VeriSafe AVT Sensor Lead Connection Options

1) General Information: VeriSafe AVT Sensor Leads

The VeriSafe AVT is provided with a total of (8) 14 AWG sensor leads (two sensor leads for each phase conductor and ground connection point). The second lead on each phase provides the ability for the AVT to verify that it is in contact with the circuit conductors (each phase and ground) when the absence of voltage test takes place. It is also part of the mechanism that is used to "test-the-tester" to validate that the AVT is functioning.

Sensor leads for each phase and ground must not be mechanically terminated at the same point for the AVT to function properly (see Figures 1 and 2). If the sensor leads are in direct contact, it is possible to defeat the AVT installation test which could lead to inaccurate test results.

Figure 1 Example of properly terminated sensor leads. Lead are not mechanically connected and termination points are insulated.

Figure 2 Terminating both sensor leads at the same point may result in inaccurate AVT results.

There is no maximum distance limitation between the two leads on each phase, however there should not be any circuit elements installed between them. When installing an AVT, care should be taken to ensure that sensor leads used to connect the AVT to the line or bus and to ground shall not be any longer than necessary and shall be routed to avoid sharp edges, pinch points or mechanical damage. Do not extend the sensor leads with a splice.

Secure the sensor lead to the power conductor or another nearby rigid feature to prevent movement of the sensor lead in the event that the termination point failed. Sensor leads can be secured using cable ties, clamps, mounts, or tape. The sensor leads should be secured at multiple locations, including near the termination point.

In addition, the sensor lead terminations should be inspected periodically, similar to other critical terminations inside an electrical enclosure, to ensure they are tight and the sensor leads are secure.

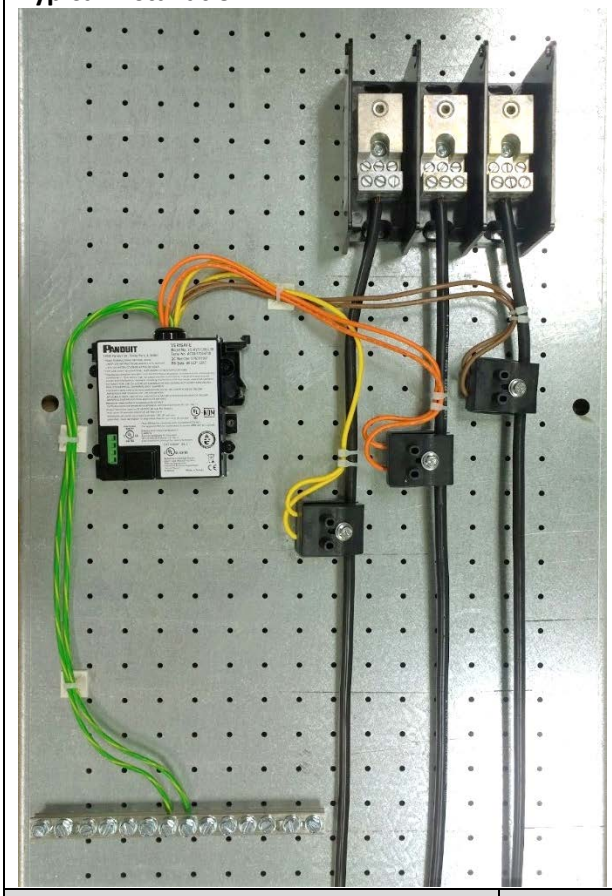
Always insulate the sensor lead termination points. A variety of methods can be used to insulate the termination. Some connectors have insulating housings, others have accessories to insulate the connector. Insulating tape or heat shrink can also be used.

Use approved connection methods and follow **local codes and standards** when terminating the sensor leads.

2) VeriSafe Sensor Lead Connection Options

VeriSafe Insulation Piercing Connector

Typical Installation



Considerations

- Single connector is used to terminate two sensor leads, allowing for a smaller, cleaner, quicker solution
- Sensor leads must have ferrules applied
- Insulation piercing connectors do not compromise the integrity of the conductor

SCCR Impact

No Impact

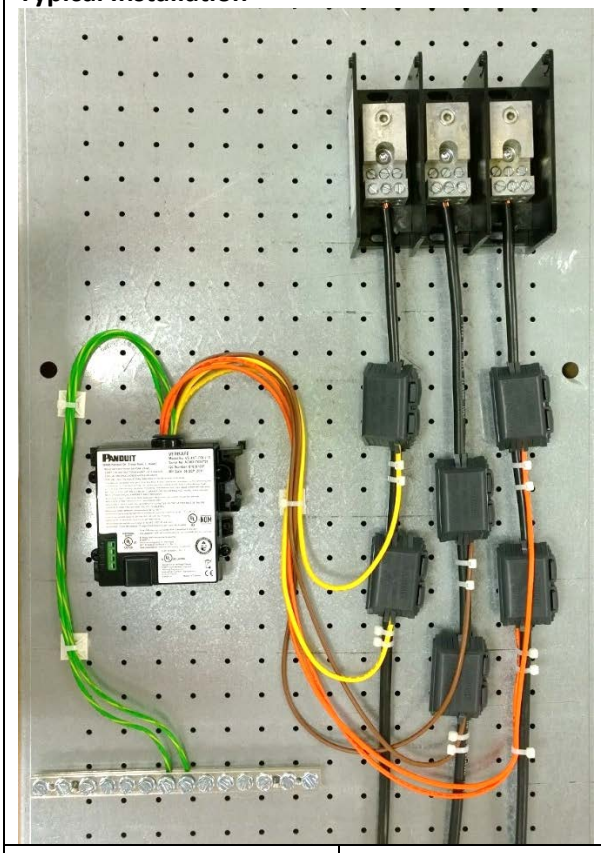
Limitations

- Total length of the AVT sensor leads must not be longer than 10 ft from AVT Isolation Module to connection point on power conductor.

VeriSafe Connector Part Number	Product Description
VS-CKP14-6	VeriSafe Insulation Piercing Connection Kit for Tapping 14 to 6 AWG conductors. For use with VeriSafe Absence of Voltage Tester. Includes three connectors to complete one AVT installation.
VS-CKP4-000	VeriSafe Insulation Connection Kit for Tapping 4 to 3/0 AWG conductors. For use with VeriSafe Absence of Voltage Tester. Includes three connectors to complete one AVT installation.

Split Bolt Connectors

Typical Installation



Considerations

- Sensor leads must have ferrules applied
- Sensor leads must be secured to the power conductor
- Connections must be insulated

SCCR Impact

No Impact

Limitations

- Total length of the AVT sensor leads must not be longer than 10 ft from AVT Isolation Module to connection point on power conductor.
- Split bolts connectors compatible the VeriSafe AVT 14 AWG sensor leads are available for power conductors up to 2/0 AWG. Larger conductors may not be compatible with this method.

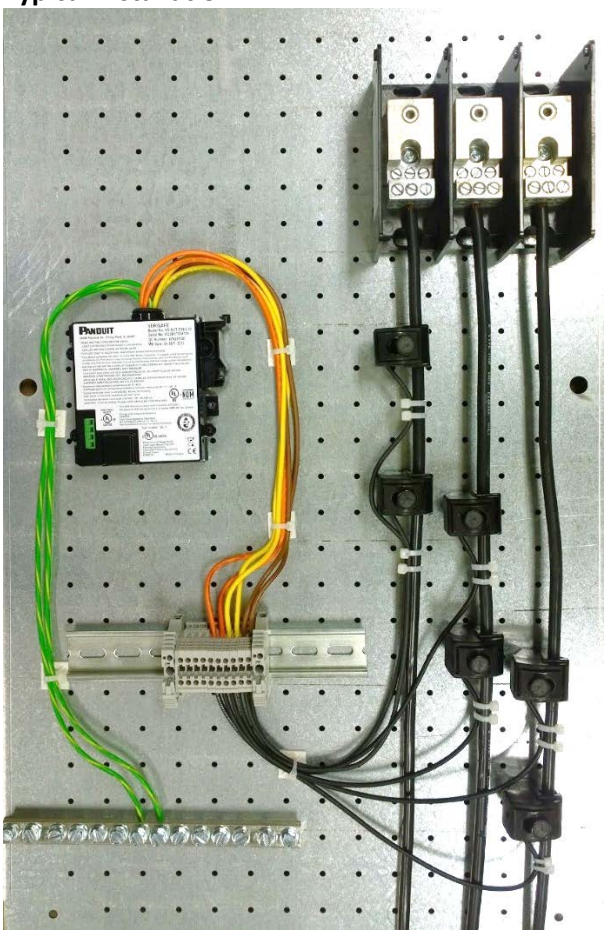
Split Bolt Part Number	Product Description
VS-CKBB8-4	VeriSafe Split Bolt Connection Kit for Tapping 8 to 4 AWG conductors.
VS-CKBB6-2	VeriSafe Split Bolt Connection Kit for Tapping 6 to 2 AWG conductors.
VS-CKBB2-00	VeriSafe Split Bolt Connection Kit for Tapping 2 to 2/0 AWG conductors.

Each Kit Contains:

- Six (6) Split Bolts
- Six (6) Covers
- Twelve (12) Ferrules

Insulation Piercing Connector with Terminal Block

Typical Installation



Considerations

- The AVT sensor leads are not compatible with insulation piercing, insulation displacement, or “hot tap” style connectors. Use of a terminal block provides a means of converting the AVT sensor leads to a wire type that is compatible with these additional types of connectors.
- Select proper extension wire per UL 1436 and the NEC that is compatible with the specific insulation piercing connector for the sensor lead extension.
- Ensure that the insulation piercing connector will not compromise the integrity of the conductor.
- Sensor leads must have ferrules applied
- Sensor lead extensions from terminal black must be secured to the power conductor

SCCR Impact

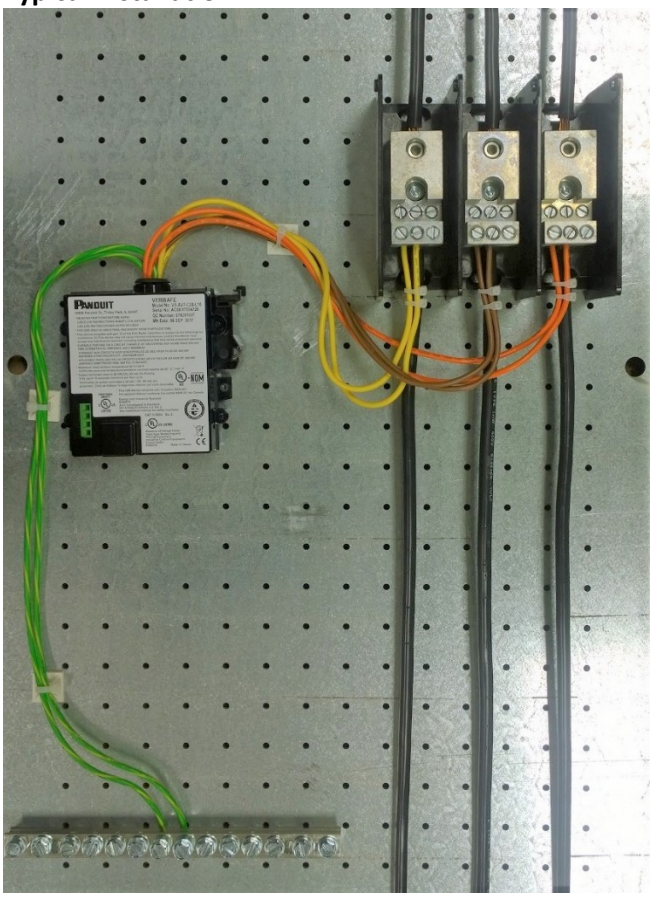
No Impact

Limitations

- Total length of the AVT sensor leads and extension wire must not be longer than 10 ft from AVT Isolation Module to connection point on power conductor.
- Must use separate terminal for each sensor lead

Power Distribution Block (PDB)

Typical Installation



Considerations

- Ideal for new installations where space for the power distribution block is more likely to be available.
- Sensor leads must have ferrules applied
- Sensor leads must be secured to the power conductor
- Select PDBs with ports capable of accepting 14 AWG AVT sensor leads.

SCCR Impact

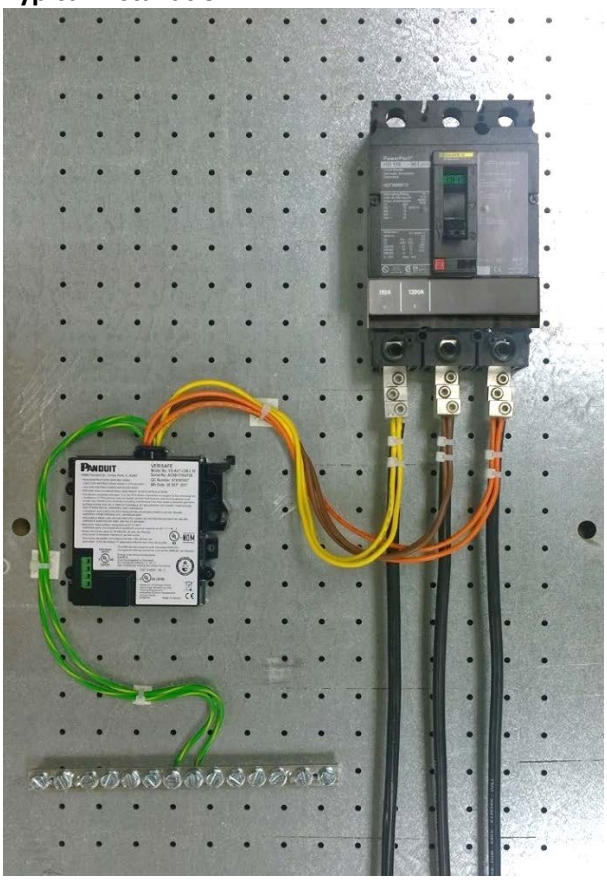
- Because the conductor is spliced on either end of the power distribution block, it is part of the power circuit and will affect the SCCR.
- The AVT is not part of the power circuit, as it only acts as a sensing/monitoring device and it does not carry power.

Limitations

- Total length of the AVT sensor leads must not be longer than 10 ft from AVT Isolation Module to connection point on power conductor.
- Space must be available in panel to install the PDB
- Sensor leads must not be terminated in the same port.
- For applications that require larger than 2/0 AWG conductors, most power distribution blocks will not have ports sized to accept both the larger conductor and smaller 14AWG AVT sensor leads.

Power Disconnect Switch with Distribution Lugs

Typical Installation



Considerations

- Sensor leads must have ferrules applied
- Sensor leads must be secured to the power conductor
- Connection may be on line side or load side
- It may be possible to terminate one AVT sensor lead on the load side lug of a disconnect and the other AVT sensor lead on the upstream lug of the next component. If this method is used, there must not be any circuit elements installed between the AVT sensor leads.
- Lugs must be rated to accept multiple leads and compatible with the 14 AWG AVT sensor leads
- Distribution lugs can be added or changed on some Power Disconnect Switches

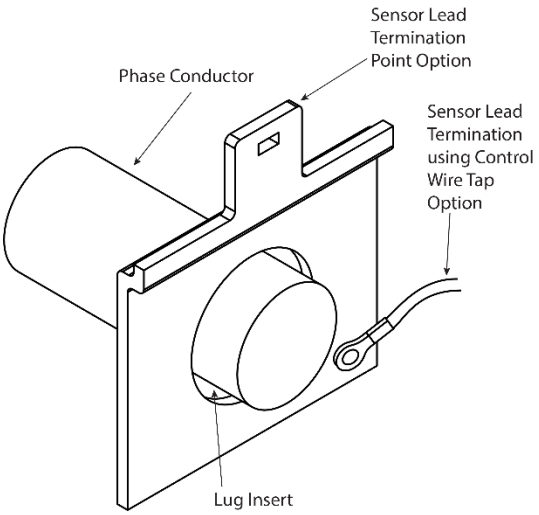
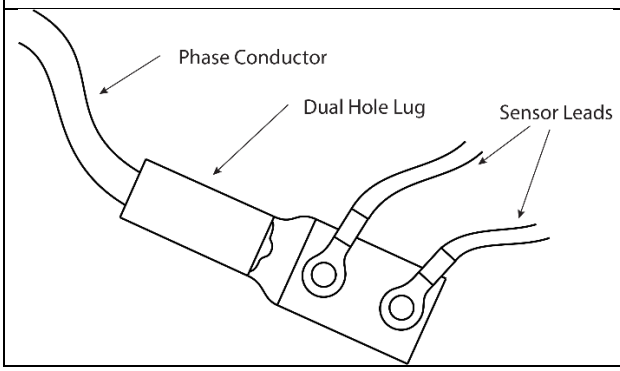
SCCR Impact

- Changing lug may impact SCCR

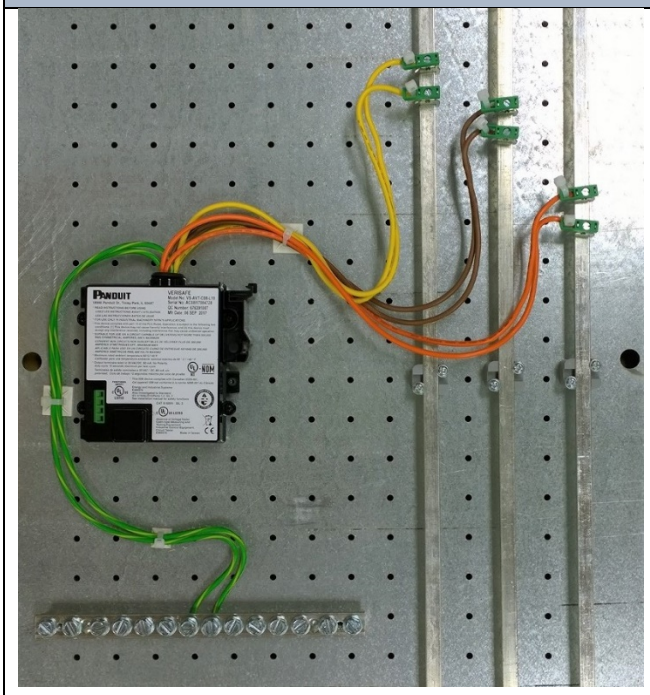
Limitations

- Total length of the AVT sensor leads must not be longer than 10 ft from AVT Isolation Module to connection point on power conductor.
- AVT sensor leads must not be terminated in the same port.

**See next page for additional lug types*

Additional Lug Types:	
	• Lugs with control wire taps. Connect sensor leads to available tap/s. • Each AVT sensor lead must be terminated at a separate point.
	• Utilize dual hole lugs. Connect sensor leads with ring terminals. • Each AVT sensor lead must be terminated at a separate point.

Busbar



Considerations

- Sensor leads must have ring terminals applied and be secured with a tapping screw
- Carefully route and secure sensor lead
- Modifications must comply with busbar manufacturer's requirements

SCCR Impact

No Impact

Limitations

- Total length of the AVT sensor leads must not be longer than 10 ft from AVT Isolation Module to connection point on power conductor.
- Sensor leads must not be terminated under same screw.