

# AutoTransformer theory of operation.

An autotransformer is a kind of transformer with only one winding, but one or more taps.

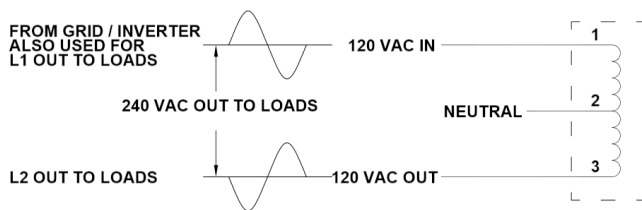
The MNX-240 has one center tap. An autotransformer is generally used either for providing a second leg in a single phase system giving you 120/240 Vac from a single 120 Vac line or to provide a 120 Vac tap from a 240 Vac line. An autotransformer may also be used to help balance loads between inverters.

More details below

**Important!** An autotransformer does not provide isolation between the input and the output.

An isolation transformer has two separate windings keeping the primary and secondary completely separate.

## Example 1: 240 VAC from a single 120 Vac line.

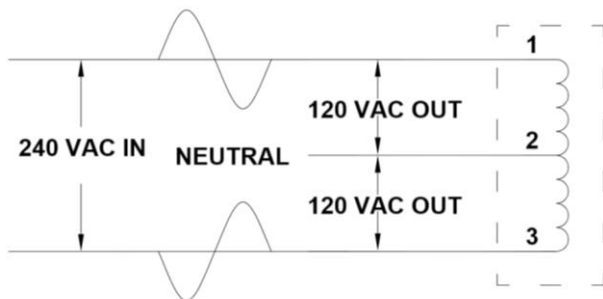


In this example the AutoFormer is being fed 120 Vac however 240 Vac is available at the output.

Notice that the lead marked **1** on the autotransformer is acting as an input and an output.

When power is applied between the leads marked **1** and **2** an opposite voltage ( $180^\circ$  degrees out of phase) occurs between the leads marked **2** and **3**. This gives you 240 Vac between leads **1** and **3**. "Lookout wellpump here I come"

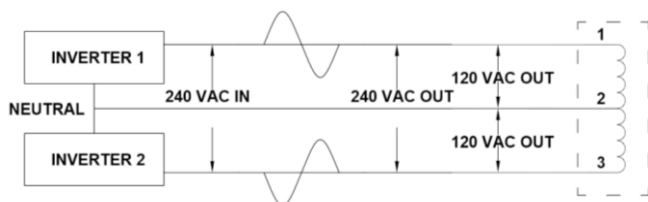
## Example 2: Two 120 VAC taps from a 240 Vac line.



In this example the AutoFormer is being fed 240 Vac and is creating two opposite ( $180^\circ$  degrees out of phase) 120 Vac taps

When power is applied between the leads marked **1** and **3** 120 Vac is available between the leads marked **1** and **2** as well as between the leads marked **2** and **3**.

## Example 3: Inverter load balancing.



When using two inverters it can be desirable to load them both equally. The auto former can accomplish this by taking the stacked output of the two inverters and creating two new 120 Vac taps. Since the loads on the AutoFormer draw power from the stacked output of the inverters any load on either tap will be drawing power from both inverters equally. The 240 Vac loads inherently draw power equally from both inverters.

In this example two inverters are stacked for 240 Vac output. This output is fed into the AutoFormer resulting in a 120/240 Vac output

When power is applied between the leads marked **1** and **3** 120 Vac is available between the leads marked **1** and **2** as well as between the leads marked **2** and **3**.