Home Certification training before signing into the eSetup app. To log in to the app, use the email ID and password that was created for the training. Do not sign up with a new ID.

Schneider Electric Installer Portal

After commissioning, qualified personnel can use the web-based Installer Portal to monitor the Schneider Home energy management system with the owner's consent.

Note: You will need a **mySchneider** account in order to log in to Installer Portal.

Home Owner App

Schneider Home

Schneider Home is a mobile app that provides an overall view of system performance for residential power monitoring systems. It allows home owners to monitor connected devices.

https://apps.apple.com/us/app/schneider-home/id6448775224

https://play.google.com/store/apps/details?id=com.schneiderelectric.SchneiderHome&pcampaignid=web_share

3 Mounting Guidelines

What's in This Chapter?

Installation Requirements

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, ARC FLASH, AND FIRE

This document is in addition to, and incorporates by reference, the relevant product manuals for each component in this system. Before installing or operating any component in this system, read all instructions and cautionary markings on the unit, and all appropriate sections of the product-specific documentation (see "Related Documents" on page 8). Unless specified, information on safety, specifications, installation and operation is as shown in the primary documentation for each product. Ensure you are familiar with that information before proceeding.

Failure to follow these instructions will result in death or serious injury.

Each component in your system has specific installation guidelines and instructions in the product-specific documentation. This information describes:

- installation locations
- ventilation and clearances
- mounting
- grounding
- cable installation

It is important that you review and follow that information for all of the necessary details.

Order of Installation

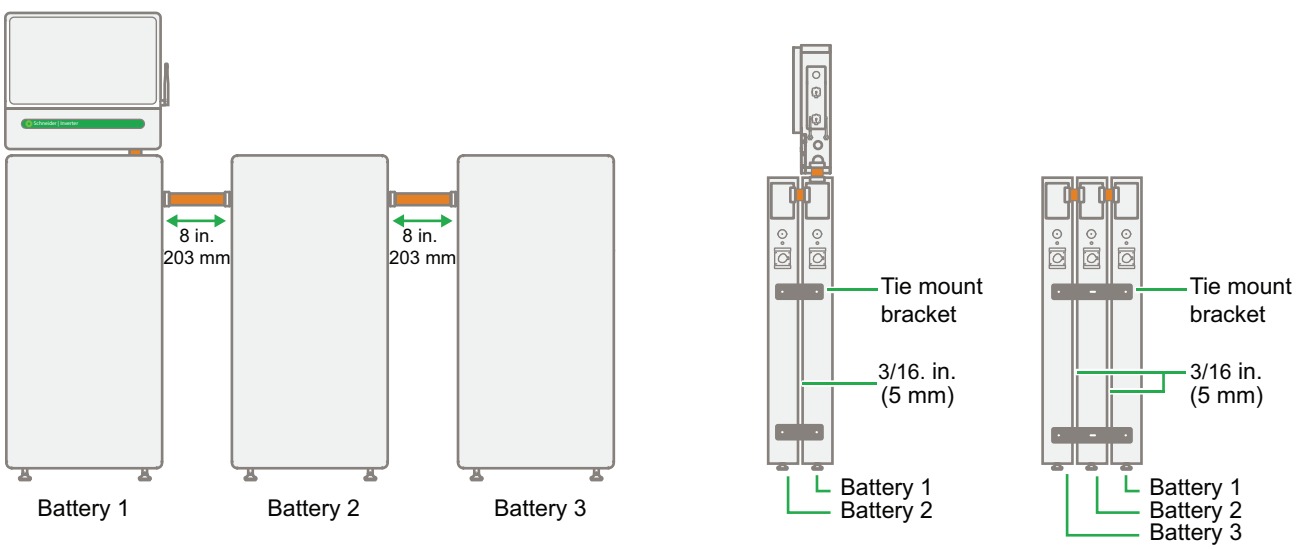
The components in your Schneider Home energy management system are best installed in the following order:

1. Schneider Boost
2. Schneider Inverter
3. Schneider Backup Controller
4. Additional devices such as the Schneider Energy Monitor

Battery Spacing Requirements

For more information, see the *Schneider Boost Installation and Operation Guide (TME12665)*.

Figure 10 Spacing requirements for multiple batteries



Conduit Fittings

When selecting conduit for the connection between components of the Schneider Home system, keep the following considerations in mind:

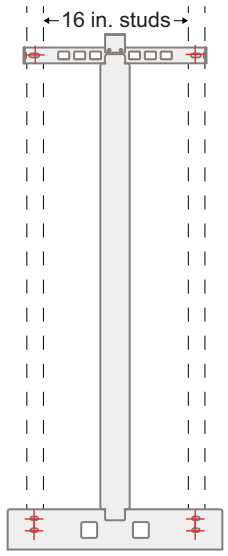
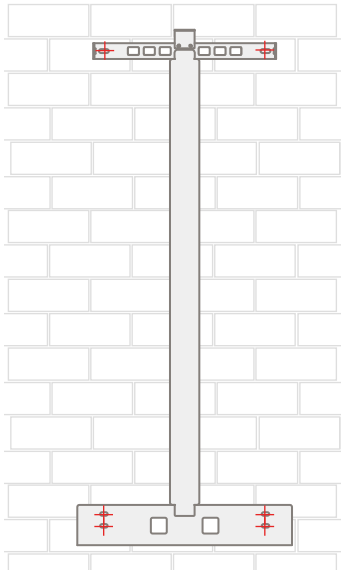
- Follow NEC or any local requirements for selecting conduit.
- Use non-flexible conduit such as EMT, schedule 40 PVC, or schedule 80 PVC.
- Where conduit bends are required, check NEC standards for guidance on acceptable bend radius.
- If installing outdoors, use rain tight connectors for device entry.
- If installing indoors, use set screw connectors for device entry.

Mounting Surfaces

Note: Additional space may be required when installing on wood studs, and planning must be done to ensure that each component can be properly mounted on the studs as described in the product-specific documentation. That may mean that although the bend radius spacing is adequate, more space must be left between the components to ensure that the mounting bracket for the component affixes to the stud.

Schneider Boost

Table 2 Schneider Boost Mounting surfaces

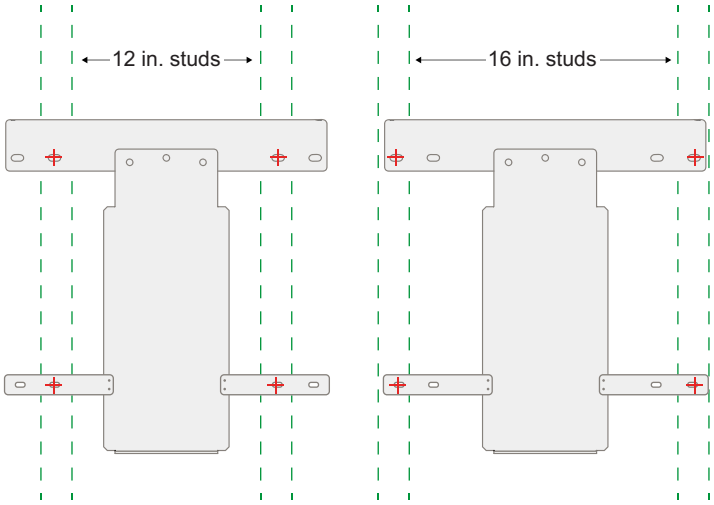
Wood Studs	
Use the six supplied wood screws. Drill a pilot hole that is 3/16 in. by 3 in. deep. **IMPORTANT**: Do not mount the Home Energy Management System on metal studs.	
Concrete or Brick	
Minimum strength must be 2500 PSI (concrete) or 1500 PSI (brick/masonry). Use six 5/16 in. anchor bolts with washers. The fastener must be long enough so that at least 2 in. (51 mm) can be embedded into the mounting material. All fasteners must be at least 1½ in. (38 mm) away from the edges of masonry blocks or bricks.	

Schneider Inverter

Table 3 Schneider Inverter Mounting surfaces

Wood Studs

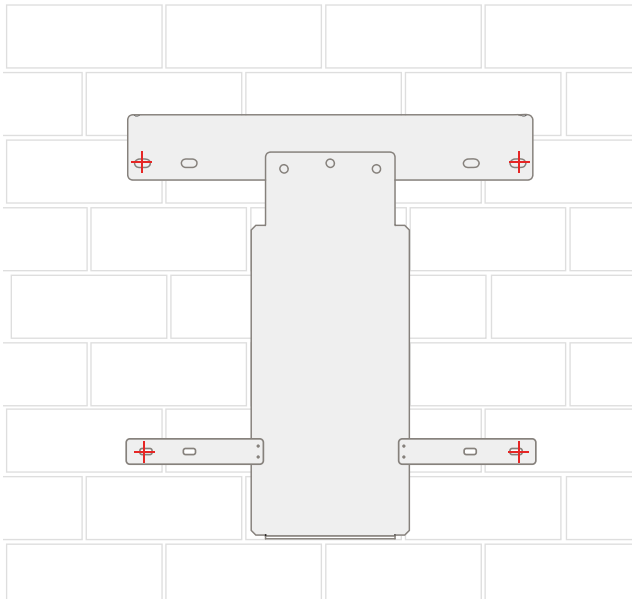
Use four 5/16 in. lag bolts with washers. The bolts must be long enough so that it can embed at least 3 in. into the studs.



Concrete or Brick

Minimum strength must be 2500 PSI (concrete) or 1500 PSI (brick/masonry).

Use four 5/16 in. fasteners with washers. The fastener must be long enough so that at least 1½ in. (38 mm) can be embeded into the mounting material. All fasteners must be at least 1½ in. (38 mm) away from the edges of masonry blocks or bricks.



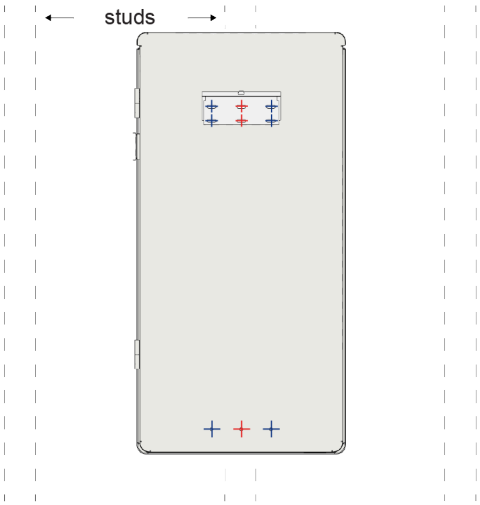
Pulse Backup Controller

Note: In the diagrams below, the Backup Controller mounting bracket must attach at minimum through the holes marked in red. For stability, the additional mounting locations marked in blue may be used.

Table 4 Pulse Backup Controller Mounting surfaces

Wood Studs

Use the provided two ¼ in. lag bolts with washers. The screws must embed securely into the studs.

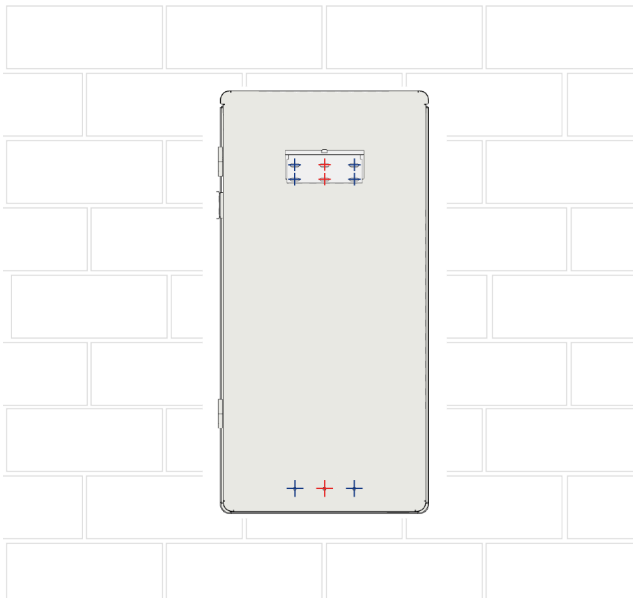


Concrete or Brick

Minimum strength must be 2500 PSI (concrete) or 1500 PSI (brick/masonry).

Use three ¼ in. fasteners with washers. The fastener must be long enough so that at least 1½ in. (38 mm) can be embedded into the mounting material.

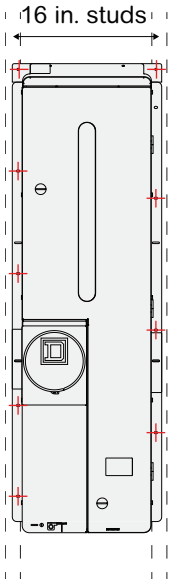
All fasteners must be at least 1½ in. (38 mm) away from the edges of masonry blocks or bricks.



Schneider Pulse CSED (with and without Backup Controller)

Table 5 Schneider Pulse CSED (with and without Backup Controller) Mounting surfaces

Wood Studs



The Schneider Pulse CSED (with and without Backup Controller) includes factory installed mounting flanges designed to install the equipment to minimum 2 x 4 wall studs. Use nine wood screws to affix the device to the studs.

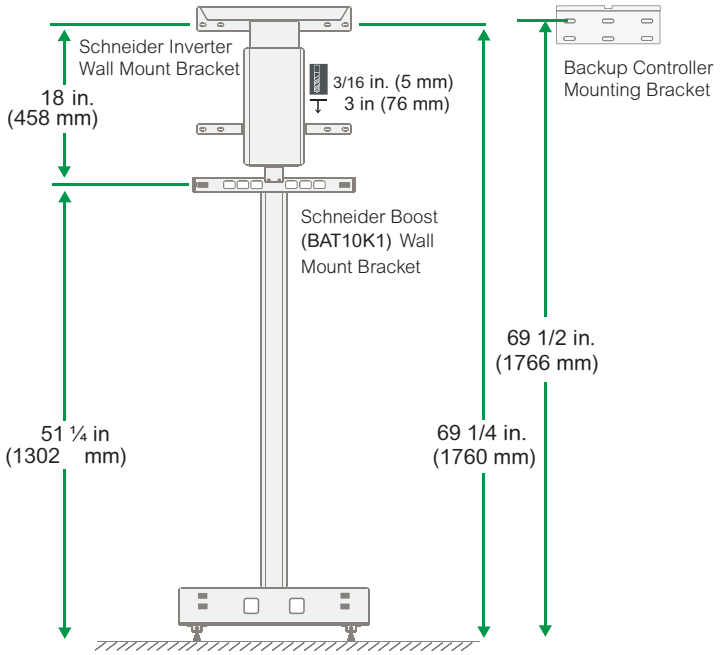
Alignment Requirements

Schneider Inverter and Schneider Boost

When installing a Schneider Inverter and Schneider Boost, in order for the conduit holes to align, the mounting brackets need to be installed relative to one another.

Use the Inverter alignment bracket provided with the Schneider Boost. For more details, see *Schneider Boost Installation and Operation Guide (TME12665)*.

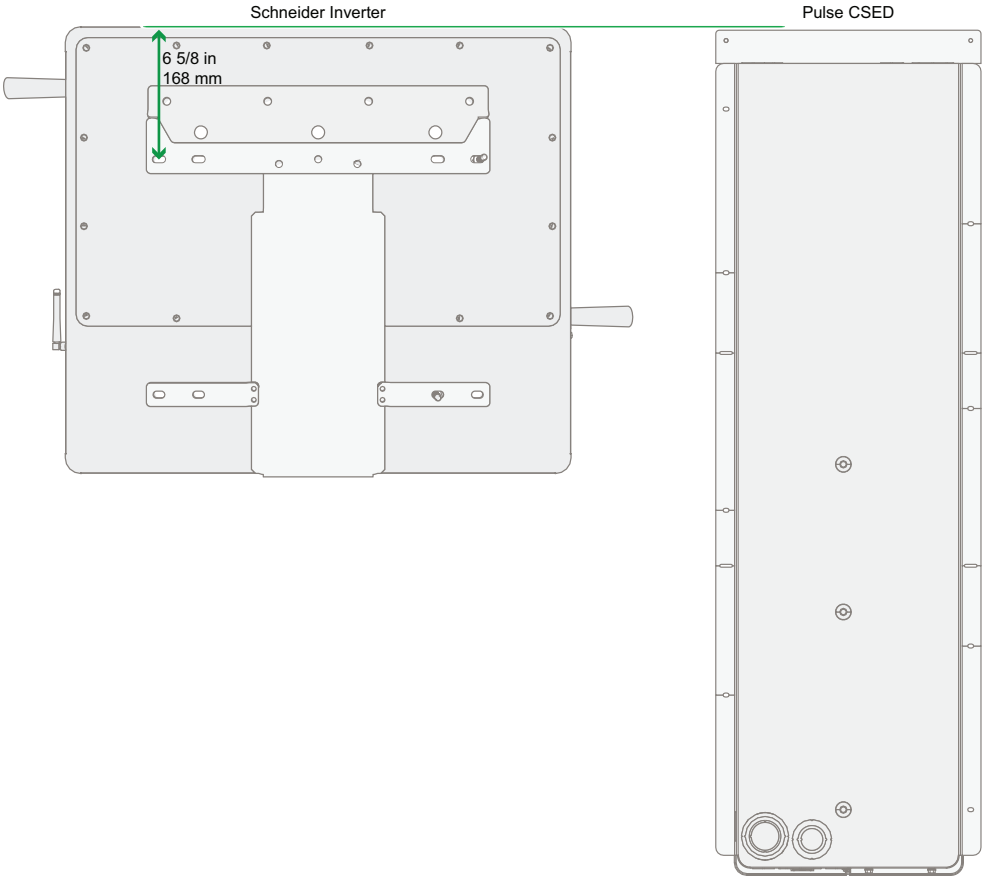
Figure 11 Bracket placement for stacked inverter and battery configuration



Note: Heights shown are to mounting holes, not the top of the bracket or device.

Schneider Inverter and Schneider Pulse CSED (with and without Backup Controller)

To align the top of the inverter with the top of the Schneider Pulse CSED (with and without Backup Controller), the holes for the inverter bracket should be 6 5/8 in. (168 mm) below the top of the CSED.



Installation Configurations

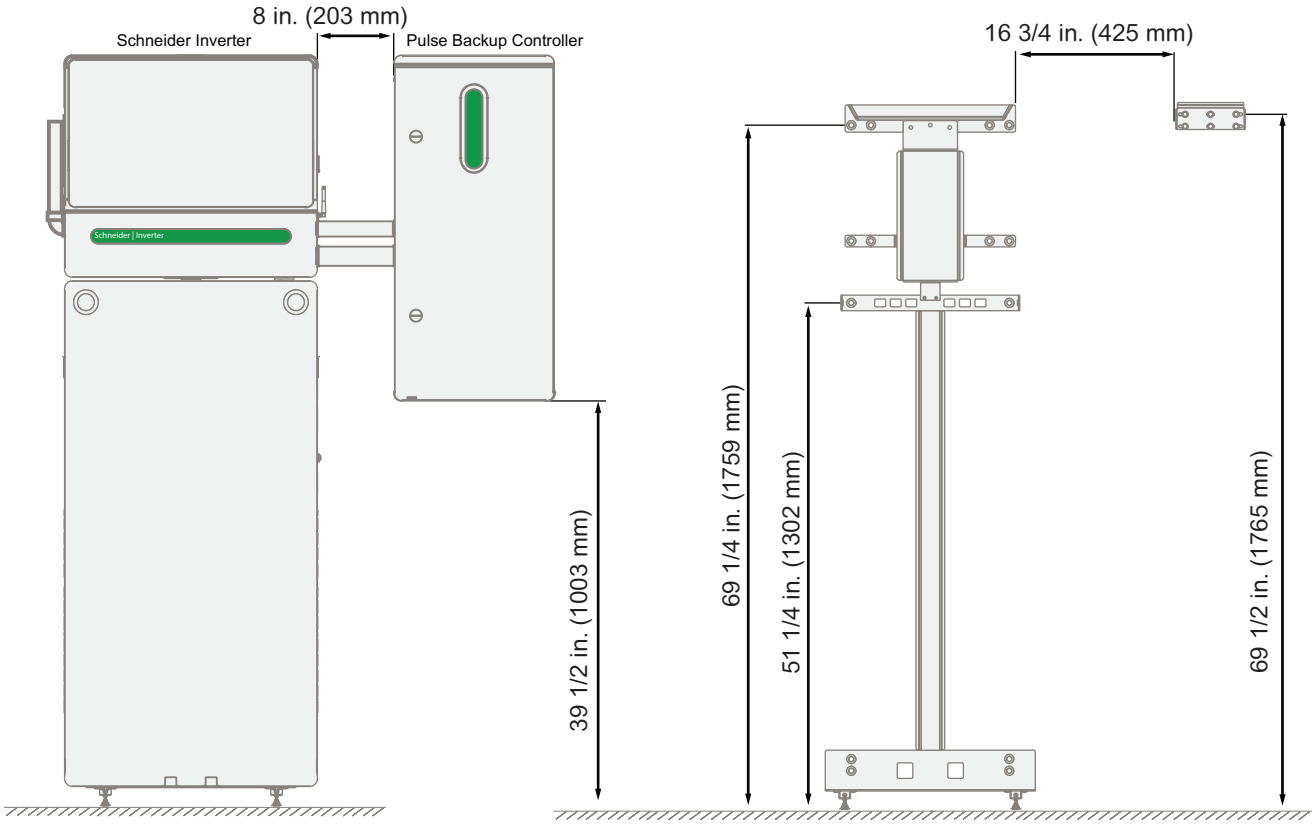
The configuration options are extensive: therefore, pre-installation planning with regards to mounting, spacing, wiring, and conduit routing must be done.

The following configurations are designed for straight conduits between system components.

Optimal Alignment of Schneider Inverter, Schneider Boost, and Pulse Backup Controller

The Pulse Backup Controller must be installed to the right of the Schneider Inverter for optimal alignment of their side conduit holes and tops. See Figure 12 below showing that this optimal alignment requires the top mounting holes on the Pulse Backup Controller's wall mounting bracket to be 1/4 in. (6 mm) higher than the top mounting holes on the Inverter's wall mounting bracket.

Figure 12 The battery inverter stack to the left of the Pulse Backup Controller; the required bracket placement shown on the right



4 Network

What's in This Chapter?

About the Schneider Home Network

The energy management system uses Ethernet to communicate with other devices in the system.

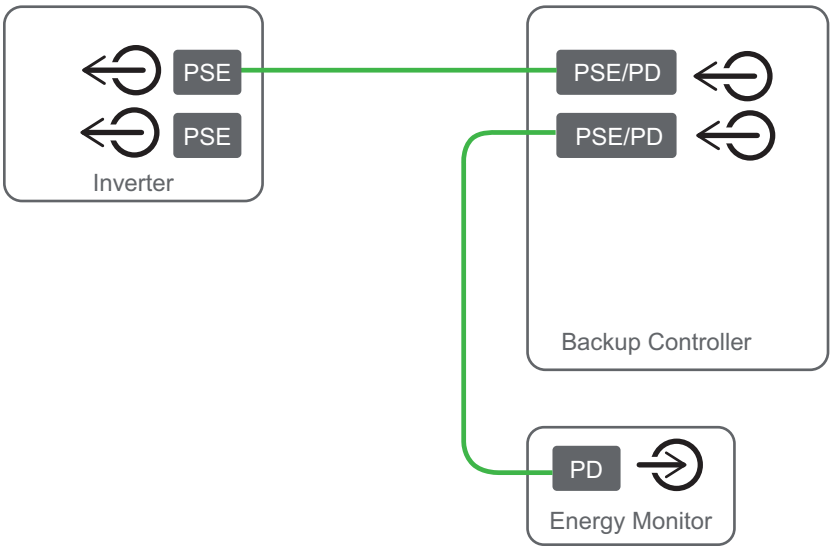
Power over Ethernet (PoE)

The energy management system uses PoE to connect and power devices in the system. In the PoE system, there are two main controllers:

- Power Sourcing Equipment controller (PSE): In the Schneider Home energy management system system, the inverter Communications board or Backup Controller can provide power to loads in the system.
- Powered Device controller (PD). In the Schneider Home energy management system, the PD may be a Backup Control Meter Collar or power meter, which receive power at the load.

Note: There can be only one PD port connected to one PSE port.

Figure 13 Example of a Schneider Home network



Communication Cables

Each network-connected device is connected by a Category 5 (CAT 5e) cable, rated for 600 V.

Note: The maximum CAT 5e cable length should be 328 ft. (100 m).

Cybersecurity Guidelines

This section includes information on how to help secure your system.

⚠ WARNING

POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY

Follow the cybersecurity best practices in the individual product installation guides to help prevent unauthorized access to the system software.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

To find out about the latest cybersecurity news, sign up for security notifications, or to report a vulnerability, visit the Schneider Electric Cybersecurity Support Portal.

Recommended Actions

Note: The list of recommended actions below is not a complete list of possible cybersecurity measures. It is meant to be a starting point to improve the security of your system.

Passwords

- Passwords should include upper case, lower case, number, and special characters
- The password must have 8 characters minimum
- The password should not be easily found in the dictionary and a phrase is preferred.
- Passwords should be changed frequently, at least once a year
- A default password must be changed immediately when first received and after a factory reset
- Never reuse passwords
- Never share passwords with unauthorized personnel

Network

- Schneider Electric devices should only be used in your personal home network
- Schneider Electric devices should not have a publicly accessible IP address
- Do NOT use port forwarding to access a Schneider Electric device from the public internet
- Schneider Electric devices should be on their own network segment. If your router supports a guest network or VLAN, it is preferable to locate the devices there
- Use the strongest Wi-Fi encryption available
- Use HTTPs in local network

Physical Site Security

To help prevent physical attacks:

- Install the system on private property, away from public passageways.
- Properly reinstall and close all covers.
- Route all cables through conduits.

Decommissioning

Before a device is permanently removed from your network, perform a full factory reset to erase all data

5 Wiring

What's in This Chapter?

Wire Sizing and Torque Values

Schneider Inverter

Table 6 Inverter cable specifications and torque

Cable name	Cable size	Connector	Rating	Strip length	Torque
AC cables	4-6 AWG	Terminal Strip	600 V Copper (Cu) wire, rated for 194°F (90°C)	5/8 in. (15 mm)	N/A
PV cables	8 AWG	Terminal Strip	600 V	5/8 in. (15 mm)	N/A
Battery and BMS cables	**Battery:** 8 AWG **BMS:** CAT5e	Terminal Strip RJ45	600 V 600 V	5/8 in. (15 mm) N/A	N/A
Ground cables	6-8 AWG	Ring terminal	600 V	5/8 in. (15 mm)	35 in-lb (4.0 Nm)
Aux relay	18 AWG	N/A	600 V	3/8 in. (10 mm)	N/A
RSD cables	18 AWG	N/A	600 V	3/8 in. (10 mm)	N/A
Ethernet cables	CAT5e	RJ45	600 V	N/A	N/A
PoE cables	CAT5e	RJ45	600 V	N/A	N/A

Schneider Boost

Table 7 Battery cable specifications and torque

Cable name	Cable size	Connector type	Rating	Torque
Power cables	8 AWG	Amphenol Amphe-PV H4 Plus™ connectors and pins	600 V	N/A
Ground	10 AWG	M6 screw with flat washer and ring terminal	600 V	44.3 in-lb (5.0 Nm)

Table 8 Required communication cable and connector

Type	Required specifications	Example
Communication cable	■ 600 V ■ Shielded Cat 5e ■ Multi-conductor, 4-twisted pair cable ■ RJ45 connector with insulation diameter range of 1/32 to 3/64 in. (0.79 to 1.12 mm)* ■ Cable jacket diameter must be ≤ 1/4 in. (6.3 mm) ■ Conductor insulation diameter must be ≤ 1/32 in. (0.79mm)	**BELDEN** 7958A DataTuff® (or equivalent) For more information, see https://www.belden.com/

* For an RJ45 pin-out, see the *Schneider Boost Installation and Operation Guide (TME12665)*.

Pulse Backup Controller

Table 9 Pulse Backup Controller cable specifications and torque

Cable name	Cable size	Connector type	Rating	Torque
Grid AC	4 AWG to 250 kcmil	Box lug	300 V Copper (Cu) wire, rated for 194°F (90°C)	See torque value on circuit breaker
L1/L2 backup/non-backup connections	4/0 AWG	Box lug	300 V	22.8 ft-lb (31 Nm)
External panels AC	6 AWG to 250 kcmil	Box lug	300 V	23 in-lb (2.6 Nm)
Earth ground	6 AWG to 250 kcmil	Box lug	300 V	23 in-lb (2.6 Nm)
Grid neutral	6 AWG to 250 kcmil	Box lug	300 V	23 in-lb (2.6 Nm)
Inverter and house loads neutral	14 AWG to 4 AWG (copper) 12 AWG to 4 AWG (aluminum)	Neutral bar	300 V	▪ #14-10 Cu, #12-10 Al: 20 in-lb (2.3 Nm) ▪ #8 Cu/Al - 25 in-lb (2.3 Nm) ▪ #6-4 Cu/Al - 35 in-lb (4.0)
Ground connection to terminal strip	14 AWG to 4 AWG (copper) 12 AWG to 4 AWG (aluminum)	Ground bar	300 V	▪ #14-10 Cu, #12-10 Al: 20 in-lb (2.3 Nm) ▪ #8 Cu/Al - 25 in-lb (2.3 Nm) ▪ #6-4 Cu/Al - 35 in-lb (4.0)
Ethernet cables	CAT5e (shielded)	RJ45	600 V	N/A

Schneider Pulse CSED (with and without Backup Controller)

Table 10 Schneider Pulse CSED (with and without Backup Controller) cable specifications and torque

Cable name	Cable size	Connector type	Rating	Torque
Grid AC	#4 AWG to 300 kcmil	Box Lug	300 V	20.83 ft-lb (28.25 Nm)
Inverter and house loads neutral	14 AWG to 4 AWG (copper) 12 AWG to 4 AWG (aluminum)	Ground/Neutral bar	300 V	▪ #14-10 Cu, #12-10 Al: 20 in-lb (2.3 Nm) ▪ #8 Cu/Al - 25 in-lb (2.3 Nm) ▪ #6-4 Cu/Al - 35 in-lb (4.0)
Ground connection to terminal strip	14 AWG to 4 AWG (copper) 12 AWG to 4 AWG (aluminum)	Ground/Neutral bar	300 V	▪ #14-10 Cu, #12-10 Al: 20 in-lb (2.3 Nm) ▪ #8 Cu/Al - 25 in-lb (2.3 Nm) ▪ #6-4 Cu/Al - 35 in-lb (4.0)
Ethernet cables	CAT5e (shielded)	RJ45	600 V	N/A
RSD Cables	#18 AWG	Terminal Strip	600 V	N/A

Guidelines for Routing Cables

Follow these guidelines when routing the cables:

- Use enclosed conduits for routing any cables outside of the enclosure.
- Route the cables away from sharp edges that might damage the insulation. Avoid sharp bends in the cable—no less than a 4 in. (100 mm) radius.
- Allow for some slack in the cable tension.
- Keep the alignment of wire pairs inside the sheath as straight as possible.
- If possible, allow separation between data and power cables.
- Use appropriate hardware fasteners to avoid damage to the cable.

Wire Routing Diagrams

Figure 14 Existing CSED Main Panel and Schneider Inverter, Boost, and Pulse Backup Controller - Partial Home Backup

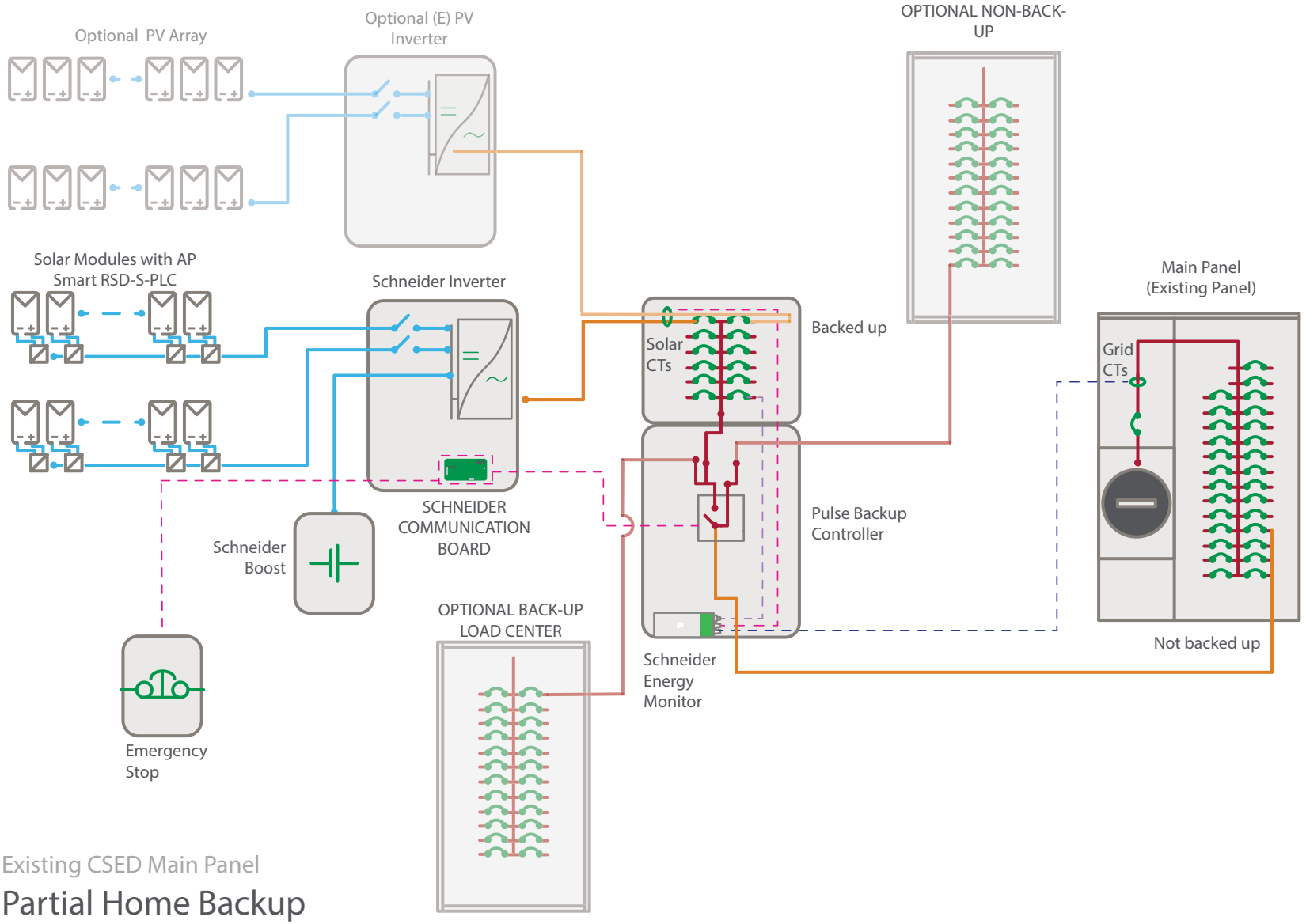


Figure 15 Existing CSED Main Panel and Schneider Inverter, Boost, and Pulse Backup Controller - Whole Home Backup

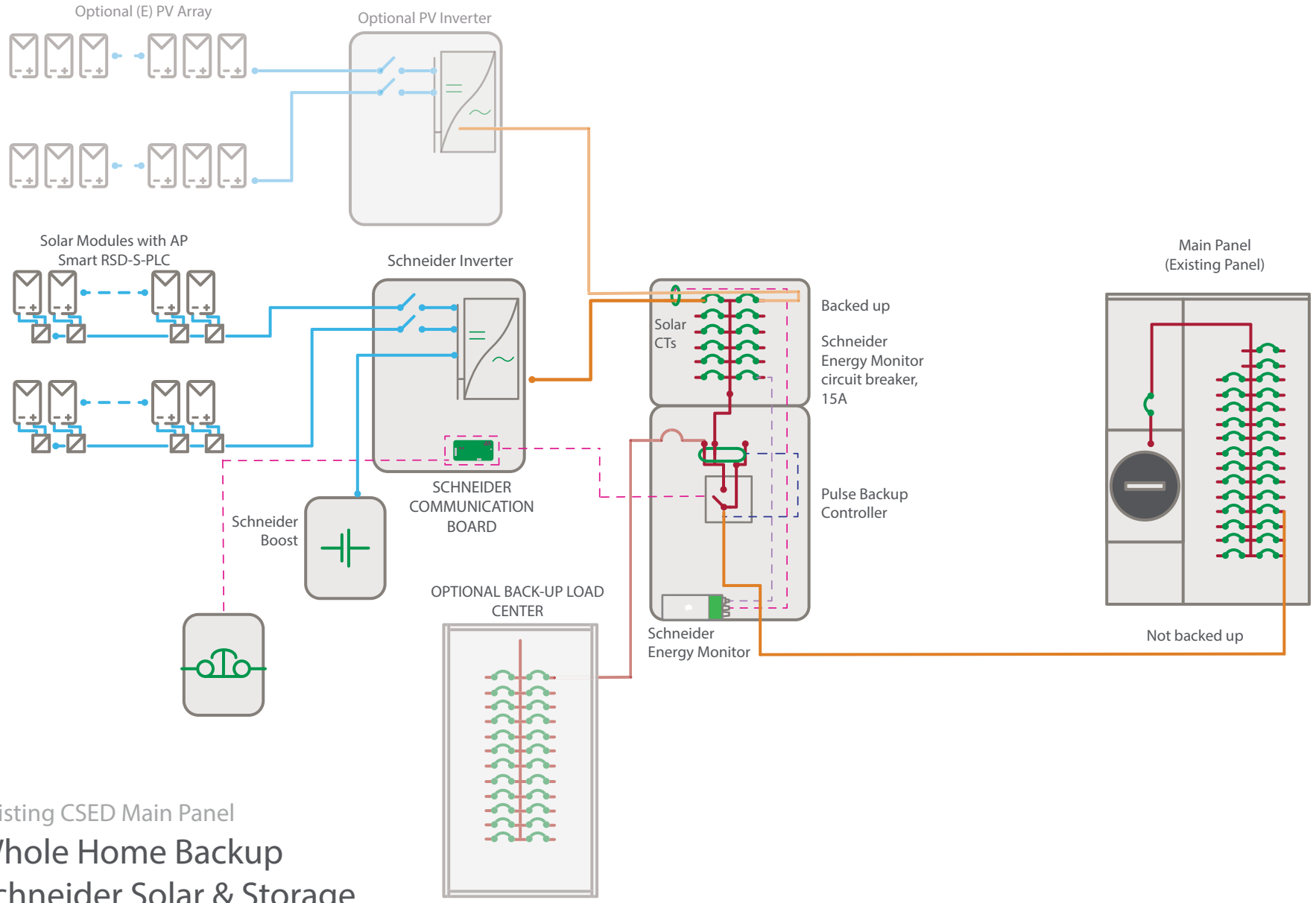
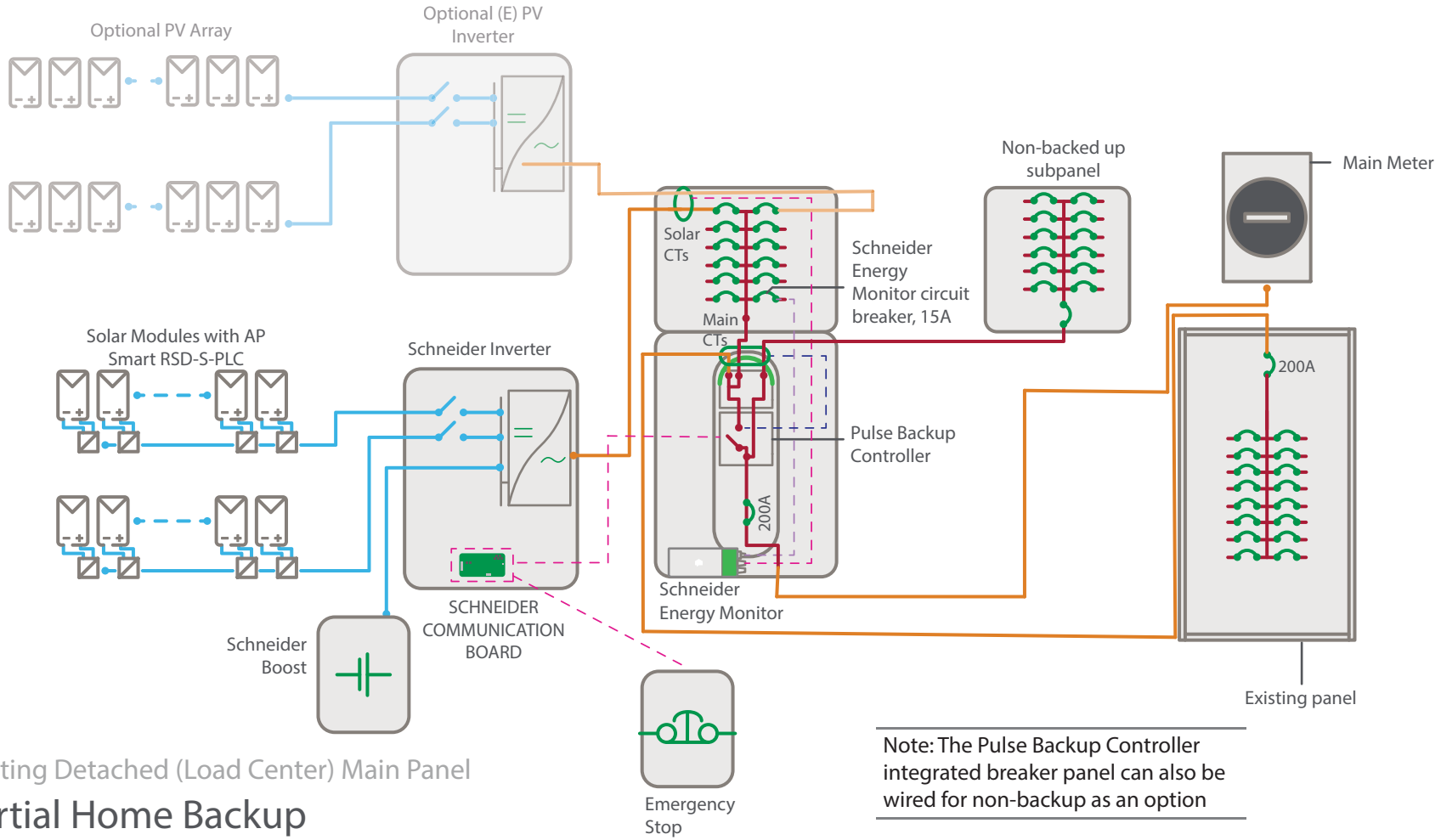


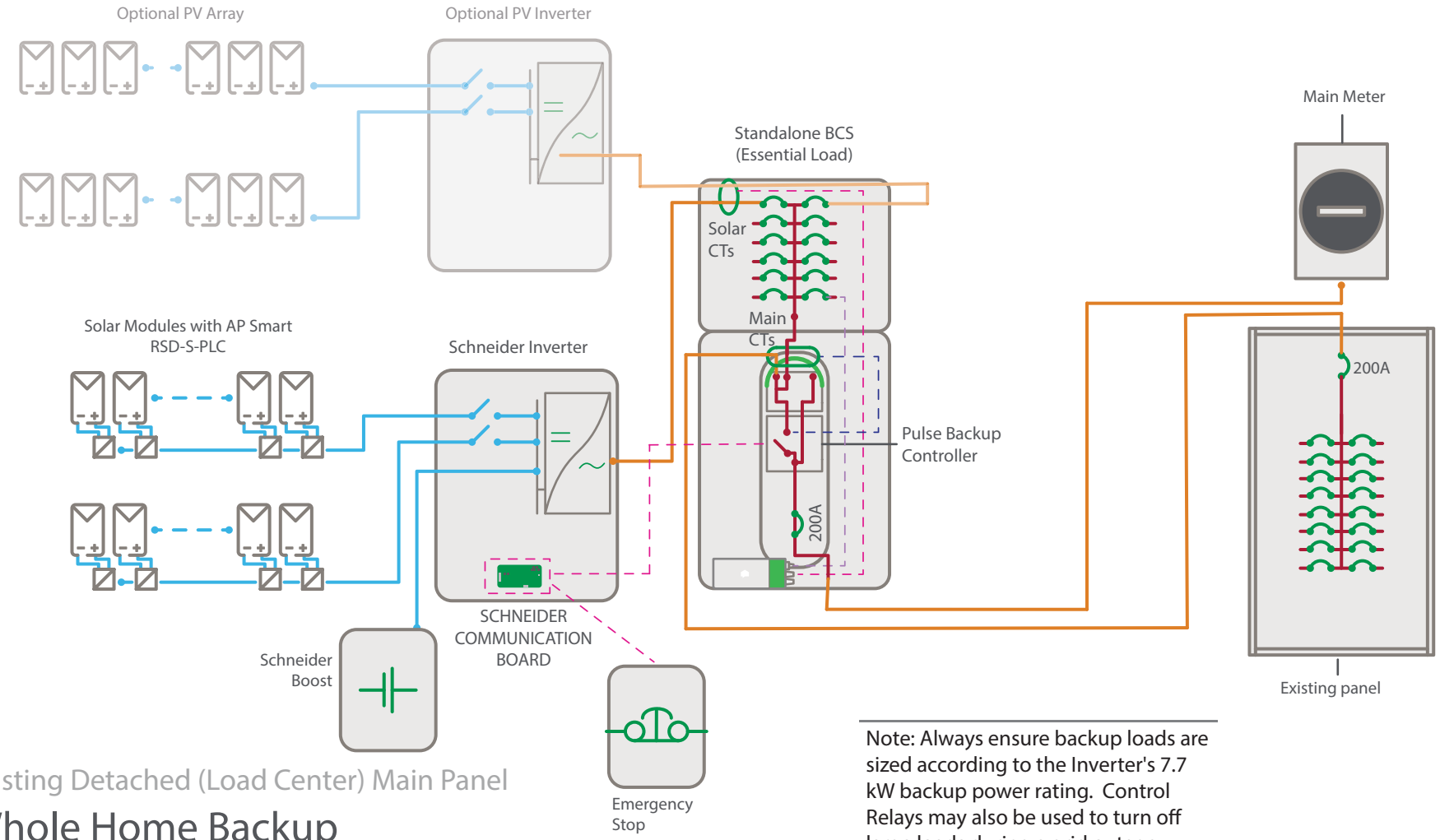
Figure 16 Pulse Backup Controller as Service Equipment with Solar and Storage - Partial Home Backup



Existing Detached (Load Center) Main Panel

Partial Home Backup
Schneider Solar & Storage
with Pulse Backup Controller as Service Equipment (Essential Load Configuration)

Figure 17 Pulse Backup Controller as Service Equipment with Solar and Storage - Whole Home Backup

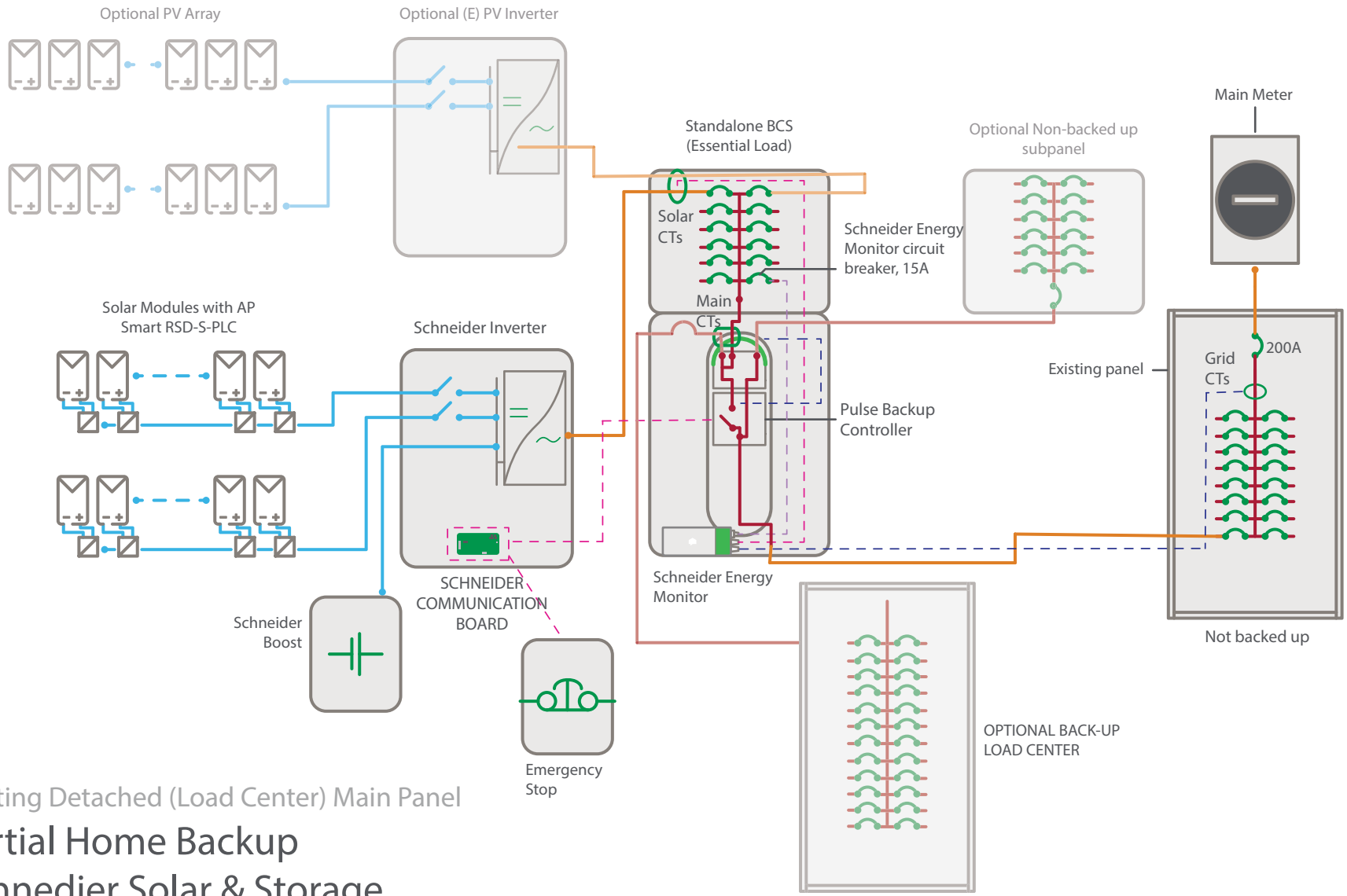


Note: Always ensure backup loads are sized according to the Inverter's 7.7 kW backup power rating. Control Relays may also be used to turn off large loads during a grid outage.

Existing Detached (Load Center) Main Panel

Whole Home Backup
Schneider Solar & Storage
with Pulse Backup Controller as Service Equipment

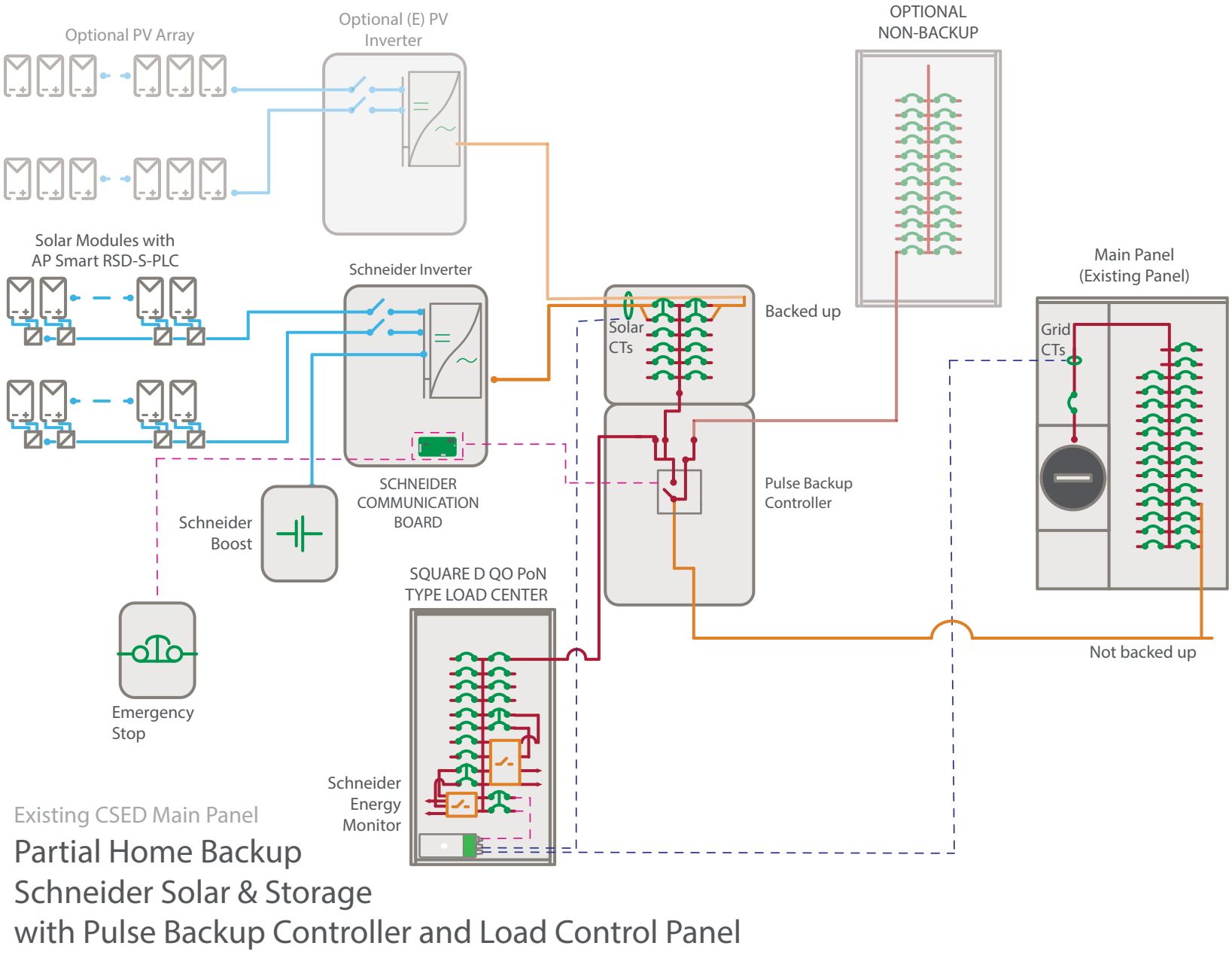
Figure 18 Pulse Backup Controller Load Side with Solar and Storage - Partial Home Backup



Existing Detached (Load Center) Main Panel

Partial Home Backup
Schnedier Solar & Storage
with Pulse Backup Controller Load Side (Essential Load Configuration)

Figure 19 Pulse Backup Controller and Load Control Panel with Solar and Storage - Partial Home Backup



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