



# Megapack 2 Operation and Maintenance Manual

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# IMPORTANT SAFETY INFORMATION


## SAVE THESE INSTRUCTIONS


THIS MANUAL CONTAINS IMPORTANT INFORMATION THAT MUST BE READ, UNDERSTOOD, AND FOLLOWED DURING OPERATION AND MAINTENANCE OF THE MEGEPACK SYSTEM.


## SYMBOLS

This manual uses the following symbols to highlight important information:


 **DANGER:** Indicates a hazardous situation which, if not avoided, could result in severe injury or death.

 **WARNING:** Indicates a hazardous situation which, if not avoided, could result in injury.


 **CAUTION:** Indicates a hazardous situation which, if not avoided, could result in minor injury or damage to the equipment.


 **NOTE:** Indicates an important step or tip that leads to best results but is not safety- or damage-related.

## PRODUCT WARNINGS


 **DANGER:** Servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing unless you are qualified to do so.

 **DANGER:** Electric shock can occur when touching live components.


 **DANGER:** Risk of electrical shock. Multiple energy sources terminate inside this equipment. Always check with a properly rated voltmeter that there is no voltage on the bus before touching.


 **DANGER:** Lock out all sources of AC power at the source before servicing Megapack or removing the AC circuit breaker or bus bar access panels in the Customer Interface Bay.

 **DANGER:** Hazardous voltage can cause severe injury or death.

 **DANGER:** Shutting off power to Megapack does not de-energize the battery, and thus a shock hazard may still be present.

 **DANGER:** Megapack, even in a normally discharged condition, is likely to contain substantial electrical charge and can cause injury or death if mishandled.

 **DANGER:** The batteries used in this device may present a risk of fire or chemical burn if mistreated. Do not disassemble, operate above 50°C (122°F), or incinerate.

 **WARNING:** Failure to read, understand and comply with all instructions in this manual may result in injury.



**WARNING:** Personal Protective Equipment (PPE) is required when working inside Megapack enclosures. Service personnel must wear safety glasses and gloves with a minimum voltage rating of 1500 V DC, Class 0 per ASTM D120 and IEC EN60903 standards.

**WARNING:** Megapack has no user-serviceable parts. All service must be performed by Tesla Energy Certified Installers or Tesla employees. Only trained service personnel are allowed access.

**WARNING:** Only use this equipment as specified by Tesla. Use of this equipment in a manner not specified by Tesla may result in impaired protection features and injury to personnel.

**WARNING:** Batteries are not user-serviceable. Only Tesla-approved personnel must remove, replace, or dispose of batteries.

**WARNING:** For continued protection against risk of fire, use only replacement fuses of the same type and rating as the original fuse. Fuses must only be replaced by trained personnel.

**CAUTION:** Do not paint any part of Megapack other than external white metal surfaces, using only Tesla-provided touch-up paint. Internal or external components such as exterior cabinets or grilles should not be painted.

**CAUTION:** Do not use cleaning solvents to clean the Megapack or expose the system to flammable or harsh chemicals or vapors.

**CAUTION:** Do not use fluids, parts, or accessories other than those specified in Tesla manuals, including use of non-genuine Tesla parts or accessories, or parts or accessories not purchased directly from Tesla or a Tesla-approved party.



**CAUTION:** Hearing damage could occur if not wearing hearing protection while Megapack is in operation.

Refer to the Tesla *Lithium-Ion Battery Emergency Response Guide* for detailed hazard information specific to the lithium-ion battery. The guide also provides hazard information for a single Tesla Megapack.

## Voltage Classification

This section defines voltage classification as used in this document.

The table below represents Tesla's standard voltage ranges. The defined ranges, comparable to global codes and standards, help categorize potential electrical hazards where applicable.

**NOTE:** Any voltage referred to in this document is low voltage unless otherwise specified.

**Table 1. Voltage Classifications**

Classification	Acronym	Alternating Current (AC) Range	Direct Current (DC) Range
Ultra-Low Voltage	ULV	0-48 V	0-48 V
Low Voltage	LV	50-1,000 V	50-2,000 V
Medium Voltage	MV	1,000-35,000 V (1kV-35kV)	2,000-35,000 V (2kV-35kV)



Classification	Acronym	Alternating Current (AC) Range	Direct Current (DC) Range
Sub-Transmission Medium Voltage	STMV	35,000-69,000 V (35kV-69kV)	35,000-69,000 V (35kV-69kV)
High Voltage	HV	Above 69,000 V (>69kV)	Above 69,000 V (>69kV)



## Reference Documents

Visit the Tesla Partner Portal at <https://partners.tesla.com/> to find reference material referred to within this guide, including:

- Lithium-Ion Battery Emergency Response Guide - <https://www.tesla.com/firstresponders>
- Megapack Enhanced Safety Overview - [https://partners.tesla.com/home/en-US/content/download/Tesla\\_Megapack\\_Datasheet\\_Safety.pdf](https://partners.tesla.com/home/en-US/content/download/Tesla_Megapack_Datasheet_Safety.pdf)
- Megapack 2 Design and Installation Manual - [https://partners.tesla.com/home/en-us/content/download/megapack\\_2\\_design\\_and\\_installation\\_manual.pdf](https://partners.tesla.com/home/en-us/content/download/megapack_2_design_and_installation_manual.pdf)
- Megapack 2 Transportation and Storage Guidelines - [https://partners.tesla.com/home/en-us/content/download/megapack\\_2\\_transportation\\_and\\_storage\\_guidelines.pdf](https://partners.tesla.com/home/en-us/content/download/megapack_2_transportation_and_storage_guidelines.pdf)
- Tesla Energy Controls and Communications Manual - [https://partners.tesla.com/home/en-US/content/download/Tesla\\_Energy\\_Controls\\_and\\_Communications\\_Manual.pdf](https://partners.tesla.com/home/en-US/content/download/Tesla_Energy_Controls_and_Communications_Manual.pdf)
- Microgrid Controller Owner's Manual - [https://partners.tesla.com/home/en-US/content/download/MicrogridController\\_Manual\\_Owners.pdf](https://partners.tesla.com/home/en-US/content/download/MicrogridController_Manual_Owners.pdf)
- Powerhub User Manual - [https://partners.tesla.com/home/en-US/content/download/Powerhub\\_User\\_Manual.pdf](https://partners.tesla.com/home/en-US/content/download/Powerhub_User_Manual.pdf)
- Tesla Energy Operations Contact List and Response Times - [https://partners.tesla.com/home/en-US/content/download/Tesla\\_Energy\\_Operations\\_Contact\\_List\\_and\\_Response\\_Times.pdf](https://partners.tesla.com/home/en-US/content/download/Tesla_Energy_Operations_Contact_List_and_Response_Times.pdf)
- Megapack Decommissioning Protocol - [https://partners.tesla.com/home/en-us/content/download/megapack\\_decommissioning\\_protocol.pdf](https://partners.tesla.com/home/en-us/content/download/megapack_decommissioning_protocol.pdf)





# 1 Megapack Overview

## 1.1 Introduction

Tesla Megapack 2 (Megapack) is a modular, fully integrated, AC-coupled battery energy storage system (BESS). This document describes the system and how it functions at a high level, how to perform basic operations and maintenance, and how to get support if needed. It also describes key components of what Tesla needs in order to service and maintain the site.

For detailed information on interfacing with and controlling the system, see the *Tesla Energy Controls and Communications Manual*.

## 1.2 Megapack System Components

A Megapack system consists of the following components:

- One or more Megapacks ([Megapack on page 7](#))
  - Megapack 2 – Part number 1748844-XX-Y<sup>1</sup>
- The Tesla Site Controller ([Tesla Site Controller on page 14](#))
  - Standard Tesla Site Controller Enclosure (for sites up to 18 MW) – Part number 1471208-XX-Y<sup>1</sup>
  - Large Tesla Site Controller (for sites greater than 18 MW) – Part number: Either 1459154-XX-Y or 1700130-XX-Y<sup>1</sup>

<sup>1</sup>Where X is a number between 0 and 9, and Y is a letter.

**Figure 1. Example Megapack Site**








## 1.3 Megapack

Megapack is bi-directional, supporting charge and discharge. It converts power for storage in rechargeable lithium-ion battery packs (battery modules) and is designed in a modular fashion in order to support a range of AC power.

 **NOTE:** Individual Megapack specifications are detailed on the product label (see [Megapack Labels on page 16](#)).

Each Megapack contains up to 19 battery modules with inverters, a thermal bay and associated thermal roof components, an AC circuit breaker, and a set of customer interface terminals and internal controls circuit boards. An external auxiliary power supply is not required for Megapack; Megapack pulls auxiliary power for the control power and thermal management from the local AC.

Depending on the system configuration (2-hour or 4-hour), each Megapack can be configured with different quantities of battery modules which, together with the site's grid voltage, determine Megapack's nominal power rating.

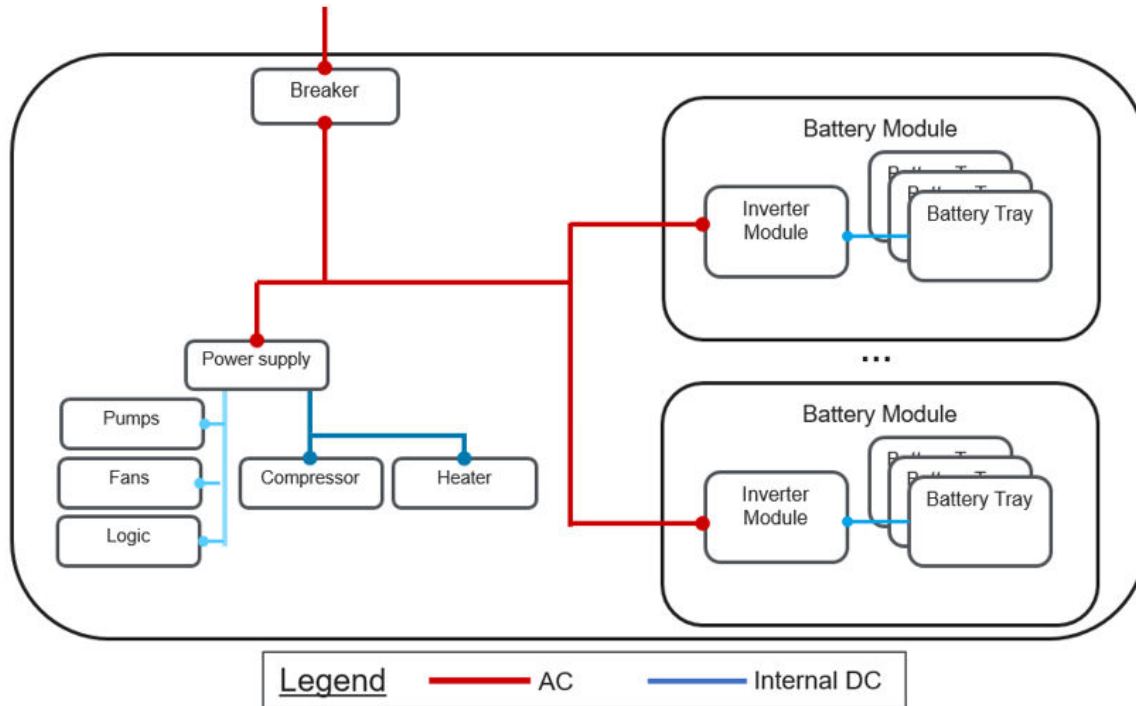
**Figure 2. Example Megapack**



1. Battery module bays ([Battery Modules on page 8](#))
2. Thermal bay ([Thermal Components on page 9](#))
3. Customer Interface Bay ([Customer Interface Bay on page 9](#))
4. Thermal roof ([Thermal Components on page 9](#))
5. IP66 enclosure ([The Megapack IP66 Enclosure on page 13](#))



**Figure 3. Megapack Internal Architecture**



### 1.3.1 Battery Modules

Battery modules are factory-installed into Megapack bays and contain prismatic lithium-ion battery cells, the smallest non-divisible energy storage components of the Megapack. A battery module in turn is the smallest field-replaceable battery unit. One Megapack contains up to 18 of these modules in the 2-hour system and up to 19 in the 4-hour system.

**Figure 4. Battery Module**



Each battery module includes an integrated inverter module for DC/AC power conversion. Battery modules are connected in parallel, each with an AC and communications output connection. The modules do not require any field assembly or adjustments and may only be replaced by Tesla Service or approved third-party service provider.



### 1.3.2 Thermal Components

Bay 1 in Megapack is called the thermal bay because it houses Megapack's thermal management system, which provides active cooling and heating to the internal Megapack components. The thermal bay is accessible for servicing from ground level and contains pumps as well as the main components of the active cooling (refrigerant) loop. Additionally, the thermal bay contains a power conversion system for drawing power from Megapack's AC bus to supply these components.

**Figure 5. Thermal Components**



1. Thermal bay
2. Thermal shelves
3. Thermal roof
4. Battery module - not part of the thermal system

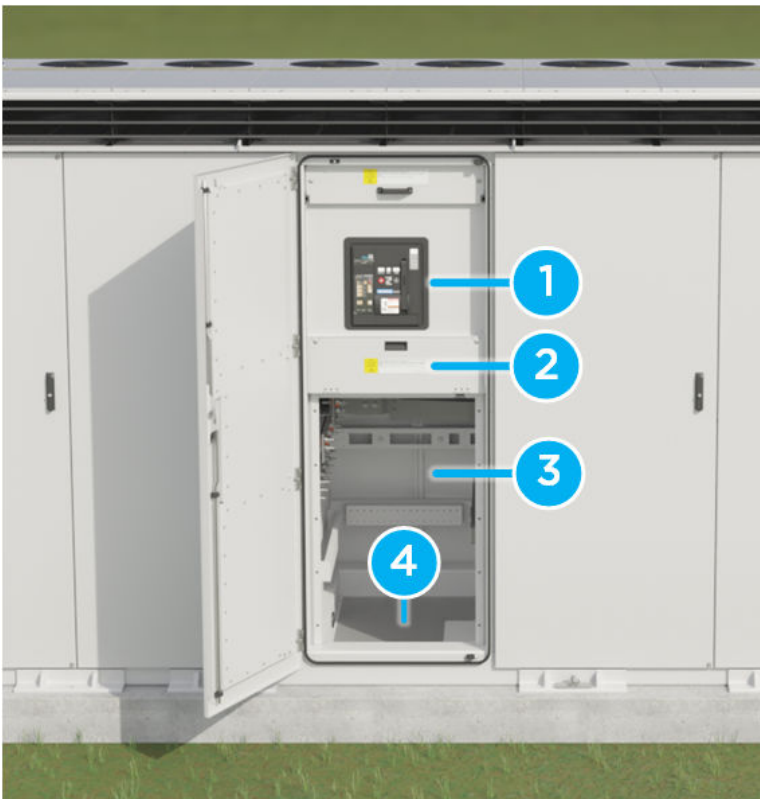
The thermal roof, or top cabinet of the enclosure, provides ventilation airspace and contains fans and radiators that cool the ethylene glycol-water coolant mix. The thermal roof is accessible for servicing with the help of a ladder or mechanical lift.

**WARNING:** The thermal management section is locked during operation. Do not open this cabinet while fans are in use, to avoid hazard from moving parts.

**NOTE:** Megapack includes an enable circuit as a safety feature. Opening the door to the thermal bay shuts down the Megapack. The thermal components located on the roof should not be serviced during operation.

### 1.3.3 Customer Interface Bay

All of the interface customers require for installation, operation, and maintenance is located in the Customer Interface Bay:

**Figure 6. Customer Interface Bay****Figure 7. Customer Interface Bay Details**

1. [Megapack AC Circuit Breaker on page 10](#)
2. Customer I/O area - where all terminations aside from AC bus bars are made
3. AC bus bar area - where terminations to the site distribution transformer or AC distribution panel are made
4. AC conduit opening covered by removable floor panel

### 1.3.4 Megapack AC Circuit Breaker

The Customer Interface Bay contains a pre-installed AC circuit breaker to provide distribution system protection.





**Figure 8. Megapack AC Circuit Breaker**



#### 1.3.4.1 Breaker Specification and Design

The Tesla AC circuit breaker part numbers are:

- Megapack 4 Hour - L2F316TGJAXEACN
- Megapack 2 Hour - L2F330WGJAXEACN

The circuit breaker is a Siemens UL489 model with an ETU745 programmable protection unit. The unit includes LSIG trip functionality (Long, Short, Instantaneous, Ground Fault) with defaults as described below. The breaker is not part of the internal Megapack protection scheme and must be programmed on-site according to site-specific plans or engineering guidance. Consult the manufacturer's documentation for the full AC circuit breaker specification for *Siemens Low Voltage WL Circuit Breakers*:

<https://new.siemens.com/us/en/products/energy/low-voltage/low-voltage-circuit-breakers/wl-power-circuit-breakers.html> → UL489 content

**NOTE:** The breaker trip power supply is fed from multiple sources in the customer I/O area. While operating normally (above 0% state-of-charge and not faulted) power is provided by the battery modules. Jumpstart power (if provided) can also be used.

**NOTE:** The breaker open/close buttons are located 1730 mm (68.1 in) from the base of the Megapack. If the chosen foundation will place these buttons outside of local regulatory height requirements, ensure another method of compliance is provided (raised workstation, remote open/close terminals, etc.).

**NOTE:** Additional protection or switching means at the output of the Megapack may be required depending on the jurisdiction. Protection and switching philosophy must be verified by the customer's engineer of record and should comply with regional and local codes.

Field retrofits of components to the breaker may be required (for example to install a spring charge motor). To perform such work, remove the panel surrounding the breaker per the instructions in the *Megapack 2 Design and Installation Manual*. Consult the *Siemens WL Breaker Manual* for details regarding installing breaker components.



### 1.3.4.2 Default Breaker Settings

The circuit breaker is shipped with pre-configured general trip settings that must be changed upon arrival through the Electronic Trip Unit (ETU). The ETU has configurable settings for Long-time overcurrent protection (L), Short-time delayed overcurrent protection (S), Instantaneous Overcurrent Protection (I), Ground Fault Protection (G), and other features provided below. The Engineer of Record is responsible for the configuration of the ETU settings for system protection and proper operation. The breaker is pre-programmed with defaults as described below:

**Table 2. Default Circuit Breaker Settings**

Megapack Pre-Configured Trip Settings	Megapack 2-Hour	Megapack 4-Hour
Frame Size	II - (3000A)	II - (1600A)
$I_n$ (Plug Rating)	3000	1600
$I_r$ (Long-time Current)	1 (3000A)	1 (1600A)
$t_r^*$ (Long-time Delay)	2 sec (18000A)	2 sec (9600A)
$I_{sd}$ (Short-time Current)	1.25 (3750A)	1.25 (2000A)
$t_{sd}$ (Short-time Delay)	0.1 sec ( $I^2t$ )	0.1 sec ( $I^2t$ )
$I_i$ (Instantaneous Current)	1.5 (4500A)	1.5 (2400A)
$I_g$ (Ground-fault Current)	C (600A)	B (300A)
$t_g$ (Ground-fault Delay)	0.2 sec ( $I^2t$ )	0.2 sec ( $I^2t$ )
Toggle Switch	$I^2t$ , $I_n$ =off	$I^2t$ , $I_n$ =off

\* $I_n$  uses the same delay as  $t_r$ , long time delay.

### 1.3.4.3 Interfacing with Megapack

External monitoring and control of the Megapack-specified circuit breaker is not a default offering. If circuit breaker status monitoring is required, contact your Tesla representative. Terminals for external control are accessible through the Customer Interface Bay for external closing (Breaker Close) and opening (Remote Shutdown). The Customer Interface Bay allows for the use of external relays to command the breaker however, Megapack will only close the breaker if the system has been deemed safe from the Megapack logic. The Trip command takes precedence over the Breaker Close command.

Upon fault detection, the circuit breaker will open to isolate the Megapack system. Default settings are described below:

**Table 3. AC Circuit Breaker Control Summary**

Breaker State	Trip Command	Breaker Close Command	Resulting Megapack Behavior
Open	Not Asserted	Asserted	Depending on desired behavior, the Megapack will perform internal checks and may close the breaker autonomously.
Open	Not Asserted	Not Asserted	The breaker will remain open until the Breaker Close command is asserted.
Open	Asserted	Asserted	The breaker will remain open; the Trip command takes precedence over the Breaker Close command and the internal Megapack breaker operations.





Breaker State	Trip Command	Breaker Close Command	Resulting Megapack Behavior
Open	Asserted	Not Asserted	The breaker will remain open; the Trip command takes precedence over the internal Megapack breaker operations.
Closed	Not Asserted	Asserted	Megapack will operate per its internal logic, which may open the breaker.
Closed	Not Asserted	Not Asserted	Megapack will operate per its internal logic, which may open the breaker.
Closed	Asserted	Asserted	The breaker will be tripped.
Closed	Asserted	Not Asserted	The breaker will be tripped.


### 1.3.5 The Megapack IP66 Enclosure


Megapack's enclosure is rated according to the IP Code (Ingress Protection Code) to IP66. This means it affords a high protection against particle and water ingress in order to protect the enclosure contents.

**This high protection rating must be maintained at all times. In particular, special precautions must be observed while installing or servicing Megapack in order to prevent particles or water from entering the enclosure.**

At a minimum, this means the following conditions must be observed:

- **Megapack must remain sealed:** While actively working on Megapack, ensure that all Megapack doors are closed and conduit and wireway openings are sealed **before you leave the site each day** in order to keep the Megapack interior dry and clean.
  - Refer to the *Megapack Installation Manual* or contact Tesla Support at [IndustrialStorageSupport@tesla.com](mailto:IndustrialStorageSupport@tesla.com) for more information on maintaining this required seal.
- **Megapack's interior must remain dry:** Do not perform any work on Megapack that requires opening its doors when there is a possibility of moisture (from precipitation or excess humidity) entering the enclosure.
- **Megapack must remain protected from dust and debris:** At all times when doors are open, ensure that dust or debris of any kind does not enter the enclosure. For example, do not operate a leaf blower near an open door and ensure that doors are closed when wind may blow debris.

 **WARNING:** Failure to properly seal the Megapack openings and enclosure may violate the integrity of the IP66 enclosure and allow moisture, particles, rodents or other objects to enter the enclosure and cause significant damage to equipment.

 **CAUTION:** Some foaming agents such as plumbing foam can degrade insulation and PVC conduit pipes. Ensure all sealants are compatible with site materials.

### 1.3.6 Megapack Numbering Key

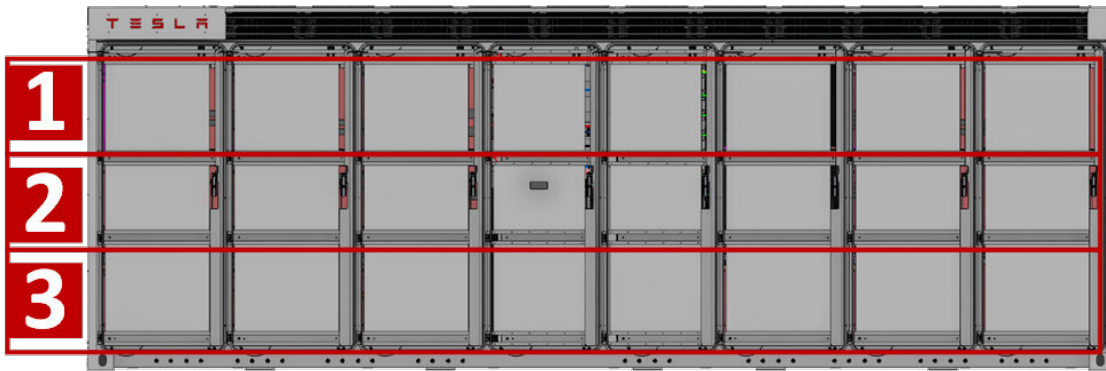
A numbering key can help identify locations of Megapack enclosure components to assist you when referring to them during installation or service. Below are the numbering keys for **bay** (vertical tower) and **shelf** (horizontal row) locations:



**Figure 9. Bay Numbering Key**



**Figure 10. Shelf Numbering Key**



For example, as depicted in [Example Megapack on page 7](#):

- The thermal bay is located in bay 1
- The Customer Interface Bay is bay 4
- A battery module under consideration might be located in any other bay except bay 4; shelves 1-3

## 1.4 Tesla Site Controller

The Tesla Site Controller is the single point of interface for the utility, network operator, or customer SCADA systems to control and monitor the entire energy storage site. It hosts the control algorithm that dictates the charge and discharge functions of the battery system units, aggregating real-time information and using the information to optimize the commands sent to each individual battery unit.

The battery system communicates with the Tesla Site Controller over a private TCP network via Modbus, DNP3, or REST interfaces.

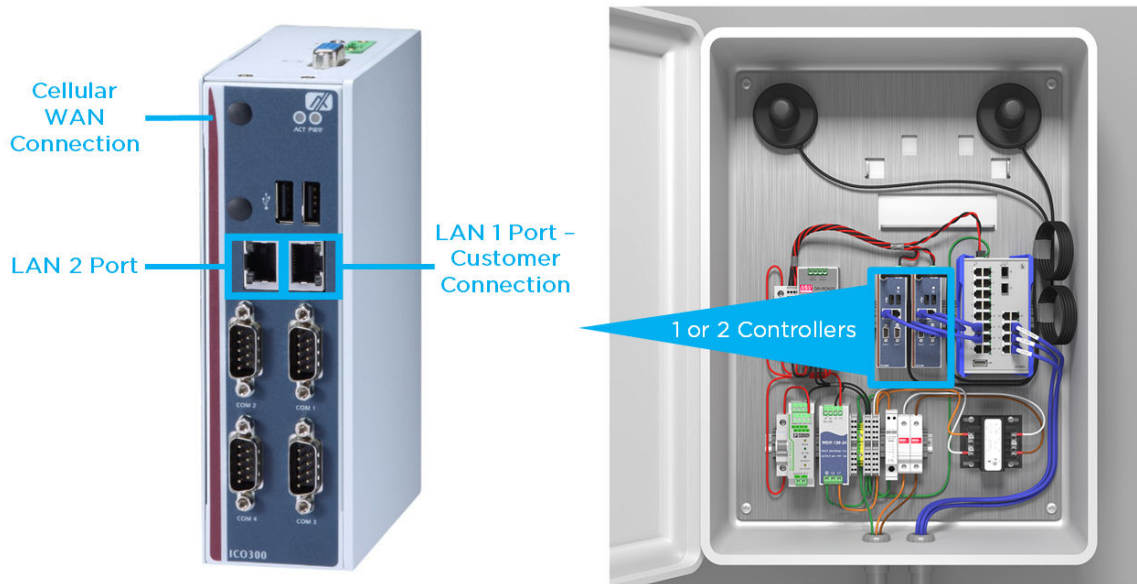
One Tesla Site Controller is typically required for each point of interconnection, however Tesla may choose to provide a second redundant Tesla Site Controller. Tesla does not include additional networking equipment that shall be required for the system to operate.

There are two physical variations of the Tesla Site Controller:

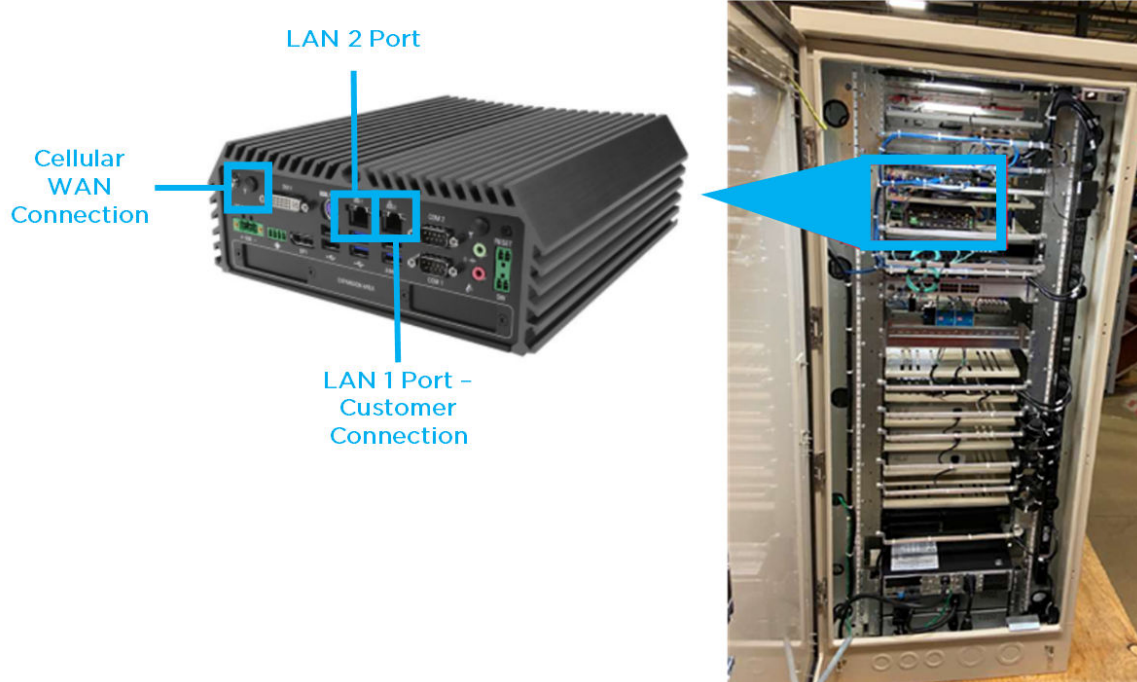


- **Standard Tesla Site Controller** - used in sites up to 18 MW. Delivered in an enclosure called the Standard Tesla Site Controller Enclosure. The Standard Tesla Site Controller Enclosure may include two (2) Standard Tesla Site Controllers.
- **Large Tesla Site Controller** - for sites larger than 18 MW. Delivered as the controller only.

**Figure 11. Standard Tesla Site Controller in the Standard Tesla Site Controller Enclosure**



**Figure 12. Large Tesla Site Controller mounted inside SCADA Rack Enclosure**



For more information:

- See the *Tesla Energy Controls and Communications Manual* for complete instructions on how to interface with the Tesla Site Controller.



## 1.5 Labels and Serial Numbers

### 1.5.1 Megapack Labels

Megapack labels provide the specifications and product reference for each individual Megapack.

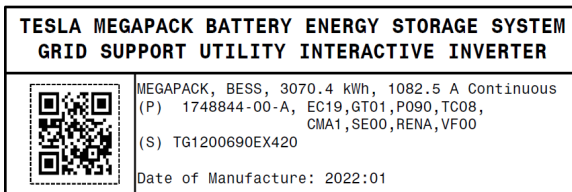
 **NOTE:** The labels pictured here are example labels. Refer to the actual labels for applicable ratings and specifications per option codes.


 **NOTE:** For more information about option codes, refer to the *Megapack 2 Option Codes Quick Reference Guide*.

The **Megapack nameplate label** is a small metal label laser-etched onto the outside of the Customer Interface Bay door above the handle. It contains:

- Description of the product, with kWh, kW, and amp ratings
- Part number followed by option codes for battery and inverter ratings only
- Serial number
- Date of manufacture

**Figure 13. Megapack Nameplate Label - Example**







 **NOTE:** The nameplate label lists selected option codes only. For the complete list of option codes, refer to the main Megapack label.

The **main Megapack label** is a large sticker affixed to the inside of the Customer Interface Bay door, and contains information such as:

- AC input/output specifications including relevant power and energy ratings
- Part number followed by complete list of option codes
- Serial number
- Date of manufacture
- Weight (mass)
- Other detailed product specifics and compliance marks



Figure 14. Main Megapack Label - Example

TESLA MEGAPACK BATTERY ENERGY STORAGE SYSTEM GRID SUPPORT UTILITY INTERACTIVE INVERTER	
<div>  <div> <div>1</div> <div>MEGAPACK BESS, 3070.4 kWh, 1082.5 A Continuous</div> <div>(P) 1748844-00-A EC19,GT01,P090,TC08,</div> <div>(S) TG1200690EX420 CMA1,SE00,RENA,VF00</div> <div>Date of Manufacture: 2022:01</div> </div> </div>	
<div> <div>2</div>  <div>3</div> </div>	
Protective Class	Class I
Enclosure Type	Type 3R/IP66
Ingress Protection (Cabinet/Cooling)	IP66 / IP2x
Operating Temperature Range	-30 °C to +50 °C
Inverter Topology	Non-Isolated
Nominal Battery Energy (AC) at 767.6 kW	3070.4 kWh
Battery Type	Li-Ion
Mass	27868 kg / 61462 lb
<b>AC Input/Output</b>	
Nominal Voltage (3-Phase)	480 VAC
Maximum Continuous Power	900 kVA
Voltage Range	432-552 V
Maximum Continuous Current	1082.5 A
Frequency	45-66 Hz
Power Factor Range	-1 to 1
Maximum Output Fault Current	1299 A
Maximum Utility Backfeed Current	1623.8 A
Maximum Supply Fault Current	85 kA AC
Refrigerant	(R-134a 7.6kg [16.75 lb])
Refrigerant Oil	(POE 3.37L [54 OZ])
Certified to:	CAN/CSA STD C22.2 No.107.1
Conforms to:	ANSI/CAN/UL 1973, ANSI/CAN/UL 9540 UL STD. 1741
<p><b>CAUTION:</b> RISK OF ELECTRIC SHOCK. <b>WARNING:</b> POWER FED FROM MORE THAN ONE SOURCE. DISCONNECT ALL SOURCES OF SUPPLY BEFORE SERVICING.</p> <p>ENERGY STORED IN CAPACITOR. DO NOT REMOVE COVER UNTIL 5 MINUTES AFTER DISCONNECTING THE EQUIPMENT.</p> <p>REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p>	
<p><b>ATTENTION:</b> RISQUE DE CHOC ÉLECTRIQUE. <b>AVERTISSEMENT:</b> L'ALIMENTATION PROVIENT DE PLUS D'UNE SOURCE COUPER TOUTES LES SOURCES D'ALIMENTATION AVANT UN SERVICE</p> <p>ÉNERGIE STOCKÉE DANS DES CONDENSATEURS. ATTENDRE 5 MINUTES AVANT DE RETIRER LE COUVERCLE APRÈS AVOIR COUPÉ TOUTES LES SOURCES D'ALIMENTATION.</p> <p>CONFIER L'ENTRETIEN À DU PERSONNEL QUALIFIÉ.</p>	
 5 Minutes	
<div>  <div>           Tesla, Inc.            Electric Ave, Sparks, NV 89437, USA            Tel: 1(877)798-3752            www.tesla.com         </div> </div>	

1. Part number
2. Serial number
3. Option codes

## 1.5.2 Tesla Site Controller Serial Number

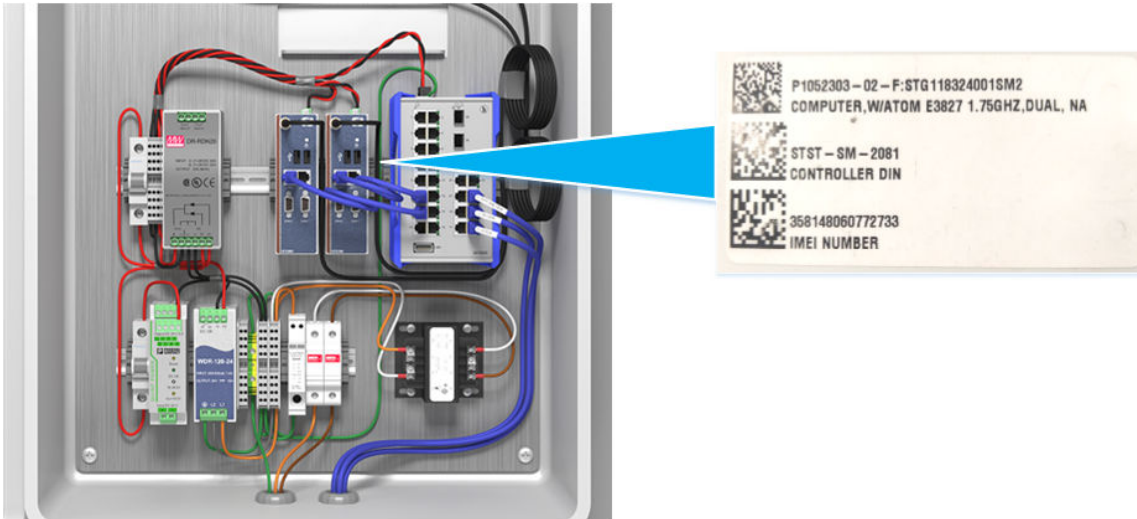
For both variants of the Tesla Site Controller, look on the controller computer or computers to identify the serial number.

The Standard Tesla Site Controller serial number and VIN are located on a label on the side of the Standard Tesla Site Controller computer in the Standard Tesla Site Controller Enclosure:





**Figure 15. Standard Tesla Site Controller Serial Number (Example) - Location**



The VIN is typically labeled *CONTROLLER DIN* and takes the format *STST-SM-####*.



**NOTE:** There may be two Standard Tesla Site Controllers in the Standard Tesla Site Controller Enclosure. Each has its own identifiers.

The Large Tesla Site Controller serial number is located on the side of the Large Tesla Site Controller computer.

## 1.6 Emergency Response Guide

The *Lithium-Ion Battery Emergency Response Guide* (ERG) provides an overview of the product materials, handling and use precautions, hazards, emergency response procedures, and storage and transportation instructions. The document may be used in place of traditional material safety data sheets (MSDS) or safety data sheets (SDS) commonly associated with the health and safety of a chemical product.

Tesla BESSs, as described in the ERG, meet the OSHA definition of “articles” and are therefore exempt from requiring SDS format. Refrigerant and coolant SDSs are however also available on the Tesla Partner Portal.



**NOTE:** Tesla BESS coolant is not a regulated substance according to the United States Department of Transportation (USDOT). Refer to the specific safety data sheet (SDS) for battery coolant.



**NOTE:** Tesla BESS refrigerant is a regulated substance according to the USDOT. Refer to the specific SDS for R-134a.



**NOTE:** For projects in Australia or New Zealand, contact your Tesla representative for the product's safety data sheet.

Tesla recommends that a physical copy of the ERG is transported along with Megapack, and subsequently remains on site and accessible at all times, for the life of the product. Download the guide from <https://tesla.com/firstresponders>, or scan the code for a given language below:





## 1.7 Getting Support

For Megapack support or to provide product feedback, email [IndustrialStorageSupport@tesla.com](mailto:IndustrialStorageSupport@tesla.com) (responses can take 24-48 hours).

For urgent support, refer to [Urgent Contact Information on page 19](#).

Have the following information ready when contacting Tesla:

- Site name
- Best point of contact for Tesla to return contact (name, phone number, email)
- Tesla Site Controller VIN (*Example VIN format: STST-SM-XXXX*)
- Brief description of the observed issue, including the time, date, and symptoms of the event
- If the issue is specific to one Megapack, the Megapack serial number.

### 1.7.1 Urgent Contact Information

In case of critical performance issues (for example, if the Tesla site is 100% non-operational), call the appropriate Tesla telephone number listed below and select **Urgent** for 24/7 support.



For other inquiries, refer to *Tesla Energy Operations Contact List and Response Times* or email and telephone support contacts provided below.

#### Online Support and Ticketing Portal

<https://energysupport.tesla.com>

#### Email Support

[IndustrialStorageSupport@tesla.com](mailto:IndustrialStorageSupport@tesla.com)

#### Urgent Support via Telephone (24x7)

North America: +1 650-681-6060

Asia/Australia/New Zealand: +61 2 432 802 81

Europe/Middle East/Africa: +31 2 08 88 53 32

#### Technical Support via Telephone

Americas: +1 650-681-6060	Asia/Pacific: +61 2 432 802 81	France: +33 173218702
Japan: +0120 312-441	Netherlands: +31 208885332	Slovenia: +38 617778699
South Africa: +27 213004878	Switzerland: +41 445155607	United Kingdom: +44 1628450645



## 2 Safety Features

### 2.1 Fire Protection

Megapack does not contain built-in smoke, gas, or fire detection or suppression features, but is designed to mitigate such hazards from spreading to surrounding units or exposures. If fire or smoke is observed emanating from a Megapack at any time, evacuate the area and notify appropriately trained first responders and the local fire department. Water-based suppression is appropriate for mitigating the spread of fire involving a Megapack. Consult the *Lithium-Ion Battery Emergency Response Guide* for details around hazards and recommended response. For emergency shutdown procedures, see [Shutting Down in an Emergency on page 29](#).

### 2.2 Safety Disconnect Features

#### 2.2.1 Megapack AC Circuit Breaker

The Customer Interface Bay contains an AC circuit breaker that can be locked in the open position.



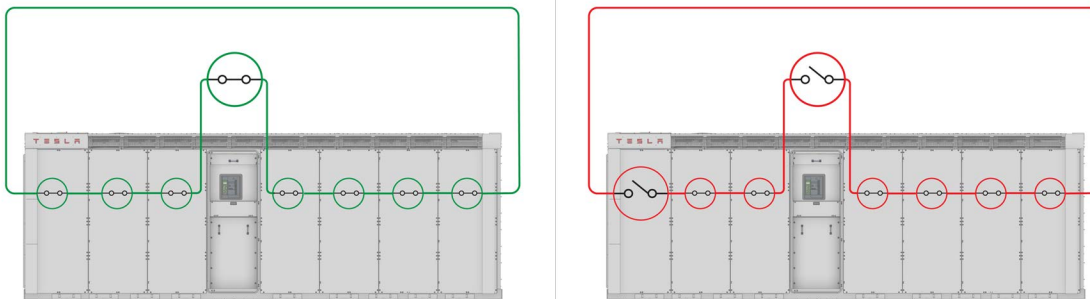
**WARNING:** Operating the Megapack AC circuit breaker does not completely de-energize the Megapack. Refer to the *Megapack Installation Manual* for de-energization procedures.

#### 2.2.2 Enable Circuit

Megapack includes an internal safety circuit called an *enable circuit* (also known as *HVIL - high-voltage interlock loop*) that shuts down all major power components whenever the circuit is opened. Certain factors trigger opening this circuit, including opening bay doors or turning the enable switch off. The Customer Interface Bay door is not part of the enable circuit, as it does not provide direct access to high-voltage equipment. The enable circuit does not trip the Megapack AC circuit breaker.

The Megapack internal monitoring system uses the enable circuit to monitor for critical system faults and de-energize the system if needed. It is not recommended to open a Megapack door during operation as a means of shutting the system down. When deliberately de-energizing the system, when possible, always use the Tesla Site Controller to command a soft shutdown and see the de-energization procedures in the *Megapack Installation Manual* for more information.


**Figure 16. Enable Circuit -- Left: Closed. Right: Open.**






### 2.2.3 Enable Switch

The customer I/O area in the Customer Interface Bay includes an enable switch that can interrupt the enable circuit and prevent the system from energizing. This switch is part of the enable circuit, and provides a lockable isolation point for procedures that involve actively working inside Megapack. It is the recommended customer interface to the enable circuit. When the switch is turned off, the enable circuit is open.

 **WARNING:** The enable switch must be turned off at any time when working inside Megapack. See the de-energization procedures in the *Megapack Installation Manual* for more information.

 **CAUTION:** Do not leave the switch off for extended durations – for example, when placing Megapack into storage. See the shutting down procedures in the *Megapack Installation Manual* for more information.

### 2.2.4 Remote Shutdown Terminals

The customer I/O area in the Customer Interface Bay contains a pair of terminals used to perform a remote shutdown, which commands the inverter to cease operation (isolating the Megapack AC bus from the battery DC source), and opens the Megapack AC circuit breaker. This may be performed when placing Megapack into storage, for example.

 **NOTE:** Refer to the shutting down procedures in the *Megapack Installation Manual* for more information.

## 2.3 Service De-Energization


In order to perform many of the service actions, de-energization of the Megapack is required, including of the line-side bus bars entering the Megapack.

Always follow the appropriate procedure in [Shutting the System Down on page 29](#) to shut down safely and contact Tesla or refer to the *Megapack Installation Manual* if de-energization is required.

## 2.4 External Safety Features

There are safety features that are not explicitly part of the Tesla battery system that are essential for operating your site, and particularly for shutting the system down. Always be aware of the safety features associated with your site before operating the battery system.

To learn about shutting the system down, see the appropriate topic in [Starting Up and Shutting Down on page 29](#).

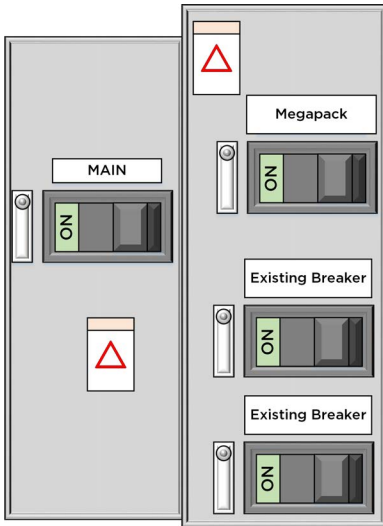
 **NOTE:** Not all sites will have any or all of these features. Follow your site design and local safety standards to be aware of safety features at your site.

### 2.4.1 External Circuit Breaker

The external circuit breaker for Megapack is typically located with site switchgear:

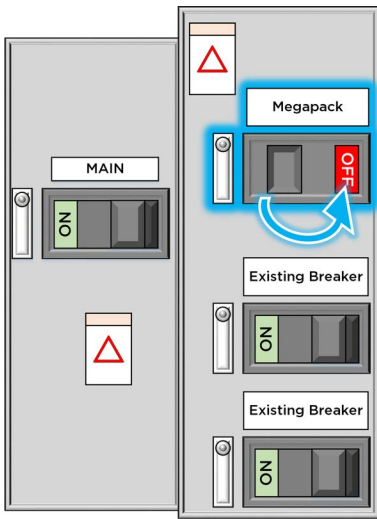


**Figure 17. Example Circuit Breaker Panel (Switchgear) with the External Megapack Breaker and Other Existing Breakers - Megapack's breaker closed, system in operation ("ON")**



This breaker shuts off power to Megapack when opened (or turned "off," as displayed below):

**Figure 18. Example Circuit Breaker Panel (Switchgear) with the External Megapack Breaker and Other Existing Breakers - Megapack's breaker open, system shut down ("OFF")**



## 2.4.2 Utility Disconnect Switch

A utility disconnect switch (or ULD - utility lockable device) is a device with a handle, typically located outside or near the circuit breaker. This device will shut off power to the battery system, when opened (or turned "off").

Figure 19. Example Utility Disconnect Switch








## 3 Energy Meters

### 3.1 Metering Overview

The Tesla Site Controller uses various meter inputs for different control functions. Energy meters must be provided by the contractor.

For additional information and for a list of supported meters, refer to the *Megapack Site Design Manual*.

 **NOTE:** When communication to any of the meters is lost during on-grid normal operation, the system ceases to operate until communication is resumed. If communication is lost, the values reported are the last values read from the meter until communication is resumed.



## 4 Accessing the Megapack Enclosure

Megapack is an IP66-rated enclosure ([The Megapack IP66 Enclosure on page 13](#)) and affords high protection against particle and water ingress. This section contains critical information about when and how to properly access Megapack in order to maintain its high protection rating.

- [Critical Door-Opening Considerations on page 27](#)
- [Megapack Door Security on page 28](#)



## 4.1 Critical Door-Opening Considerations

**CAUTION:** Do not open any Megapack doors or other openings for 48 hours after delivery to site **and** until instructed to do so by Tesla Support per below.





Before opening any door or other opening in the Megapack enclosure:

1. Measure and record the following information:
  - Site temperature
  - Relative humidity
2. Call Tesla Support ([Getting Support on page 19](#)) and provide the temperature and humidity measurements.
3. Proceed only if instructed to do so by Tesla Support.

Do NOT Open a Megapack's doors in any of the conditions below.

**CAUTION:** Megapack doors should never be opened when it is raining, with no exceptions, to prevent damage to Megapack.

### Conditions Where Megapack Doors Should NOT Be Opened

<p>Actively raining (see below for details on snowy conditions)</p> 	<p>Fog is visibly present</p> 
<p>Humidity is above 95% on site (use a humidity sensor that is temperature-compensated and accurate to within 1%)</p> 	<p>Minimum cell temperature is <b>below</b> the dew point (contact your Project Engineer for calculation support)</p> 



In snowy conditions, please review the chart below before opening Megapack doors.

Condition	Action
If it is snowing and relative humidity is above 95%.	Do not open Megapack doors.
If it is snowing, wind speed is below 5 miles per hour, and relative humidity is below 95%.	Megapack doors may be opened only if a tarp/awning is extended above the opened door(s) to prevent any snow from entering the enclosure.
If it is snowing and wind speed is above 5 miles per hour.	Megapack doors may be opened if physical barriers are installed adjacent to opened doors to prevent wind-blown snow from entering the enclosure.

## 4.2 Megapack Door Security

All Megapack doors have the ability to be locked or fastened. The Customer Interface Bay ([Customer Interface Bay on page 9](#)), as the primary customer interface for Megapack, is not required to be locked. The other doors do not need regular access and should remain closed and fastened shut.



**NOTE:** Access to the Customer Interface Bay may be subject to local codes and regulations.

### Installing Locks

Combination locks are shipped with Megapack, either pre-installed on the Customer Interface Bay door or delivered in the Accessory Kit. Install these locks to ensure doors are not left open unnecessarily:

- **Set combination to 4585** for coordinated access with Tesla field service personnel. Tesla must have ability to unlock doors. If you choose a different combination, advise your Tesla contact in writing.
- If Tesla field service personnel arrives on site and observes locks are not installed, they will proactively install and coordinate with onsite personnel.
- For keyed locks, a double hasp is required to allow Tesla access by unlocking Tesla's lock.



## 5 Starting Up and Shutting Down

### 5.1 Starting the System


Once Tesla has completed the commissioning and initial start-up of Megapack, the system is ready for operation. You should not need to perform extra steps to start the system.

#### 5.1.1 Re-Energizing Megapack


If Tesla Service or a Tesla-approved entity gives the direction to re-energize Megapack after upstream maintenance, proceed with the steps below for each Megapack to be re-energized.

1. Verify that the equipment and area, including the inside of the Customer Interface Bay and AC bus bar area, is clear of tools, materials, workers, equipment, and debris.
2. Close any open doors and ensure all covers are in place.
3. Remove the lock on the Megapack AC circuit breaker, if needed.
4. Turn the enable switch on, if it was turned off.
5. Reinstate the remote shutdown contact, if it had been removed.
6. Notify operations and on-site personnel before re-energizing.
7. Turn the Megapack AC circuit breaker MOTOR switch from OFF to AUTO.
8. Close the Megapack AC circuit breaker.
9. Close the upstream external circuit breakers.


### 5.2 Shutting the System Down

 **CAUTION:** Do not use the enable circuit (in other words, do not open a Megapack door) as a means to de-energize the system. The enable circuit is meant as an added safety layer for incidental or accidental misuse of the system. When deliberately de-energizing the system, wherever possible always use the Tesla Site Controller to command a soft shutdown as described in the procedures in this section.

 **NOTE:** Familiarize yourself with safety features ([Safety Features on page 21](#)), including any breakers ([External Safety Features on page 22](#)), at your site before operating Megapack.

 **WARNING:** Contact Tesla or consult the procedures in the *Megapack Installation Manual* if work is to be performed or if shutting down for storage.

#### 5.2.1 Shutting Down in an Emergency

 **DANGER:** If smoke or fire is visible, do not approach the Megapack and do not open any of its doors.

To shut down the system in an emergency or for unknown behavior:

1. If an external E-stop button or remote shutdown contact to Megapack is present, engage it.
2. If Megapack is serviced upstream by an external AC circuit breaker or disconnect, open the breaker or disconnect.
3. Contact Tesla at [IndustrialStorageSupport@tesla.com](mailto:IndustrialStorageSupport@tesla.com) to advise that the system has been shut down.



**NOTE:** Refer to the *Lithium-Ion Battery Emergency Response Guide* for details on response to a hazardous event.



**WARNING:** Shutting the system down does not de-energize Megapack. Contact Tesla or consult the procedures in the *Megapack Installation Manual* if work is to be performed.

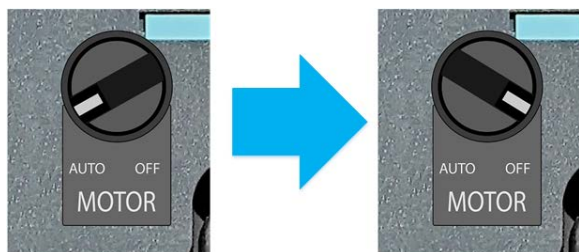
## 5.2.2 Performing a Planned Shutdown, Single Megapack Site

Perform this procedure at sites with a single Megapack:

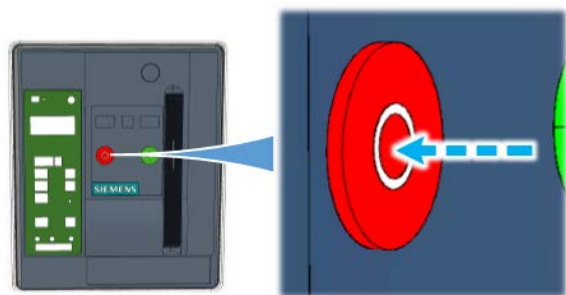
1. If possible, command a soft shutdown of the system using the software via the Tesla Site Controller by commanding a power set point of zero. If the site manager does not have the means to command power, contact [IndustrialStorageSupport@tesla.com](mailto:IndustrialStorageSupport@tesla.com) to request the power shutdown command.
2. Open the site or external circuit breaker or disconnect (if one is present).
3. Assess the steps in [Critical Door-Opening Considerations on page 27](#) and proceed if advised by Tesla.
4. Open the Customer Interface Bay door to access the Megapack AC circuit breaker:



5. Switch the Megapack AC circuit breaker MOTOR from AUTO to OFF:

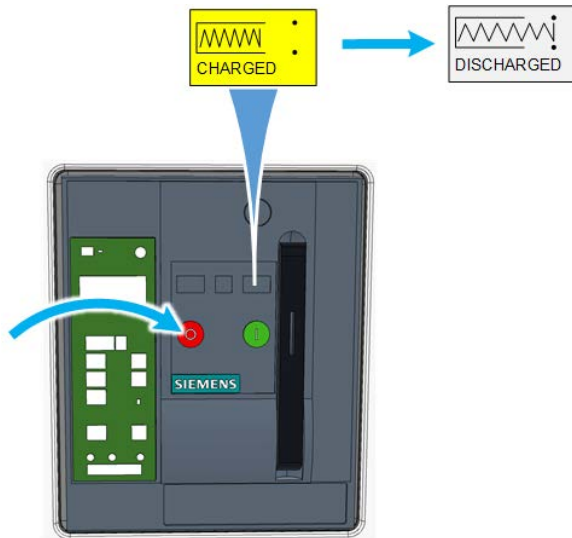


6. Open the Megapack AC circuit breaker by pressing the red button firmly until it clicks:



7. Verify that the Megapack AC circuit breaker is open: The *CONTACTS* window displays green and *OPEN* and the *SPRING* window displays *DISCHARGED*:





**WARNING:** Shutting the system down does not de-energize Megapack. Contact Tesla or consult the procedures in the *Megapack Installation Manual* if work is to be performed.

### 5.2.3 Performing a Planned Shutdown, Multiple Megapack Site

Perform this procedure at sites with multiple Megapacks:

1. Determine whether the entire site should be shut down, or only one Megapack.
  - **If shutting down power to the entire site**, command a soft shutdown of the system using the software via the Tesla Site Controller. If the site manager does not have the means to command power, contact [IndustrialStorageSupport@tesla.com](mailto:IndustrialStorageSupport@tesla.com) to request the power shutdown command.
    - On-grid system: command a power setting of zero
    - Microgrid system: change *Island Control Mode* to 2
  - **If shutting down power to only one Megapack**, the power commands on the Tesla Site Controller do not require a change (but a change is permitted if desired).
2. Isolate AC power at the appropriate circuit breaker:
  - **If shutting down power to the entire site**, open the site-wide external circuit breaker or disconnect to remove grid power.
  - **If shutting down power to one Megapack**, open the nearest upstream AC branch breaker (if a true breaker is present) that isolates that block.
3. **Wait** for Tesla Service or a Tesla-approved entity to arrive or provide further direction.

**WARNING:** Shutting the system down does not de-energize Megapack. Contact Tesla or consult the procedures in the *Megapack Installation Manual* if work is to be performed or if de-energization for any other reason is required.



## 6 Off-Grid Operation

### 6.1 About Off-Grid Operation

When you lose power from the grid, the power (*load*) to the facility served by the battery system automatically stays on due to the power reserved in the battery ([Example Power Flow while Off Grid \(Powerhub Site View\) on page 33](#)). You might see lights flicker and there may be a 5-10 second delay as the power source shifts to the battery, but the power will come back on shortly and the battery will begin to discharge.

If you have power generation on-site (for example, solar panels or diesel generators), the system may run for some time by using the generator in tandem with the battery.

If the battery runs out of energy and another generator is not available, the battery system will shut down safely and there will be a power outage while the battery waits for solar or for the grid to return. When power from the grid returns, the battery system resumes charging to prepare for backup use again ([Example Power Flow while On Grid \(Powerhub Site View\) on page 33](#)).

At any time, including during a power outage and while using battery backup power, you can monitor the state of charge of the battery system using Tesla Powerhub, as displayed in the figures below.

**NOTE:**

- If the power doesn't come back on during a grid outage, contact Tesla.
- For detailed information on using Powerhub, see the *Powerhub User Manual*.



**NOTE:** For detailed information about off-grid, microgrid, and islanding behavior, see the *Tesla Energy Controls and Communications Manual* and the *Microgrid Controller Owner's Manual*

Figure 20. Example Power Flow while Off Grid (Powerhub Site View)

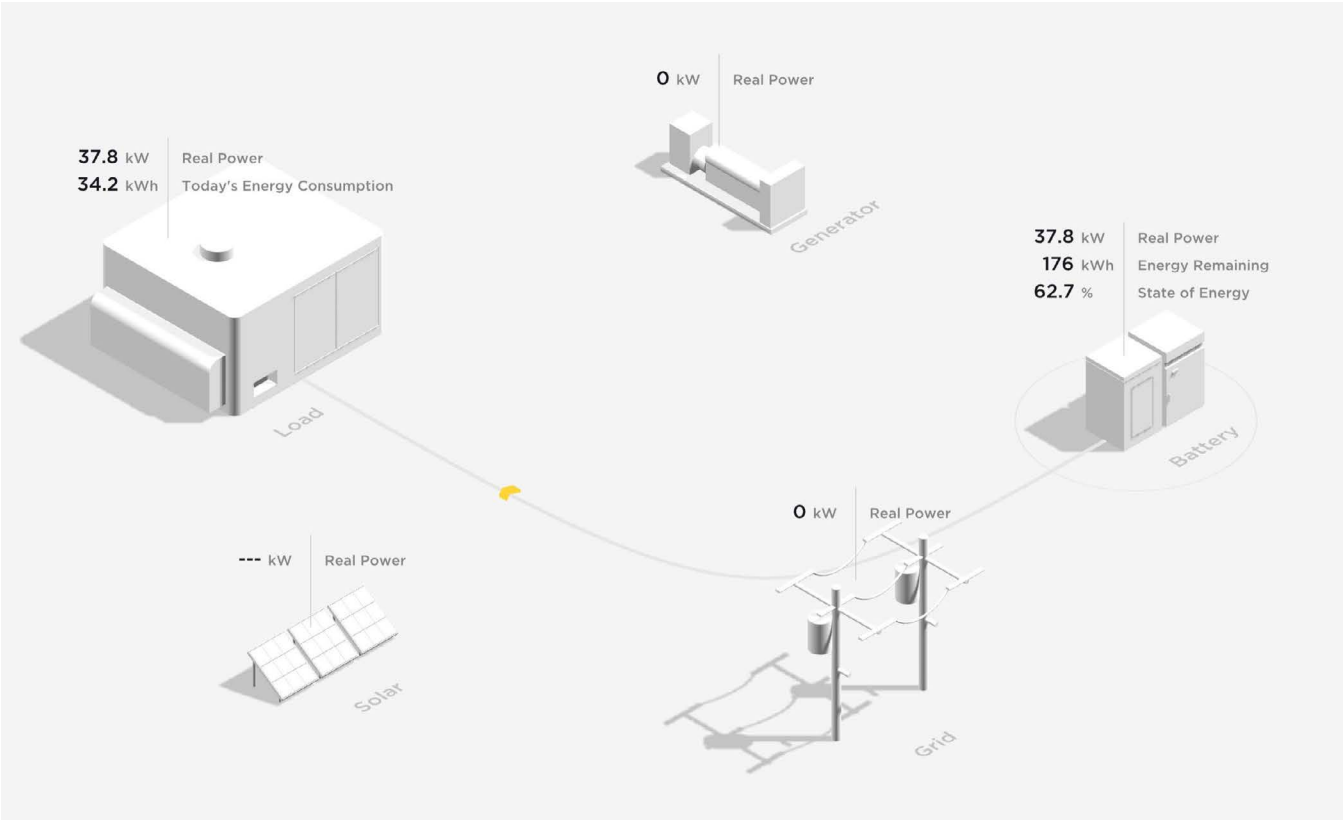
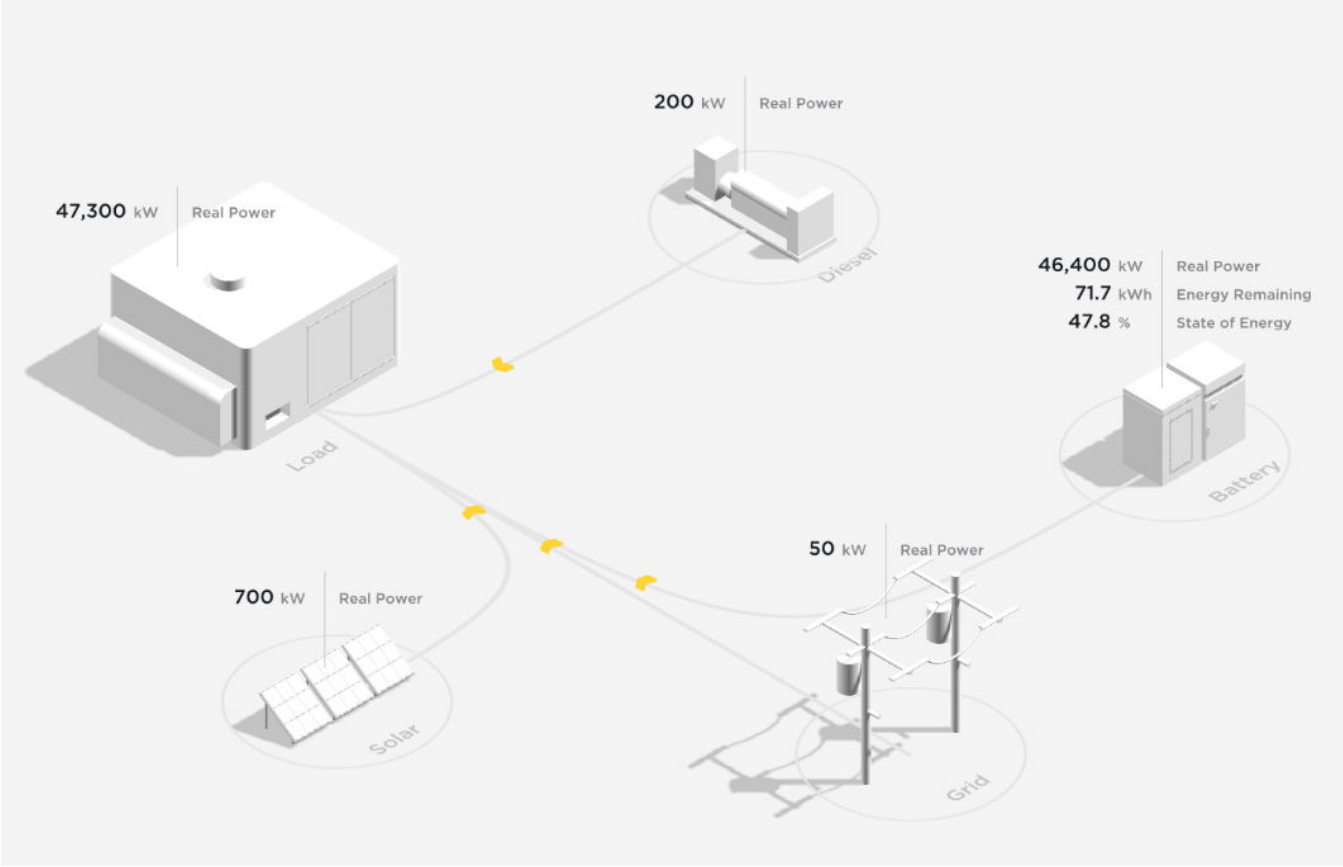


Figure 21. Example Power Flow while On Grid (Powerhub Site View)





## 7 Service and Maintenance

### 7.1 Maintenance Guidance

Tesla service personnel and third-party service providers trained on the operation and maintenance of Tesla equipment are the only individuals certified for proper Megapack maintenance. After Megapack is commissioned, it is not recommended that personnel without sufficient training and product knowledge work within Megapack without explicit guidance from Tesla.



**WARNING:** Only trained and Tesla-approved service personnel are allowed access.



**WARNING:** Lock out externally-supplied AC power at the source before opening any enclosure door.



**WARNING:** For continued protection against risk of fire, use only replacement fuses of the same type and rating as the original fuse. Fuses must only be replaced by trained personnel.



**CAUTION:** Do not power wash the unit. Only use a low pressure hose to wash it.



**CAUTION:** After any impact or intrusion on the system site, check all Megapack doors for deformation. If obvious deformation is found, notify Tesla immediately to replace the entire thermal door before operation. Do not attempt to repair.

### 7.2 Access Requirements

Tesla must retain access to the site and all Tesla equipment over the lifetime of the site.



**NOTE:** For installations not at grade, contact Tesla for additional guidance.

#### 7.2.1 Accessing the Site

- The site shall provide and maintain a clear access route from the public right-of-way to the front of each Megapack for delivery, installation, replacement, and removal of Megapack and its components.
- The access route must support Megapack and its transportation equipment, including crane and forklift as required. Ensure that access accommodates required vehicle turn radii of at least 4725 mm (186 in) and gross vehicle weight (including Megapack mass).

#### 7.2.2 Accessing Megapack

- Tesla must have the ability to remove any locks preventing access. Refer to [Megapack Door Security on page 28](#) for information on securing and locking doors while retaining Tesla access.
- Keep the doors of all enclosures free of all obstructions such as snow, sand, and blown debris during system operation. With any concerns, contact Tesla during the site design phase.
- Area in front of Megapack must be capable of supporting a vehicle mass of at least 6100 kg (13450 lb).



## 7.3 On-Site Maintenance Infrastructure

For sites containing more than 15 Megapacks, Tesla requires dedicated infrastructure for service and maintenance purposes. The infrastructure must include:

- Parking
- Toilet facilities
- Building or container as specified below

This infrastructure must be made available to Tesla during construction and for the life of the project, and must be completed no later than 2 weeks prior to commissioning. Prior to commissioning, Tesla will deliver necessary materials that the Tesla Service organization shall own.

Customers must allow for infrastructure depending on the category of maintenance required, as described below.

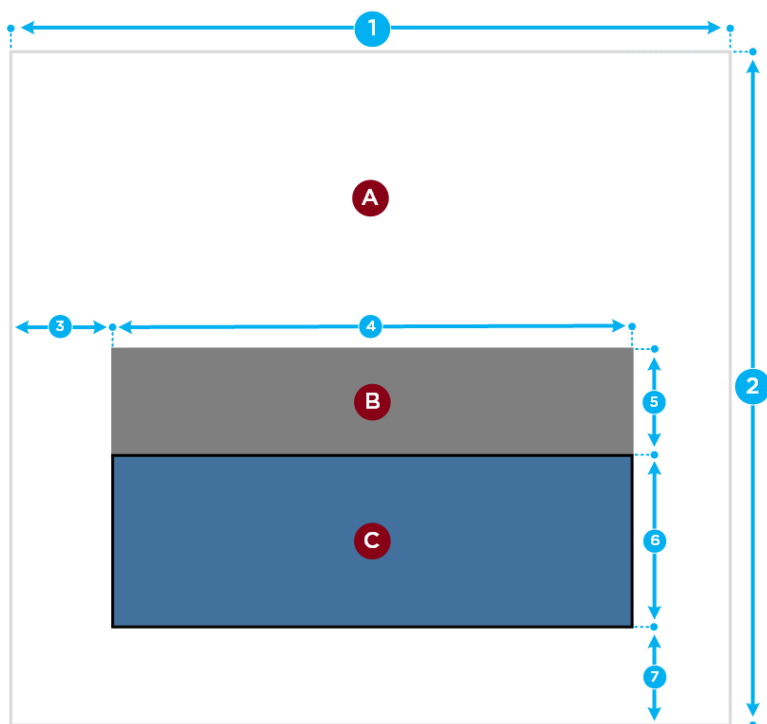
**NOTE:** Tesla requires a higher category of maintenance on projects located outside of the continental USA. Contact Tesla to confirm category for your specific project.

**Table 4. On-Site Maintenance Infrastructure Categories**

Category of Maintenance	Number of Megapacks	Max Project Size	Storage Infrastructure
Level 1	15-20	76 MWh	One 40-foot container
Level 2	21-50	190 MWh	Two 40-foot containers
Level 3	51-250	960 MWh	1000 square-foot O&M building
Level 4	251-1000	3800 MWh	3000 square-foot O&M building

Dimensions must be observed per the guidance below:

**Figure 22. Level 1 Maintenance Area**



**Table 5. Level 1 Maintenance Area Components**

Component	Description
A	Clearance
B	Concrete staging pad
C	Storage infrastructure

**Table 6. Level 1 Maintenance Area Dimensions**

Dimension	Specification
1	18.3 m (60 ft)
2	10.4 m (34 ft)
3	3 m (10 ft)
4	12.2 m (40 ft)
5	1.8 m (6 ft)
6	2.4 m (8 ft)
7	1.5 m (5 ft)



**NOTE:** For Level 2, 3, and 4 maintenance infrastructure specifications, contact Tesla.

The storage area must meet the following requirements:

- Minimum surface requirement 150 mm (6 in) of Type 2 Class A aggregate base
- Minimum 1% slope for drainage
- Access requirements as noted in [Access Requirements on page 34](#)
- Convenience power outlet, 15 A duplex (2 outlets), mounted near container location
- Connection to the grounding system
- Clearance requirements as described below



**NOTE:** Follow all local codes and regulations.

## 7.4 Maintenance to Be Performed by the Site Manager

The site manager is not responsible for maintenance inside any of the system enclosures. However, the site manager is responsible for the upkeep of the site around the Megapack. In particular, the site manager shall ensure the following conditions:



**WARNING:** Before operating or maintaining Megapack, read and understand all safety information as detailed in [IMPORTANT SAFETY INFORMATION on page 2](#).

### 7.4.1 Maintaining the Installation Area

- Protect the installation area from flooding. If more than 15 cm (6 in) of water are standing on the Megapack pad for longer than 30 minutes, shut down the system and contact Tesla.
- Any walls installed around the pad must be designed to prevent standing water (drain, weep holes, etc.). There must be sufficient clearance between the equipment and any walls or obstructions to allow for proper drainage.
- Ensure that installation areas comply with the appropriate local fire code requirements.





- For non-grade installations, contact Tesla about maintaining site access.
- For any site that has signed a Capacity Maintenance Agreement (CMA), the site layout must provide adequate space to allow additional CMA units for the duration of the contract. This includes room for an overhead lift to access the site, and clearance above the pad to place the additional capacity units.

### 7.4.2 Maintaining the Perimeter

A perimeter wall, screen, or fence may be used to enclose the installation to screen equipment from view, or to deter access by persons who are not qualified, maintaining the following conditions:

- When deterring access, maintain fence height as specified in the *Megapack Site Design Manual*.
- Fencing may be locked and posted with a placard stating “Authorized Users Only” or similar. If applicable, see 2018 IFC 1206.2.8.7.3.
- The distance from any fence to the equipment shall match the clearance requirements in the *Megapack Site Design Manual*, or as noted per the following exceptions:
  - If the installation is located within a property that already contains perimeter fencing to prevent unauthorized public access, additional fencing might not be required.
  - Permanent chain link fence without fill or slats can be installed according to the clearances specified in the *Megapack Site Design Manual*.
  - Removable chain link fencing (e.g. with a swing gate, or similar) without fill or slats may be installed according to the clearances specified in the *Megapack Site Design Manual*. When removed, the fence and its support structure must allow unobstructed equipment maintenance access and clearance for equipment door swing.

### 7.4.3 Maintaining Clearance

- Ensure that no walls or other structures are built that could interfere with any enclosure component's door opening fully.
- Megapacks installed in enclosed areas must maintain minimum access around the sides of the equipment as specified in the *Megapack Site Design Manual* to access the front of each Megapack. This access is required for service cart access and is required to be level (maximum 5% cross slope).
- Keep the doors of all enclosures free of obstruction (snow, sand, blown debris, etc.) during system operation to avoid restricting airflow through the ventilation openings. Restricted airflow can affect system performance. Additional maintenance might be required in sites where obstructions such as snow can exceed the bottom of the grill on the Megapack door. If regular maintenance is not possible, install a canopy or building that meets the clearance and installation requirements listed in Megapack manuals.
- Maintain clearance as specified in the *Megapack Site Design Manual* in front of all Megapacks for maintenance access with a service cart to replace heavy components, as well as to allow proper ventilation of the exhaust air that exits from the front of the unit.
- Trim landscaping to maintain clearances as specified in the *Megapack Site Design Manual*. Keep the unit free of tree limbs and any other combustible obstructions as specified, including but not limited to canopies and building overhangs. Combustible objects, such as wood fences, must also maintain a minimum clearance from all sides of the Megapack as specified.

### 7.4.4 Maintaining the Enclosure

- Visually inspect the enclosure and report any areas of damage to Tesla.
- Visually inspect the area around Megapack and ensure it remains free of debris or rodents.



## 7.5 Maintenance to Be Performed by Tesla

Tesla or a Tesla-approved entity shall be responsible for arranging all corrective maintenance over the lifetime of the system. Contact Tesla at [IndustrialStorageSupport@tesla.com](mailto:IndustrialStorageSupport@tesla.com) to create a service request when needed.

In addition, Tesla or a Tesla-approved entity shall perform periodic preventative maintenance over the life of the system. These maintenance schedules are outlined below.

### 7.5.1 One-Year Maintenance

The following preventative maintenance occurs every year:

**Table 7. One-Year Maintenance Activities**

Equipment	Activity
System-Level	Torque checks within the Megapack, test equipment calibration checks, visual inspection (rodents, etc.)
	Harness inspection or replacement in kind if damaged (protective sleeve failure, rodents, etc.)
	Enclosure integrity – touch up paint and gasket inspection or replacement in kind if damaged
	Perform inspection of the Customer Interface Bay conduit openings to ensure their integrity and that no rodents have entered the Megapack. Ensure that the conduit openings remain sealed.
	Inspect and replace bags of desiccant inside the Customer Interface Bay, if needed
	Cabinet cleaning
	Cabinet ventilation system inspection - radiator area cleaning
	Coolant level check
	Battery and meter communications check

### 7.5.2 Ten-Year Maintenance

The following preventative maintenance occurs every 10 years:



**NOTE:** Replacing pumps requires that the thermal bay be removed from Megapack.

**Table 8. Ten-Year Maintenance Activities**

Equipment	Activity
Megapack	Coolant refill
	Fan replacement
	Pump replacement
	Door gasket replacement

## 7.6 Capacity Maintenance

Tesla's Capacity Maintenance Agreement (CMA) guarantees power and energy over the life of the system. A site must sign a CMA at time of purchase for this section to apply.



To ensure that additional capacity can be added annually with minimal effort and minimal downtime to the existing plant, the following provisions are accounted for in the site design:

- Concrete pads and electrical infrastructure are designed for a fully built out site (maximum packs expected for the entire system life)
- Access is provided for a crane (10T crane minimum) or gradall such that capacity units can be added/removed from the access roads

Installation of a CMA restack unit generally involves the following steps:

1. The CMA restack unit will arrive onsite
2. The associated Megapack will need to be shut down, including the incoming AC connection
3. The CMA restack unit will be lifted into place beside the Megapack and bolted down
4. Above-ground cables and harnessing will be connected from the CMA restack unit to Megapack
5. The CMA restack unit will be commissioned

Installation time for a single CMA restack unit is approximately ~1 hour per unit, excluding standard site access, setup, and de-mobilization overheads (which are approximately ~3 hours).

## 7.7 Environmental Considerations

Each Megapack contains coolant and refrigerant in its thermal system ([Thermal Components on page 9](#)). Depending on the number of Megapacks installed on a site, storage, use and handling of these substances may require reporting, hazard management plans, or containment procedures as required by local codes and regulations. Site operators shall ensure that all local codes and regulations related to this matter are followed. Refer to the *Megapack Site Design Manual* for more information.



## 8 Decommissioning and Disposal

This section outlines basic decommissioning tasks. For more information, refer to the *Megapack Decommissioning Protocol*.

### 8.1 Recycling

Tesla recycles Megapack components with no recycling fees to the customer. The customer is only responsible for decommissioning and shipping costs.

### 8.2 Electrical Service

Disconnect the electrical service to Megapack at the point of interconnection.

### 8.3 Equipment

The following equipment is to be disposed of or recycled as required by the local AHJ per local codes.

- Interconnection switchgear
- Transformer
- Tesla Site Controller including, if applicable, Standard Tesla Site Controller Enclosure
- Megapack

Remove Megapacks and ship them back to the Gigafactory in Nevada for recycling. Contact [IndustrialStorageSupport@tesla.com](mailto:IndustrialStorageSupport@tesla.com) for details.

Should a Megapack require return to Tesla, it is important to take proper packaging, protection, and securement steps.

All ground transportation shall be via an air-ride truck and tarped appropriately, with no intermediate offloading in transit.

Refer to the *Megapack Transportation and Storage Guidelines* for additional information on securing and moving all components safely.

 **WARNING:** Dispose of used batteries promptly. Keep them away from children. Do not disassemble, crush, or dispose of in fire.

### 8.4 Infrastructure

Concrete pads, existing conduit, and cables are to be demolished and disposed of as required by the local AHJ and per local codes.



## Revision History

Revision #	Date	Description
1.0	March 25, 2022	Initial Revision.

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