


Installation of 600 V Class Current Sensors on Higher Voltage Conductors

Introduction

It is common practice in the electrical industry to apply 600 volt class current sensors to insulated conductors carrying substantially higher voltages.

The information in this note is intended for applications using factory-insulated wire with double layers of insulation sufficient to provide suitable electrical isolation between high voltage conductors/components and the current sensor to be installed. Enhanced protection for bare conductors against abrasion or damage, corona and leakage paths and other environmental effects are not adequately considered here.


DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Follow safe electrical work practices. See NFPA 70E in the USA, or applicable local codes.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Read, understand and follow the instructions before installing this product.
- Turn off all power supplying equipment before working on or inside the equipment.
- Use a properly rated voltage sensing device to confirm power is off.

DO NOT DEPEND ON THIS PRODUCT FOR VOLTAGE INDICATION

- Only install this product on insulated conductors.

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

A qualified person is one who has skills and knowledge related to the construction and operation of this electrical equipment and the installation, and has received safety training to recognize and avoid the hazards involved. NEC2009 Article 100
No responsibility is assumed by Veris Industries for any consequences arising out of the use of this material.

Design Considerations

Evaluate the proposed installation space to ensure that there is sufficient space for all components and their associated wiring, including the current sensor. Maintain physical clearances between the sensor and any uninsulated or inadequately insulated components carrying voltages higher than the sensor's rating class (as well as connected signal or communications wiring) to levels shown in the appropriate electrical code tables. Pay particular attention to the required distances to terminations and other uninsulated points.

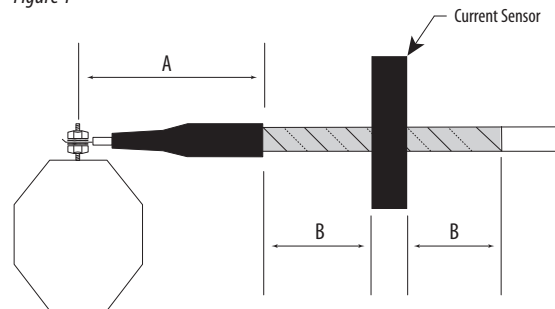
Materials

1. Insulation: Insulate high voltage conductors to allow the use of lower voltage class current sensors around them. Employ approved tapes or insulating sleeves that provide a B.I.L. high enough for the applied voltage and conditions, as shown in the NEC code (current U.S. NEC Code, Table 490-24).
2. Restraining device(s): Mount or restrain the current sensor and associated wiring within the insulated area. Common materials for this purpose include accessory mounting brackets provided by the current sensor manufacturer and/or insulating wire ties.

Procedure

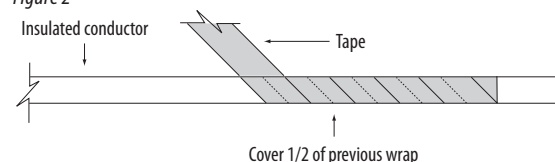
1. Disconnect power to the conductor.
2. Ensure that the conductor is clean so that insulating tape properly adheres to the outer surface. Ensure that there are no sharp protrusions that might produce arcs, damage the insulating materials, or damage other components. Ensure that there is a path directly away from the high voltage conductors suitable for the communications/signal wiring.
3. Ensure that moving parts such as doors and interlocks do not interfere with the installation, damage wiring, or reduce clearances below required distances.
4. Refer to Figure 1. Check national and local codes to determine the clearance distance (B) required for the applied voltage (Current U.S. NEC Code, Table 490-24). Determine the clearance distance required from terminations or other bare conductors (A).

Figure 1



5. Apply tape (Figure 2) or insulating sleeves (per manufacturer instructions) to cover each high voltage conductor for a minimum length of twice the distance B (from Figure 1) plus the width of the current sensor to be mounted over the conductor.

Figure 2



6. Mount the current sensor over the center of the added insulation using wire ties and/or brackets. Avoid damaging the insulation layers while mounting the current sensor. Current sensors demonstrate optimal accuracy when the monitored conductor is centered within the sensor window.
7. Route communications/signal wiring directly away from the high voltage conductor(s). Retain clearances as required to any other high voltage points. Restrain the wiring as needed to ensure that it cannot come within the prescribed clearance distance from any high voltage point.

The information provided herein is intended to supplement the knowledge required of an electrician trained in high voltage installations. There is no intent to foresee all possible variables in individual situations, nor to provide training needed to perform these tasks. The installer is ultimately responsible for ensuring that a particular installation remains safe and operable under the specific conditions encountered.