

**MINIMUM REQUIREMENTS
FOR THE INSTALLATION OF STEP UP-STEP DOWN SINGLE PHASE, LOW
VOLTAGE TRANSFORMERS**

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This bulletin provides guidance for acceptable installation of transformers. This bulletin details the location, disconnects, bonding, and grounding of single-phase step-up, step-down transformers and similar configurations. Design drawings prepared by a professional engineer in good standing with EGBC must be provided for installations that deviate from the guidance provided by this bulletin.

This installation is an option where long distances are encountered, and voltage drop is a consideration. See rule 8-102.

The following conditions apply to transformer installations:

- Transformer impedance must be compatible ***
- Parallel conductors must comply with the requirements of BCEC 12-108
- Maximum of two transformers
- Maximum allowable voltage 750V

*** Different impedances may result in unequal voltage drops across the transformers when the load changes which can lead to output voltage fluctuations. Additionally, under a fault condition, different impedances may cause fault current imbalances which could result in the overcurrent device not functioning as intended. The installer must confirm with the transformer manufacturer or a design professional that the impedance values of the step-up and step-down transformer are within acceptable limits if the transformers do not match impedance.

Part A: Transformer location

Rule 2-200 must be taken into consideration when determining a suitable location. A separate room or area restricting access to only authorized persons will typically satisfy these requirements. See [IB-EL 2016-05](#) sections D: Ventilation, F: Adequate Working Space, and H: Protection for Electrical Workers for further information on the requirements for the installation of this equipment.

Part B: Transformer disconnects

A disconnecting means must be provided in the primary circuit of each transformer per rule (26-248).

The disconnect must be accessible and lockable to prevent unauthorized access.

Each transformer must be provided with markings indicating the location of the disconnecting means and other markings necessary to ensure safe and proper operation.

Part C: Transformer bonding and grounding:

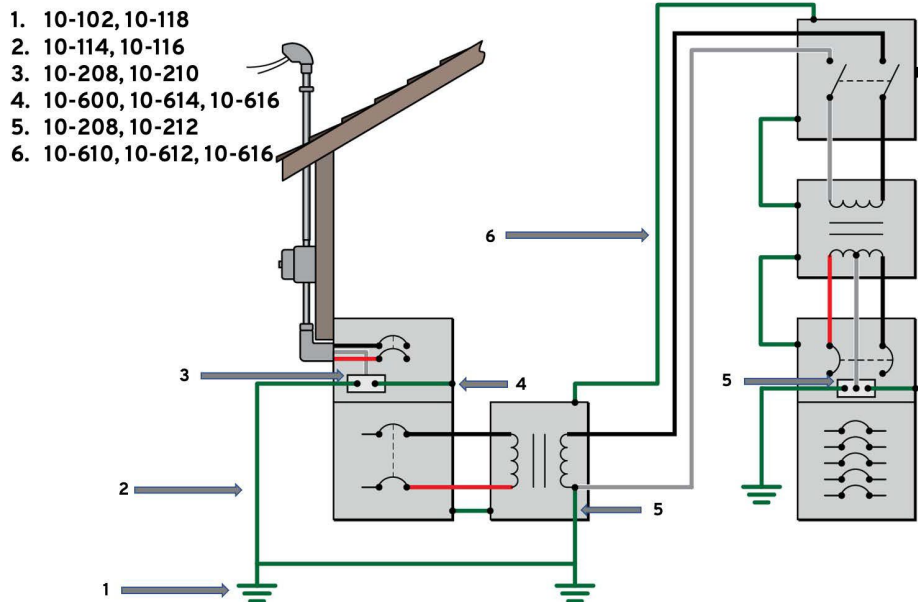
Equipment must be bonded to ground in accordance with rule 10-610, and the bonding conductor size must not be less than that given in rule 10-616.

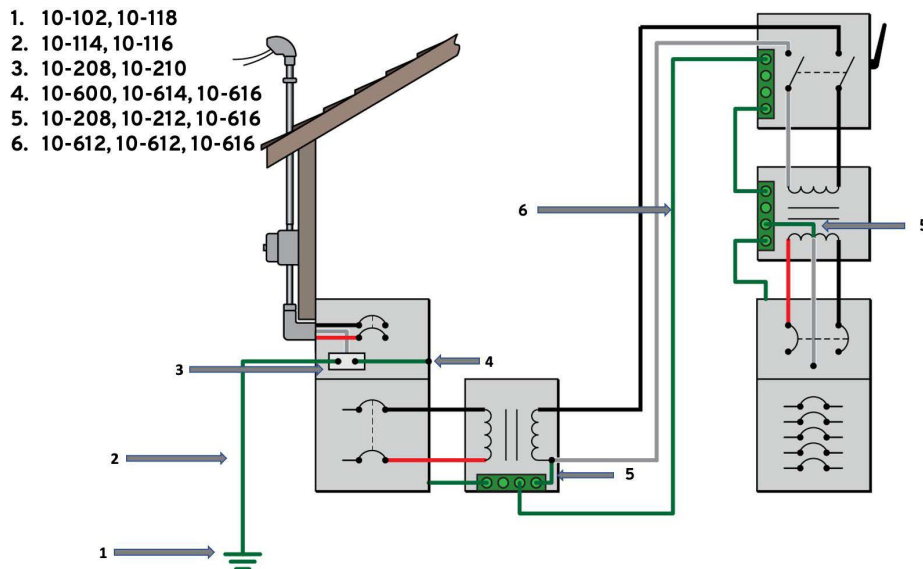
The AC system between the step-up and step-down transformers must be solidly grounded, and the grounded conductor must be identified where provided.

As per Rule 10-212 3) a separately derived AC system operating at 750 V or less shall be permitted to be grounded by the system bonding jumper that is connected to the bonding conductor included in the primary supply.

Note: Rule 10-212 3) can be applied to both transformers.

The center point on the secondary winding of the step-down transformer must be grounded with a minimum #6 AWG copper or #4 Aluminum at the distribution panel's main neutral buss, or at the transformer per Rule 10-212. The system bonding jumper must be connected to the grounded conductor at the same point as the grounding connection.





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References:
Safety Standards Act
 Electrical Safety Regulation
 Safety Standards General Regulation