

# POWERING MULTIPLE DEVICES FROM A SINGLE TRANSFORMER

APPLICATION NOTE LC-122

Individual transformers must be used for each TSI actuator, flow station, and monitor/controller. Normally, TSI supplies a 110:24 VAC transformer with each piece of equipment. A typical wiring diagram is shown in Figure 1.

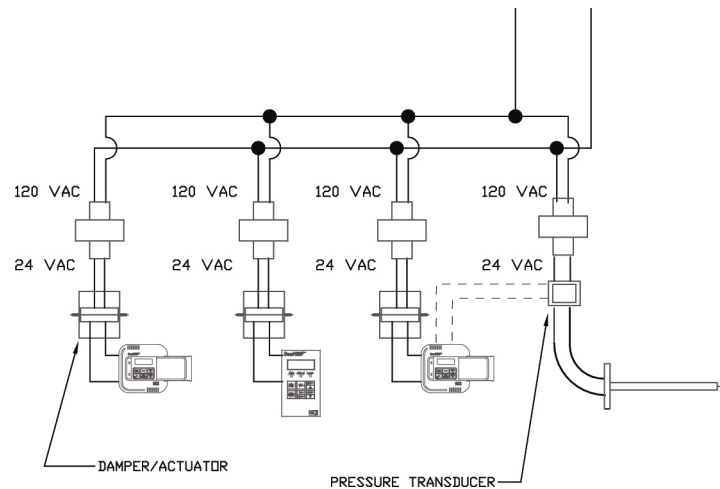


Figure 1. Standard Wiring with 110:24 Transformers

Sometimes, it is easier in the field to use one large transformer as the source for the 24 VAC power required by TSI equipment. Typically, in this case, all of the equipment is directly wired to the transformer, as shown in Figure 2. If the equipment is wired in this way, it could be damaged.

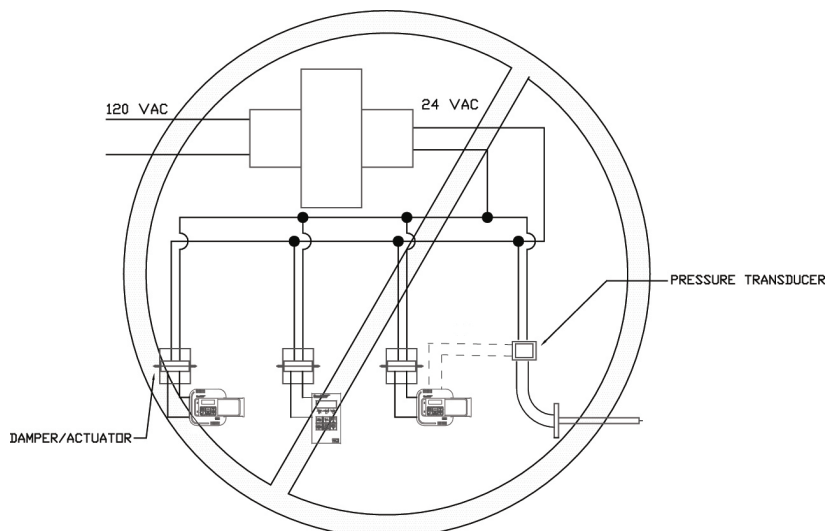
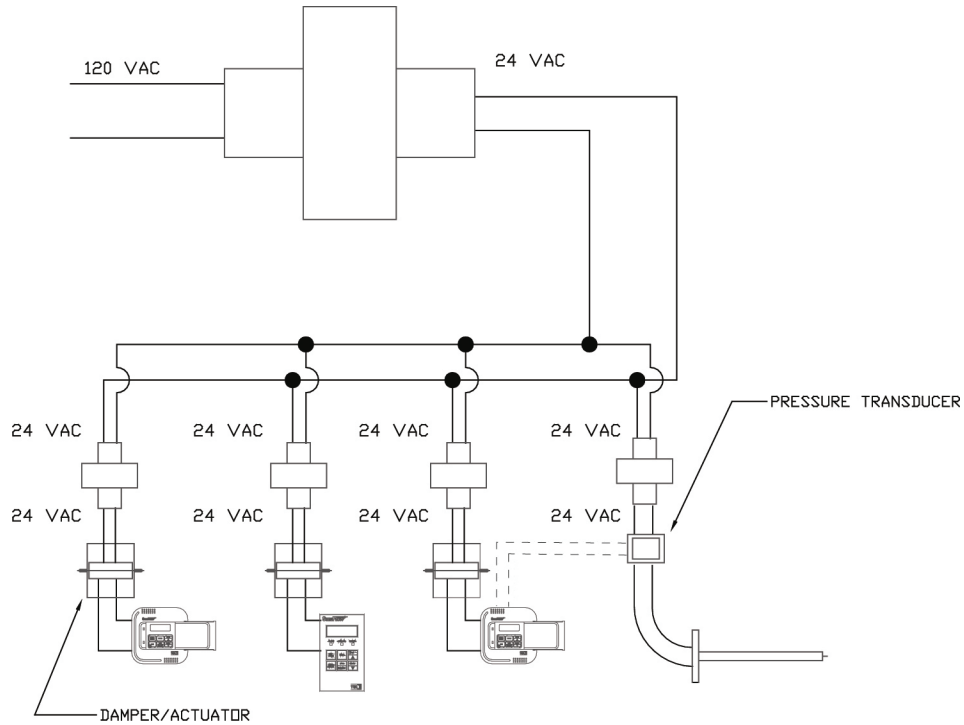


Figure 2. Incorrect Wiring with a Single Transformer

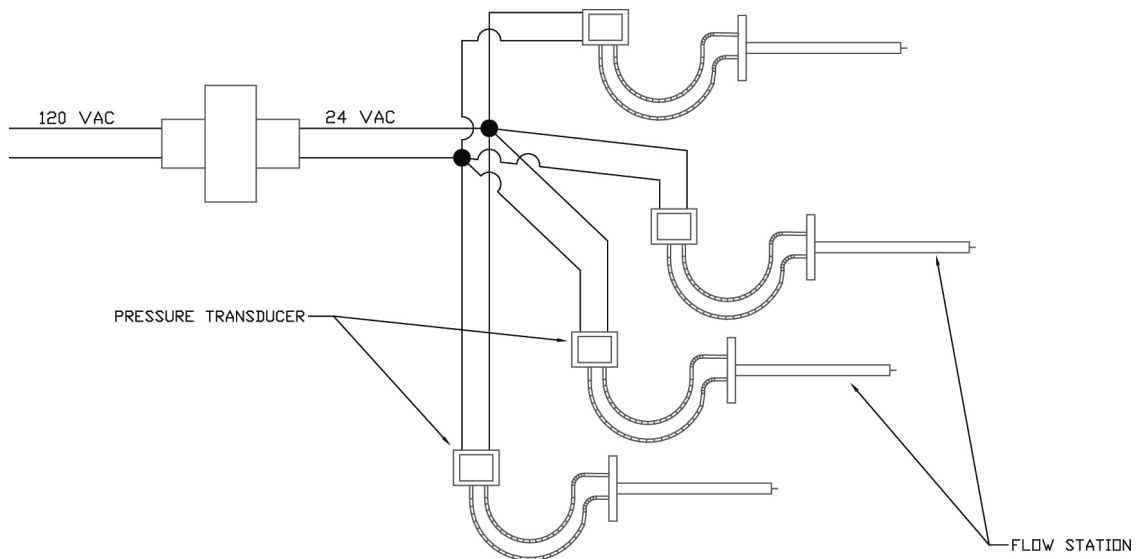


Wiring with this method will cause damage to the electronics due to rectification and ground loop concerns. Instead, when using a single 110:24 VAC transformer to power multiple devices, isolation transformers must be used for each damper/actuator, monitor, and flow station. This is shown in Figure 3.



**Figure 3. Wiring with Isolation Transformers**

Multiple flow stations may be wired together. A maximum of 16 flow stations can be wired to a single TSI transformer, due to power consumption. These flow stations should be wired in a “star” configuration, as shown in Figure 4. Care must be taken to observe the proper polarity when wiring.



**Figure 4. Wiring Multiple Flow Stations to a Single Transformer**



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<b>USA</b>	<b>Tel:</b> +1 800 874 2811	<b>India</b>	<b>Tel:</b> +91 80 67877200
<b>UK</b>	<b>Tel:</b> +44 149 4 459200	<b>China</b>	<b>Tel:</b> +86 10 8251 6588
<b>France</b>	<b>Tel:</b> +33 4 91 11 87 64	<b>Singapore</b>	<b>Tel:</b> +65 6595 6388
<b>Germany</b>	<b>Tel:</b> +49 241 523030		