Permanent Electrical Safety Devices (PESDs) are defined as external devices permanently mounted to electrical systems that, directly or indirectly, reduce the risk of arc flash and/or shock hazard by providing feedback on the voltage state within the enclosure and eliminating proximate exposure to that same voltage. PESD combo units include voltage portals and voltage indicators.

**Voltage Indicators:** Flashing or non-flashing device that monitors both AC and DC voltage. They are externally mounted and give a visual indication outside the panel to the presence or absence of voltage. Voltage indicators are also available in Class 1 Div 2, solid-on LEDs.

**Part numbers include:** R-3W, R-3W2, R-3W-SR

**Voltage Portals:** Non-conductive, encapsulated point that allows for the detection of the presence of voltage through a panel door with a non-contact voltage detector (NCVD).

**Part numbers include:** R-1A003 and R-T3

### PESDs and NFPA 70E

The NFPA 70E states that the following principles are foundational to ensuring a zero energy state:

- **Locate all sources of electrical energy.** Voltage portals and voltage indicators installed will locate each source.
- **Physically contact voltage detector to the electrical energy.** Voltage indicators are hardwired to the source.
- **Test between each phase and phase to ground.** Voltage indicators check voltage between phase-phase-ground.
- **Verify voltage detector before and after use.** A non-contact voltage detector (NCVD) can be verified before and after use.

Please note: Employers are responsible to train employees in selecting and properly using a voltage detector. It is also the responsibility of employers to provide a written lock-out/tag-out procedure and train employees on those procedures. Follow manufacturer’s instructions when using a non-contact voltage detector. All other safety procedures apply.


**Warning:** Verify an electrical conductor has been de-energized using an adequately rated voltage detector before working on it. Follow appropriate Energy Control (Lockout/Tagout) procedures as per OSHA Subpart S, the current edition of NFPA 70E; and the current edition of CSA Z462.
Grace Engineered Products' SafeSide® R-T3, a non-contact voltage portal, has three phases combined into one single unit. Operators now have a single test location for all three phases, which takes up less space on the electrical panel and reduces installation time.

The SafeSide® R-T3 also reduces arc flash risk while increasing electrical safety and productivity by providing electricians and maintenance personnel a single no-touch voltage portal on the outside of grounded metallic electrical enclosures. The SafeSide® R-T3 interface, installed on an electrical panel, allows electricians and maintenance personnel to use a NCVD pen to check line voltage before and after they open the main disconnect. The ability to pre-verify electrical isolation prior to opening an electrical panel puts an additional safety barrier between people and hazardous voltage.

**FEATURES**

> 3-phases combined into one unit
> Integral 6' #12 AWG lead wire
> Installs in a 30mm hole for easy installation
> Rugged polycarbonate construction for safety
> UV outdoor rated so you can mount it anywhere
> UL Type 4, 4X, 12 Rated

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
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<tbody>
<tr>
<td>R-T3</td>
<td>Three-phase Voltage Portal installs in a 30mm hole</td>
</tr>
<tr>
<td>R-T3-LF</td>
<td>Flange mount adhesive label, 8.75” x 1.90”</td>
</tr>
<tr>
<td>R-T3-LH</td>
<td>Door/Side mount adhesive label, 5.50” x 4.00”</td>
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</tbody>
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**Operating instructions:**

1. Verify proper operation of Non-Contact Voltage Detector (NCVD) to a known source. With the Isolator closed and the electrical panel powered, verify the NCVD indicates voltage when completely inserted into the bottom of the recessed area of the R-T3 interface (figure 1). If the NCVD does not indicate voltage, then proceed with Lock-out/Tag-out (LOTO) procedure as per NFPA 70E Annex G or other approved procedure.

2. Open the isolator, insert the NCVD individually into the recessed area of the installed R-T3 interface. If the phases have been isolated, then the NCVD should not sense voltage on the R-T3 interface and the panel has been pre-verified. From here on follow approved electrical LOTO procedure.

**WARNING:** Non-Contact Voltage Detectors (NCVD) require solidly grounded power systems for proper operation. Using NCVDs and/or SafeSide® voltage portals on power systems with a floating, isolated grounds, or other ungrounded systems will result in false-negative voltage indication (voltage present, but not indicated by the NCVD). Follow the NCVDs’ manufacturer operating instructions for proper procedures and operation of the NCVD.