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# ABB DCFC– UL Input Power Requirements

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This presentation includes forward-looking information and statements including statements concerning the outlook for our businesses. These statements are based on current expectations, estimates and projections about the factors that may affect our future performance, including global economic conditions, and the economic conditions of the regions and industries that are major markets for ABB Ltd. These expectations, estimates and projections are generally identifiable by statements containing words such as “expects,” “believes,” “estimates,” “targets,” “plans,” “outlook” or similar expressions.

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- costs associated with compliance activities
- market acceptance of new products and services
- changes in governmental regulations and currency exchange rates, and
- such other factors as may be discussed from time to time in ABB Ltd’s filings with the U.S. Securities and Exchange Commission, including its Annual Reports on Form 20-F.

Although ABB Ltd believes that its expectations reflected in any such forward-looking statement are based upon reasonable assumptions, it can give no assurance that those expectations will be achieved.

This presentation contains non-GAAP measures of performance. Definitions of these measures and reconciliations between these measures and their US GAAP counterparts can be found in the ‘Supplemental reconciliations and definitions’ section of “Financial Information” under “Quarterly results and annual reports” on our website at [www.abb.com/investorrelations](http://www.abb.com/investorrelations)

# DC Wallbox 3-phase – Input Power Requirements

## Input Power Requirements – DC Wallbox 3-phase

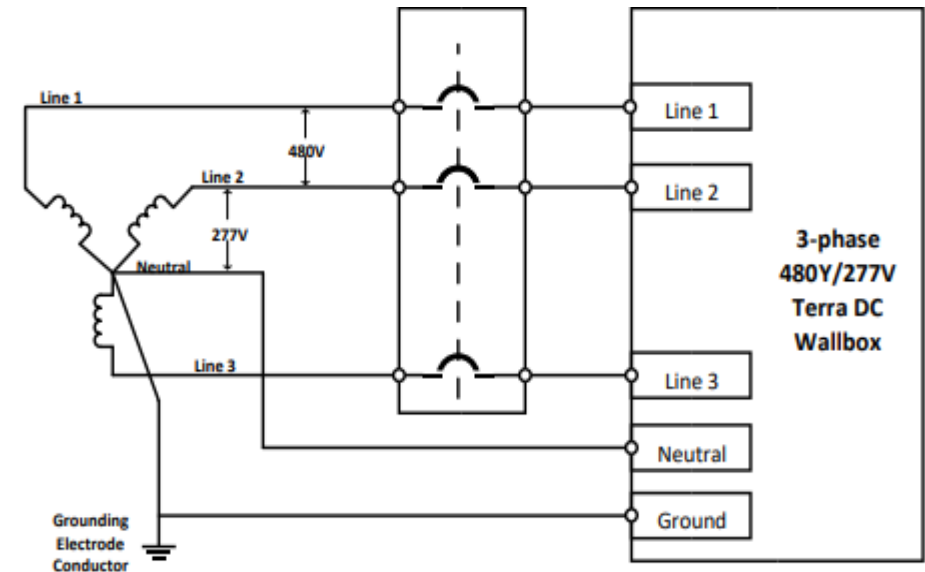
### AC Input requirements:

- Voltage: 480Y / 277 VAC +/- 10 % (60 Hz)
- Nominal input current: 32A @480VAC, 35A @432V (480 -10%)
- Maximum Power required: 26.6kVA
- System: WYE (L1-L2-L3-GND-N)
- Circuit breaker recommended size: 50A
- Charger's THDi, power factor, efficiency: <5%, >0.96, 94%
- Type of load: AC/DC Power Converter, 94% efficiency (kWac vs kWdc)
- Harmonics data: refer slide #10

### Recommendations:

- Based on use cases in the field, ABB recommends a minimum 40kVA standard dry type transformer. Installations with high harmonic content/low power quality, a Harmonic Mitigation Transformer HMT may be required. For group install (1 transformer x multiple chargers), please, work with your transformer manufacturer of choice using 26.6kVA for proper sizing.
- Follow NEC and local rules in place

## Connection diagram



Electrical grid configuration required for 3-phase, Terra DC Wallbox UL variant (3 $\phi$ , 480Y/277V input)

# Terra 54/54HV – Input Power Requirements

## Input Power Requirements – Terra 54/54HV

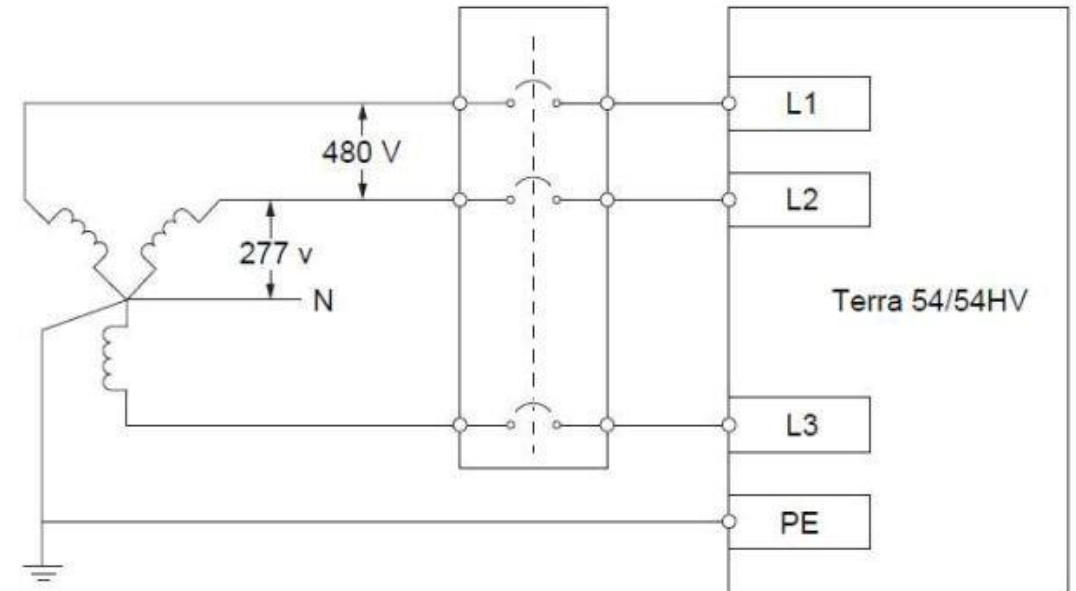
### AC Input requirements:

- Voltage: 480Y / 277 VAC +/- 10 % (60 Hz)
- Maximum input current required: 64A
- Maximum Power required: 54kVA
- System: WYE (L1-L2-L3-GND-N)
- Circuit breaker recommended size: 80A
- Charger's THDi, power factor, efficiency: <5%, >0.96, 95% (kWac vs kWdc)
- Harmonics data: refer slide #10

### Recommendations:

- Follow NEC and local rules in place

## Connection diagram



# Terra 94 – Input Power Requirements

## Input Power Requirements – Terra 94

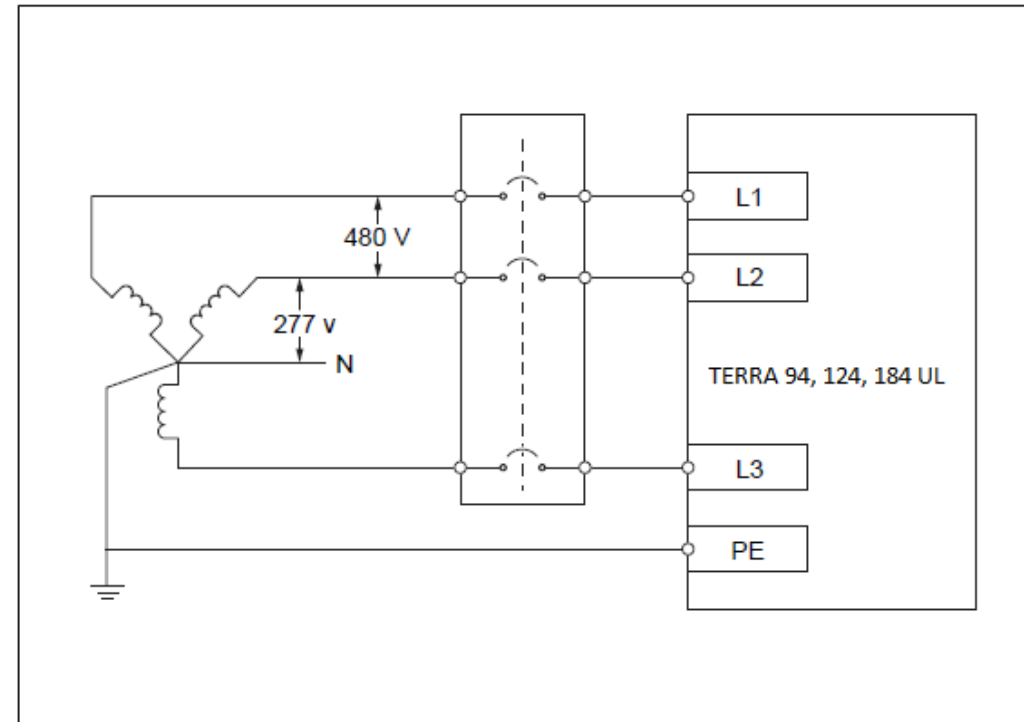
### AC Input requirements:

- Voltage: 480Y / 277 VAC +/- 10 % (60 Hz)
- Maximum input current required: 115A
- Maximum Power required: 96kVA
- System: WYE (L1-L2-L3-GND-N)
- Circuit breaker recommended size: 150A
- Charger's THDi, power factor, efficiency: <5%, >0.96, 95%
- Type of load: AC/DC Power Converter, 95% efficiency (kWac vs kWdc)
- Harmonics data: refer slide #10

### Recommendations:

- Follow NEC and local rules in place

## Connection diagram



The EVSE must be wired with a WYE input, as shown in the diagram. Do not connect a neutral wire to the EVSE.

# Terra 124/124HC – Input Power Requirements

## Input Power Requirements – Terra 124/124HC

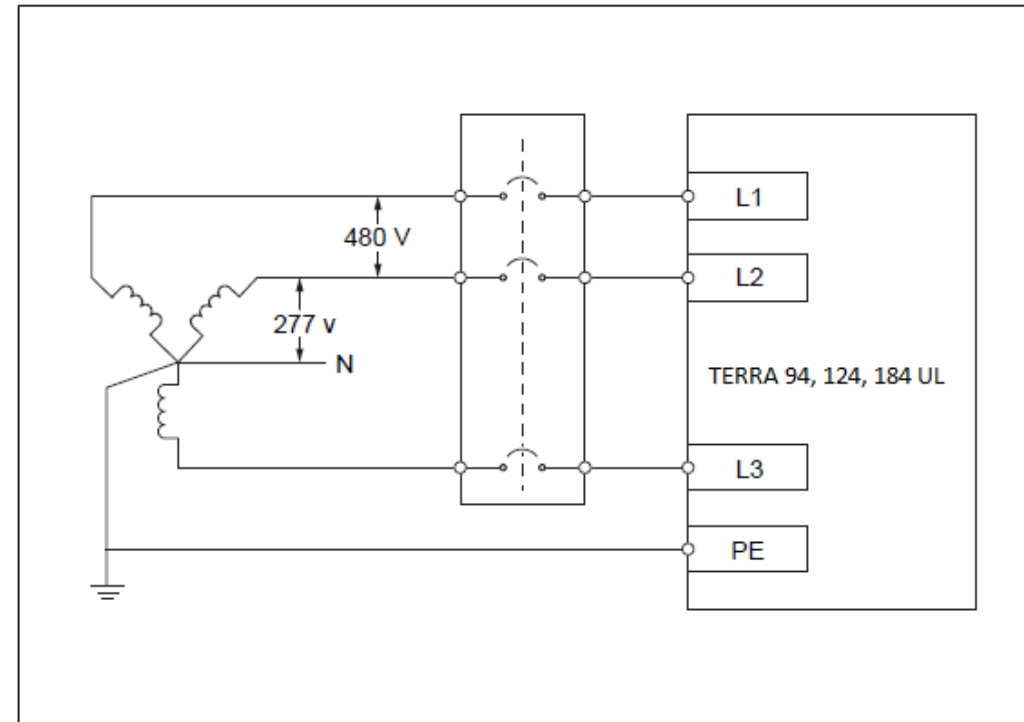
### AC Input requirements:

- Voltage: 480Y / 277 VAC +/- 10 % (60 Hz)
- Maximum input current required: 153A
- Maximum Power required: 128kVA
- System: WYE (L1-L2-L3-GND-N)
- Circuit breaker recommended size: 200A
- Charger's THDi, power factor, efficiency: <5%, >0.96, 95%
- Type of load: AC/DC Power Converter, 95% efficiency (kWac vs kWdc)
- Harmonics data: refer slide #10

### Recommendations:

- Follow NEC and local rules in place

## Connection diagram



The EVSE must be wired with a WYE input, as shown in the diagram. Do not connect a neutral wire to the EVSE.

# Terra 184/184HC – Input Power Requirements

## Input Power Requirements – Terra 184/184HC

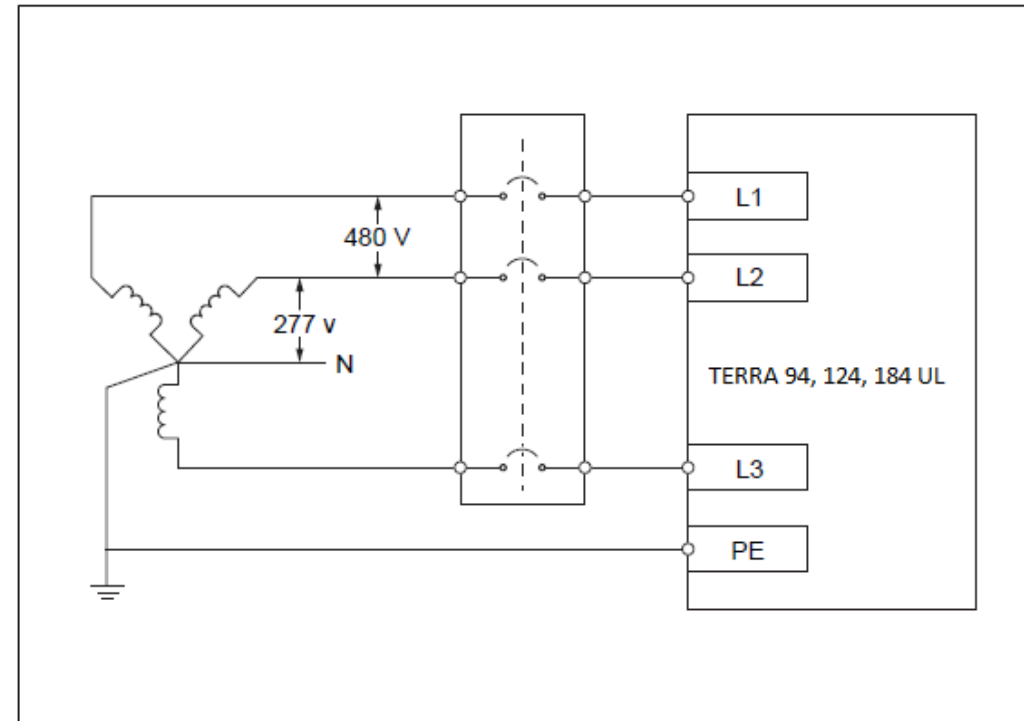
### AC Input requirements:

- Voltage: 480Y / 277 VAC +/- 10 % (60 Hz)
- Maximum input current required: 230A
- Maximum Power required: 192kVA
- System: WYE (L1-L2-L3-GND-N)
- Circuit breaker recommended size: 300A
- Charger's THDi, power factor, efficiency: <5%, >0.96, 95%
- Type of load: AC/DC Power Converter, 95% efficiency (kWac vs kWdc)
- Harmonics data: refer slide #10

### Recommendations:

- Follow NEC and local rules in place

## Connection diagram



The EVSE must be wired with a WYE input, as shown in the diagram. Do not connect a neutral wire to the EVSE.

# Terra HP 175 Single Power Cabinet – Input Power Requirements Gen 2 & Gen 3

## Input Power Requirements – Terra HP 175 per cabinet

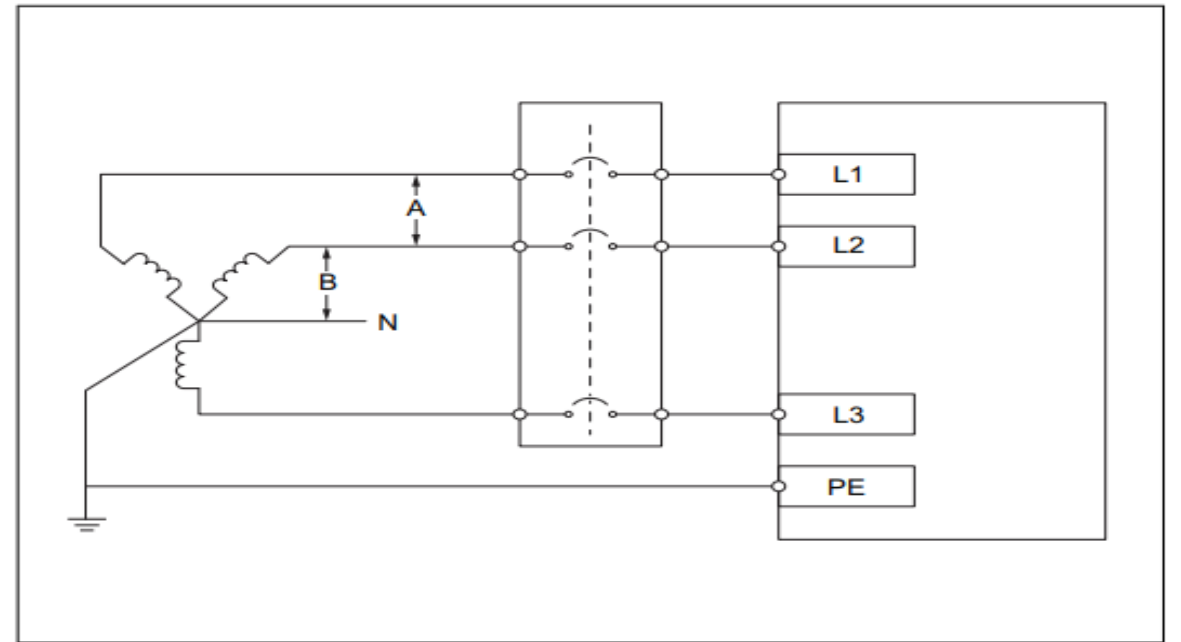
### AC Input requirements:

- Voltage: 480Y / 277 VAC +/- 10 % (60 Hz)
- Maximum input current required: 231A
- Maximum Power required: 192kVA
- System: WYE (L1-L2-L3-GND-N)
- Circuit breaker recommended size: 300A
- Charger's THDi, power factor, efficiency: <8%, >0.97, 94%
- Type of load: AC/DC Power Converter, 94% efficiency (kWac vs kWdc)
- Harmonics data: refer slide #10

### Recommendations:

- Follow NEC and local rules in place
- Use one circuit breaker per cabinet. For a two-cabinet set up, refer to the datasheet in slide #11

## Connection diagram



	Canada	USA
A	600 V	480 V
B	347 V	277 V



# HVC 150 Single Power Cabinet– Input Power Requirements Depot Box & Pantograph

## Input Power Requirements – HVC 150 per cabinet

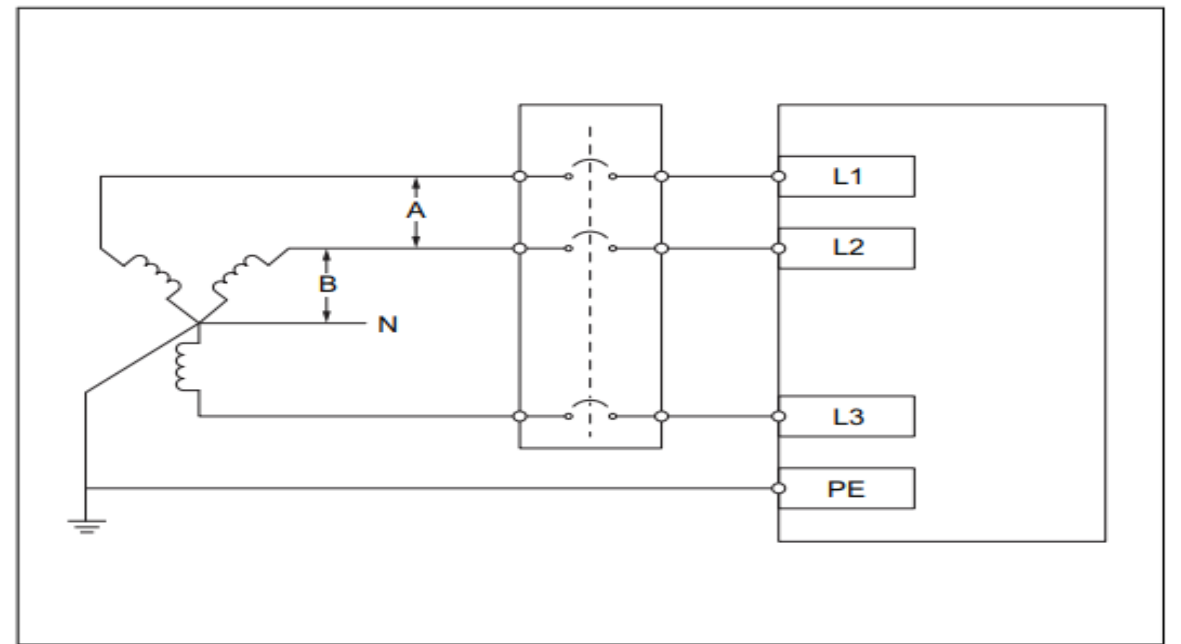
### AC Input requirements:

- Voltage: 480Y / 277 VAC +/- 10 % (60 Hz)
- Maximum input current required: 198A
- Maximum Power required: 170kVA
- System: WYE (L1-L2-L3-GND-N)
- Circuit breaker recommended size: 250A
- Charger's THDi, power factor, efficiency: <8%, >0.95, 94-96%
- Type of load: AC/DC Power Converter, 94% efficiency at 20% power, 96% at full power (kWac vs kWdc)
- Harmonics data: refer slide #10

### Recommendations:

- Follow NEC and local rules in place
- Use one circuit breaker per cabinet. For a two or more-cabinet set up, refer to the datasheet in slide #11

## Connection diagram



	Canada	USA
A	600 V	480 V
B	347 V	277 V

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# ABB DC Fast Chargers – Harmonics data

## Harmonics

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Data (last review July/2022):



Microsoft Excel  
Worksheet

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# ABB DC Fast Chargers – Datasheets

## Datasheets

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### DC Wallbox (input power needs update, see slide 3):

<https://search.abb.com/library/Download.aspx?DocumentID=4EVC800802-LFUS&LanguageCode=en&DocumentPartId=&Action=Launch>

### Terra 54/54HV:

<https://search.abb.com/library/Download.aspx?DocumentID=4EVC800801-LFUS&LanguageCode=en&DocumentPartId=&Action=Launch>

### Terra 94/124/184:

<https://search.abb.com/library/Download.aspx?DocumentID=9AKK107991A4247&LanguageCode=en&DocumentPartId=&Action=Launch>

### Terra HP Gen 2, power cabinet:

<https://search.abb.com/library/Download.aspx?DocumentID=4EVC700601-LFUS&LanguageCode=en&DocumentPartId=&Action=Launch>

### Terra HP Gen 3, power cabinet:

<https://search.abb.com/library/Download.aspx?DocumentID=9AKK107991A9632&LanguageCode=en&DocumentPartId=&Action=Launch>

### HVC 150, 300, 450

### Depot Box, power cabinet:

<https://search.abb.com/library/Download.aspx?DocumentID=9AKK107680A4436&LanguageCode=en&DocumentPartId=&Action=Launch>

### Pantograph down (PD), power cabinet:

<https://search.abb.com/library/Download.aspx?DocumentID=9AKK107991A0428&LanguageCode=en&DocumentPartId=&Action=Launch>



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