For the operating range from 16 A to 1600 A, the molded case circuit breaker ensures the optimum overload and short-circuit protection. For new plants, the SENTRON 3VL molded case circuit breakers with integrated communication are the best solution. Recording of the measured values is an integrated component of the switch.

- **Compact and communication-capable**
  Compact dimensions and optimum communication capability are the main features of the SENTRON 3VL molded case circuit breaker. The space-saving circuit breaker is used for plant and motor protection, for starter combinations or as a non-automatic air circuit breaker, as required.

- **Flexible and comprehensive**
  The molded case circuit breaker is available both with thermal-magnetic overcurrent release (16 A to 630 A) and with electronic overcurrent release (63 A to 1600 A), and therefore supplies a wide-ranging product spectrum in all application areas. Two internal series of accessories complete the product portfolio.

### Highlights

- Universal communication solutions, also in combination with the SENTRON 3WL air circuit breaker
- Thermal-magnetic or solid-state tripping units ensure a wide-ranging product spectrum in all application areas
- Flexibility and variable possibilities for use with extensive accessories
Circuit Breakers

3VL molded case circuit breakers up to 1600 A

Overview of components and accessory parts

Modular design of the circuit breaker with universally standardized accessories

1. Withdrawable/plug-in base
2. Side walls for withdrawable version
3. Phase barriers
4. Flared front busbar connecting bars
5. Straight connecting bars
6. Circular conductor terminal for Al/Cu
7. Box terminal for Cu
8. Extended terminal cover
9. Standard terminal cover
10. Masking frame/cover frame for door cut-out
11. Motorized operating mechanism with or without spring energy store
12. Front-operated rotary operating mechanism
13. Door-coupling rotary operating mechanism
14. SENTRON 3VL circuit breakers
15. Internal accessories
16. Solid-state overcurrent trip unit LCD ETU
17. Solid-state overcurrent trip unit with communication function
18. Thermal/magnetic overcurrent trip unit
19. RCD module
20. Rear-accessible terminals – flat and round
21. COM20/COM21 communication module to the PROFIBUS-DP/MODBUS RTU
22. Battery power supply with test function for solid-state trip unit
Overview

Benefits when it comes to planning
- Further operating range from 16 to 1600 A
- Available for plant, generator and motor protection, for starter combinations or as non-automatic air circuit breaker
- Various licenses and international approvals permit almost limitless use (IEC 60947-2, UL 489, CSA, NOM, CCC, GOST, shipbuilding (GL, LRS, DNV, BV))
- Universal and retrofittable accessories for all sizes
- Universal communication concept with PROFIBUS-DP or Modbus RTU
- Customer-specific solutions available ex works
- No derating to 50 °C
- Expanded selectivity with the 3VL circuit breaker can be achieved simply and safely using the zone selective interlocking (ZSI)

Benefits

Benefits in the control cabinet
- Switching from high short-circuit currents despite limited space requirement
- Up to three difference breaking capacity 55/70/100 kA available in one size
- Simple mounting and operation
- High flexibility through various range of accessories and modular design

Added value in operation
- High efficiency and reliability through constant quality optimization
- Fast and easy setting of parameters
- Costs savings, productivity increases, higher availability and flexibility through communication capability
- Test possibilities for inspection and maintenance (manual tester for electronic releases)

Field of application
- Protection against overload and short-circuit protection for plant, generators and motors. Also available for starter combination for motors or as non-automatic air circuit breaker

International standards and approvals
- IEC 60947-2 / EN 60947-2 (VDE 0660-101)
- IEC 60947-1 / EN 60947-1 (VDE 0660-100)
- Isolating features according to IEC 60947-2 / EN 60947-2 (VDE 0660-107)
- Disconnector unit features for stopping and deactivating in case of emergency (main and EMERGENCY-STOP switch) according to IEC 60204-1 / EN 60204-1 (VDE 0113-1)

Image shows possible attachment of internal accessories for 3VL 2 and 3VL 3
Unlimited communication: with the innovative COM20 and COM21 modules

For the economic and safe operation of the plant, transparency in energy distribution is the basic requirement – and this is satisfied completely with the COM20/21. By integrating the modules, all ETU versions can communicate universally via PROFIBUS/MODBUS.

Whether switch status, trigger cause, alarms, current measurement, event log, switching cycles or device controls: The costs and function-optimized COM20/21 reliably transmit all important information so that there is transparency regarding the status of your plant at all times.

Further benefits of the COM20/21 solution

- Can be used universally – even with the cheap ETU, universal communication is possible
- Easy installation through optimized ETU connection
- Maximum flexibility thanks to smaller size for space optimization in the control cabinet
- Particularly uncomplicated, as no auxiliary and alarm switch wiring to the communication module

Increased plant availability through multi-family communication
## Technical specifications

### 3VL molded case circuit breakers up to 1600 A

<table>
<thead>
<tr>
<th>Type</th>
<th>VL160X/3VL1</th>
<th>VL1600/3VL8</th>
<th>VL1600/3VL8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current (I_c) at 50 °C ambient temperature</td>
<td>A 16 ... 160 50 ... 160 200 ... 250 200 ... 400 315 ... 630 800 1000 ... 1250 1600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated operational voltage (U_c) AC 50/60 Hz DC</td>
<td>V 690 690 690 690 690 690 690 690</td>
<td>V 500 600 600 600 600 -- -- --</td>
<td></td>
</tr>
</tbody>
</table>

### Electronic releases
- Thermal-magnetic
- Electronic LCD ETU/ETU
- Communication-capable

### Switching capacity \(I_{sw}/I_{cc}\)

<table>
<thead>
<tr>
<th>Standard switching capacity (K_{sw})</th>
<th>N</th>
<th>Up to 240 V AC</th>
<th>kA</th>
<th>65/65</th>
<th>65/65</th>
<th>65/65</th>
<th>65/65</th>
<th>65/65</th>
<th>65/65</th>
<th>65/65</th>
<th>65/35</th>
<th>65/35</th>
</tr>
</thead>
<tbody>
<tr>
<td>High switching capacity (H)</td>
<td>H</td>
<td>Up to 415 V AC</td>
<td>kA</td>
<td>55/55</td>
<td>55/55</td>
<td>55/55</td>
<td>55/55</td>
<td>55/55</td>
<td>55/55</td>
<td>55/28</td>
<td>55/28</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>Up to 690 V AC</td>
<td>kA</td>
<td>8/4</td>
<td>12/8</td>
<td>12/8</td>
<td>15/8</td>
<td>20/10</td>
<td>20/10</td>
<td>20/10</td>
<td>20/10</td>
<td>20/10</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>Up to 250 V DC</td>
<td>kA</td>
<td>30/30</td>
<td>32/32</td>
<td>32/32</td>
<td>32/32</td>
<td>32/32</td>
<td>30/30</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>Up to 500 V DC</td>
<td>kA</td>
<td>12/6(3)</td>
<td>12/6</td>
<td>12/6</td>
<td>15/8</td>
<td>20/10</td>
<td>20/10</td>
<td>30/15</td>
<td>30/15</td>
<td>--</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>Up to 600 V DC</td>
<td>kA</td>
<td>--</td>
<td>--</td>
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</tr>
</tbody>
</table>

### NEMA breaking capacity \(I_{cc}\)

| Up to 480 V AC | kA | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| Up to 600 V AC | kA | 12(3) | 12 | 12 | 20 | 20 | 20 | 20 | 20 |

| Up to 240 V AC | kA | 100/75 | 100/75 | 100/75 | 100/75 | 100/75 | 100/75 | 100/75 | 100/75 | 100/50 | 100/50 |
| Up to 415 V AC | kA | 70/70 | 70/70 | 70/70 | 70/70 | 70/70 | 70/70 | 70/70 | 70/70 | 70/35 | 70/35 |
| Up to 440 V AC | kA | 42/32 | 50/38 | 50/38 | 50/38 | 50/38 | 50/38 | 50/38 | 50/38 | 50/38 | 50/38 |
| Up to 500/525 V AC | kA | 30/29 | 40/30 | 40/30 | 40/30 | 40/30 | 40/30 | 40/30 | 40/30 | 40/30 | 40/30 |
| Up to 690 V AC | kA | 12(6) | 12/6 | 12/6 | 15/8 | 20/10 | 20/10 | 30/15 | 30/15 | -- | -- |
| Up to 250 V DC | kA | 30/30 | 32/32 | 32/32 | 32/32 | 32/32 | 30/30 | -- | -- | -- | -- |
| Up to 500 V DC | kA | 30/30 | 32/32 | 32/32 | 32/32 | 32/32 | 30/30 | -- | -- | -- | -- |
| Up to 600 V DC | kA | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

### Very high switching capacity \(L\)

| Up to 480 V AC | kA | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Up to 600 V AC | kA | 12(3) | 12 | 12 | 20 | 20 | 30 | 30 | 30 |

### Time constant \(T_{Cond}\)

- Available
- Not available

1) Rated DC voltage applies only for circuit breakers with thermal-magnetic release.

2) At 240 V AC, 415 V AC and 525 V AC max. 5 % overvoltage, at 440 V AC, 500 V AC and 690 V AC max. 10 % overvoltage, at 250/500/800 V DC max. 5 % overvoltage.

3) Rated current \(I_c \geq 25\) A.

4) The maximum permitted DC voltage for each conducting path needs to be taken into account for DC switching applications, see Technical Information at www.siemens.com/lowvoltage/support.

5) The NEMA breaking capacity can be found on the rating plate of each IEC circuit breaker.
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