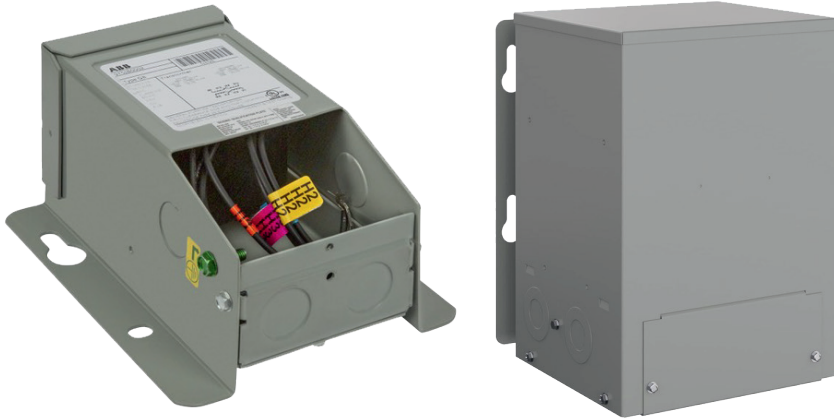


INSTALLATION INSTRUCTIONS

Encapsulated Dry-Type General Purpose and Buck Boost Transformers

Wall Mounted, Totally Enclosed Non-Ventilated and Polyester Resin Filled



Thank you for purchasing and installing the ABB QB or QMS buck boost or encapsulated transformer. Depending on the selected product, it may be an autotransformer or isolation transformer, please refer to the product nameplate for the wiring diagram that will show whether it is an isolation or autotransformer product. The buck boost transformers provide a variety of installation possibilities such as wiring single-phase isolation transformers together to create a three-phase autotransformer. Please refer to the buck boost connection diagrams for more information. The QB and QMS transformers are totally enclosed non-ventilated transformers also known as TENV. TENV products are not required to comply with the US Department of Energy (DOE) 10 CFR 431 efficiency regulations. The QB and QMS transformers are RoHS compliant and seismically qualified to CBC 2022 and IBC 2021 standards, for seismically sensitive installations, please refer to FEMA Publication 413 for installation guidance.



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

WARNING: An installer will possibly be exposed to lethal voltages and currents during installation or maintenance. This product should be installed by a person trained to install and maintain electrical products. Care must be taken to ensure that power lines are de-energized during installation and maintenance using the common electrical trade practices known as Lock-Out Tag-Out (LOTO) procedures.

This product can expose you to chemicals including Styrene which is known to the State of California to cause cancer, birth defects or other reproductive harm.

For more information go to www.P65Warnings.ca.gov
Please consult your local regulations regarding product disposal.

RECEIVING

Upon receipt examine the package for any damage that may have occurred in shipment. If the shipping container must be opened outdoors, take proper precautions to prevent the entrance of moisture. Examine the transformer for broken, bent or loose parts, or other damage. If damage from outside sources is evident, file a damage claim with the transportation company and notify the nearest manufacturer's sales representative.

HANDLING AND STORAGE

The transformers have two one-inch diameter holes provided at the top of the mounting bracket for lifting. These transformers can be heavy, so proper handling tools/equipment and appropriate personal protective equipment (PPE) for heavy lifting should be considered.

The storage rooms should be clean and dry and without extreme temperature variations. Before placing the transformer in service after a period of storage, be sure that it is clean and dry by observing the instructions under "installation".

INSTALLATION

Preparation

Any accumulation of dirt or dust may be removed by brushing or by blowing dry air on the unit. If moisture is evident by feel or appearance, the unit should be dried by placing it in an oven or by blowing heated air over until dry. In either situation the drying temperature should not exceed 110 °C (230 °F).

Mounting

The only foundation necessary is a flat vertical surface or wall strong enough to support the weight of the unit. Regardless of the type of mounting surface, permanent and effective grounding of the metal case is recommended as a safety precaution. Free circulation of air is essential for the proper operation of all dry-type transformers; therefore, a minimum distance to adjacent structures of six inches is recommended. These transformers must be mounted upright with the wiring compartment/box at the bottom.

All general-purpose dry-type transformers are cooled by the free circulation of surrounding air over their surfaces. In the totally enclosed, non-ventilated designs any heat generated by the transformer is transferred to and from its enclosure. These transformers will perform satisfactorily at their rated output when surrounding air does not exceed 40 °C (104 °F) and adjacent structures do not impede free movement of air.

Connections

Reference should be made to the wiring diagram and/or nameplate when making electrical connections to the transformer. Do not change connections while the unit is energized. To minimize circulating currents in the enclosure all leads to the same load must pass through one knockout and all supply leads must pass through one knockout.

For an outdoor installation, conduit connectors need to be rated at a minimum NEMA 3R.

Make certain that all connections are electrically tight so that current-carrying parts are joined under adequate pressure. If aluminum cable is used, adequate preparation of the aluminum cable and protection of the joint is essential.

These transformers require connecting wires/cables to be rated at 90 °C minimum for field connecting cables.

To protect dry-type transformers from voltage surges imposed upon the power lines by lightning, switching, or other sources; adequate surge protective

devices should be connected near any transformer exposed to such overvoltages. Recommend installing properly rated ABB OVRHT3D SPDs.

BUCK BOOST CONNECTIONS

Buck Boost isolation transformers may also be connected as autotransformers for boosting or bucking voltage; please refer to the NEC Art. 450.4 and wiring connection diagrams A – D (use diagrams F-J and Z for combining three transformers to create a three-phase autotransformer). However, the use of autotransformers is subject to precautions: secondary circuits supplied by autotransformers may be subject to exceptionally severe short circuit currents unless protected by current-limiting means. It is recommended that suitable current-limiting devices be installed, where necessary, to limit the short-circuit current less than 25 times the rated current. In all cases the National Electrical Code Art. 450.4 regulations should be followed.

Care must be taken to ensure that line and load wires are of the correct wire gauge to safely receive and supply the maximum electrical currents for the installed system. Please refer to the thicker lines in the connection diagrams at the end of this document for guidance.

MAINTENANCE

Dry-type transformers have no moving parts. The only maintenance required is periodic inspection of connections and removal of accumulated dust and dirt. Additional information relating to the installation and maintenance of general-purpose transformers can be found in the American National Standards Institute (ANSI) publication C57-94. "Guide for Installation and Maintenance of Dry-type Transformers" and NETA MTS.

RENEWAL PARTS

Because of the design of these transformers, field repairs are impractical and uneconomical, and no spare parts and renewal parts are recommended or available. If conditions of operation dictate the need for standby equipment, spare unit(s) is recommended.

Description

Shown in **Figs. 1 & 2**, these TENV general-purpose and Buck Boost transformers are designed for vertical wall mounting and for ratings of 600 volts or below. They are suitable for outdoor as well as indoor installations.

The TENV transformers are designed to reach rated temperature rise above ambient air temperature (ambient temperatures must be less than 40 °C/104 °F) when operating continuously at rated voltage, frequency and load. Overheating, with possible fire damage, may result if the unit is operated for sustained periods at "above" rated voltage, "above" rated current* or at "lower" than rated frequency or installed improperly.

***Rated current equals volt-amperes divided by rated voltage for single-phase units; or for three-phase units, rated volt-amperes divided by rated line-to-line volts, the total of which is divided by square root of the three...1.732. Please refer to the product nameplate/label for technical information.**

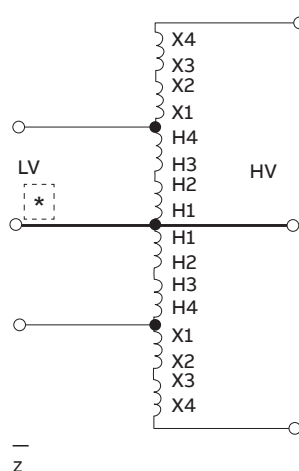
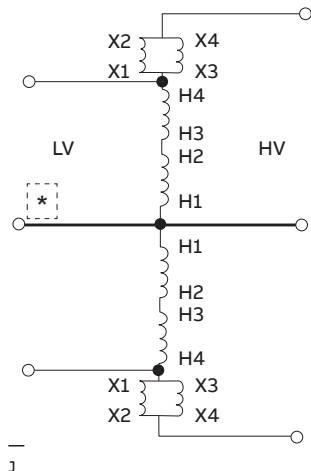
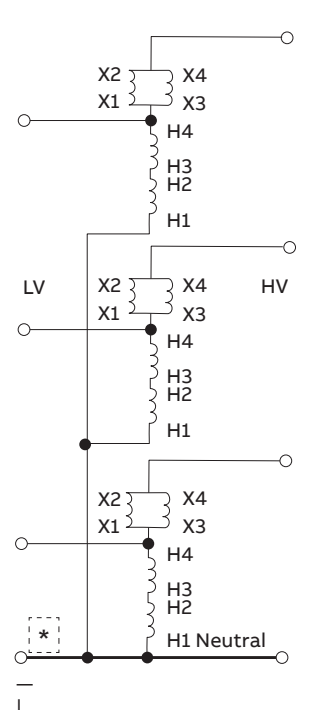
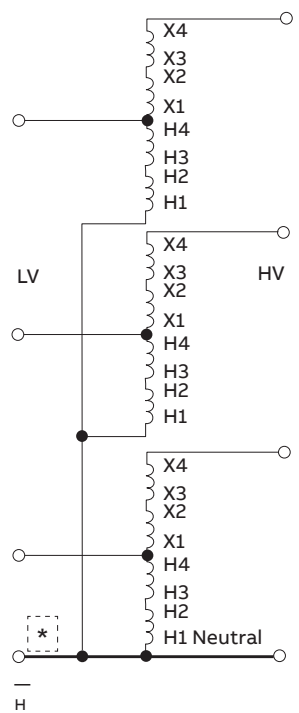
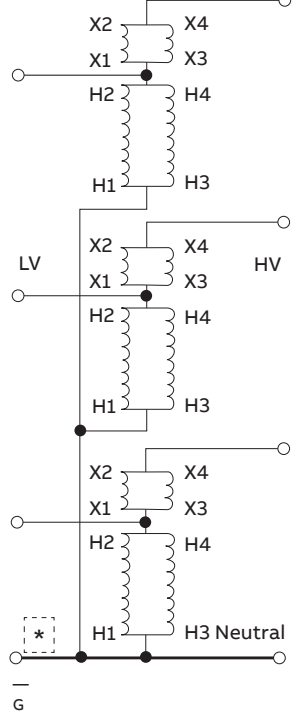
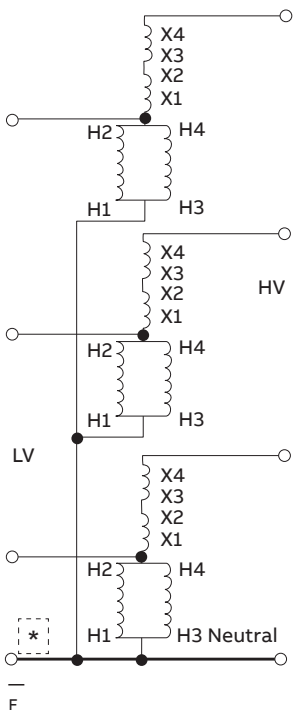
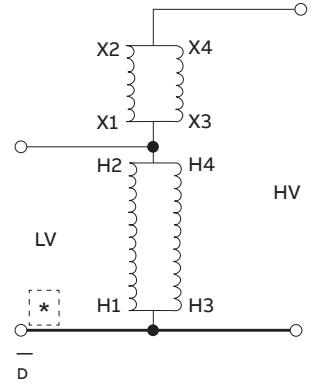
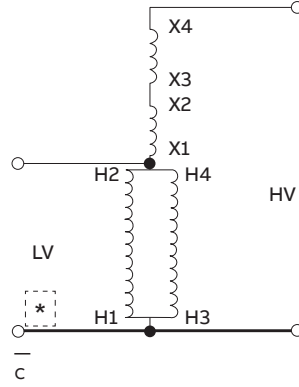
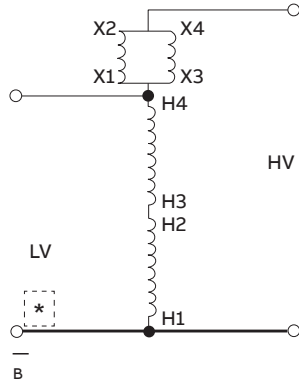
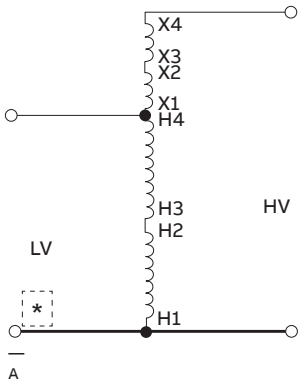


Figure 1: Type QB showing exposed wiring box



Figure 2: Type QMS

CONNECTION DIAGRAMS



* = common power lines (thick lines above) that require wire gauges to match the source and supply currents. These installations require connecting wires/cables to be rated at 90°C minimum

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