The interchangeability of the VL circuit breaker trip units allow for easy conversion from any of 3 types of protection. They are thermal-magnetic, electronic, or electronic with a built-in LCD display. The thermal-magnetic trip unit features an adjustable magnetic trip setting. The electronic trip units are microprocessor based true RMS sensing devices and are available with a variety of adjustable trip settings, configurations, and information menus. With precise control over the circuit breaker functions and access to system status, diagnostics, and information, these trip units allow for unsurpassed flexibility in circuit coordination.

An example of coordination is the out of the box Ground Fault function on the Model 545 trip units. The pick-up and time delay settings are fixed for each frame and do not overlap with the settings on the other frames. Therefore, when VL breakers are used together in a system the GF protection is automatically coordinated. The user also has the ability to program a custom coordination scheme with the high level of adjustability available on the Model 576 trip units.

### Trip Unit Functions

<table>
<thead>
<tr>
<th>Thermal-Magnetic</th>
<th>Electronic LI</th>
<th>Electronic LIG</th>
<th>Electronic LSI</th>
<th>Electronic LSIG</th>
<th>Electronic with LCD LSI</th>
<th>Electronic with LCD LSIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Current Setting (Ic)</td>
<td>Fixed</td>
<td>☐</td>
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<td>☐</td>
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<tr>
<td>Long Time Delay (tL)</td>
<td>☑</td>
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<tr>
<td>Instantaneous Overcurrent Setting (Ii)</td>
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<tr>
<td>Short Time Pick-up (Isd)</td>
<td>☑</td>
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<td>☑</td>
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<tr>
<td>Ground Fault Pick-Up (Ig)</td>
<td>☑</td>
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<td>☐</td>
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<tr>
<td>Alarm &amp; Status LEDs</td>
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<td>☑</td>
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<tr>
<td>Built-in Display (LCD)</td>
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<tr>
<td>Pre-Trip Alarm (ON/OFF)</td>
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<tr>
<td>Last trip information (ON/OFF)</td>
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<tr>
<td>Zone Selective (ON/OFF)</td>
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<tr>
<td>Communications (ON/OFF)</td>
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</tbody>
</table>

- ☐ – Adjustable setting.
- ☑ – This feature is included.
- “fixed” – Non-Adjustable setting.
- ☐ – Feature is not included.
- ◐ – Requires the trip unit to be connected to a PC (via a COMPRO or COMMOM communications module) for access or programming.

### Continuous Amps Rating (Ir)

This setting is the continuous current that the breaker will carry without tripping. It can be set up to 100% of the trip unit’s nominal rating (Ir).

### Long Time Delay (tL)

Sometimes referred to as the “overload” position, this function controls the breaker’s “pause-in-tripping” time. It allows low level, temporary murmur currents such as those encountered when starting a motor to pass without tripping. The time delay begins when the current reaches 6 x Ir.

### Instantaneous Pick-up (Ii)

This function sets the breaker to trip instantaneously during high fault conditions. On Model 545 trip units this setting is fixed on LSI and LSIG trip units and adjustable on LI and LIG trip units. These features are fully adjustable on Model 576 trip units.

### Short Time Pick-Up (Isd)

This function controls the level of fault current the breaker will carry for a short time without tripping, thus allowing downstream devices to clear short circuits ahead of up-stream protection. It may be defeated (turned-off) on Model 576 trip units.

### Short Time Delay (tsd)

This controls the interval of time the breaker will remain closed against a fault (at the Short Time Pick-up current level) without tripping. The time delay may be set at fixed points or at short time intervals based on l2t curves. This function is used with the Short Time Pick-up to achieve selectivity and better system coordination.

### Ground Fault Pick-Up (Ig)

This setting controls the level of ground fault current that will cause the breaker to trip. Model 545 Electronic Trip Units act on the residual current to sense ground current. The Model 576 Electronic Trip Unit is programmable and allows the user to select either the residual current method or direct detection (via a separate current transformer) to detect ground current.

### Ground Fault Time Delay (tg)

This controls the interval of time the breaker will remain closed after a ground fault is detected (at the Ground Fault Pick-up current level) without tripping.
**VL Molded Case Circuit Breakers**  

**General Information**

**Thermal-Magnetic** trip units, Model 525, combine the inverse time element design for low level overloads, and instantaneous magnetic action for short circuit protection. The standard unit has preset overload protection and an adjustable instantaneous trip setting, with 6 set points. Thermal-Magnetic trip units are available throughout the VL family, from 15 to 1600A.

Electronic Trip Units

Electronic trip units are available throughout the VL family, from 60A (which can be set as low as 30A) up through 1600A. They are also available in four trip configurations (LI, LIG, LSI, LSIG) and features can include a built-in LCD display.

On the Model 545 Electronic Trip Unit a flashing LED confirms that the microprocessor is operating and another indicates an overload condition. For ease-of-use and to insure proper coordination, the set points for the continuous current are shown on the face of these trip units in **amps**.

On the Model 576, the LCD version, the current in each phase is continuously shown on the display. Unlike many displays, no secondary or auxiliary voltage is required as long as the breaker is energized and a minimal load current is present. These trip units can also indicate the “last trip” status (date, time, amps) when they’re connected to a PC via one of our communications modules.

**Typical Trip Unit Labeling and Adjustment Positions**

Model 545 Electronic Trip Unit with LSIG trip functions

Model 576 Electronic Trip Unit has an LCD display