The SENTRON 3WL air circuit breakers are particularly flexible and communication-capable. They ideally fulfill the increased requirements for air circuit breakers, above all in respect of operation and monitoring of network events when using electronic control systems. The quality of this series is setting standards around the world.

**Flexible and communication-capable**

The SENTRON 3WL circuit breaker takes into account the higher requirements around the world. It can be used flexibly as an infeed, distribution, coupling and outgoing switch, it is easy to use and universally communication-capable. Connected to an electronic control system, it offers comprehensive possibilities for monitoring of network events.

**Versatile in use**

With only three sizes, the SENTRON 3WL covers a power range from 630 A to 6300 A. At the upper power range it is the smallest in its class. All types are characterized by the modular design and universal, uniform accessories.

**Highlights**

- Universal communication solutions, also in combination with the 3VL molded case circuit breaker
- Flexibility and variable possibilities for use with extensive accessories
- Simple planning, assembly and retro-fitting as a result of the modular design
Air Circuit Breakers

3WL air circuit breakers

Overview of components and accessory parts

Guide frame
Main connection, front/Flange, horizontal, vertical
Position signalling switch
Ground contact, leading
Shutter
COM15 PROFIBUS module or COM16 MODBUS module
External CubicleBUS module
Closing solenoid, auxiliary release
Auxiliary conductor plug-in system
Auxiliary switch block
Door sealing frame
Interlocking set for base plate
Transparent insert, function insert
EMERGENCY-STOP pushbutton, Key operation
Motorized operating mechanism
Operating cycle counter
Breaker Status Sensor (BSS)
Electronic trip unit (ETU)
Remote reset magnet
Breaker Data Adapter (BDA)
Four line display
Ground-fault protection module
Rated current module
Measurement function module
Circuit breaker

Modular design of the circuit breaker with universally standardized accessories
Overview

**Benefits when it comes to planning**
- Only 3 sizes with the same accessories to cover all current ranges
- 4 power levels for the short-circuit capacities for all applications
- Consistent modularity simplifies construction and subsequent adjustment
- Specific retrofittable modules for electronic releases
- Universal communication concept for PROFIBUS or Modbus

**Benefits**

**Critical advantages for switchgear manufacturers:**
- Compact construction saves storage and switch cabinet costs (size 1 (up to 1600 A) fits in a 400 mm-wide switchboard panel, devices of size 3 (up to 6300 A) fit in an 800 mm-wide switchboard panel)
- 4 switching capacity power levels: Cheap solution for all customer requirements
- Fast and reliable parameterization
- Reduced costs and higher productivity through communication capability
- Preventative maintenance through early information and subsequent reaction can prevent the risk of expensive plant shutdowns
- Effective diagnostics management: Measured values are the basis for efficient load management, for drawing up power demand profiles and for assigning energy to cost centers
- Long life of circuits and switchgear. Service life extension through simple replacement of the main switches

**Added value in operation**
- Very high reliability and very long service life
- Provision of data for the construction, e.g. load management (display of overload on PMC) via communication
- Ready-to-close indicator
- Various connection methods for simple and ideal customer connection, delivered ex works
- Very high current-carrying capacity
- Considerable additional benefits as a result of the connection possibilities for external input and output modules

**Field of application**
- As incoming-feeder, distribution, tie, and outgoing-feeder circuit breakers in electrical installations
- For switching and protecting motors, capacitors, generators, transformers, busbars and cables.

The AC devices are available as circuit breakers and non-automatic air circuit breakers. DC devices are available as non-automatic air circuit breakers.

**International standards and approvals**
- IEC 60947-2
- DIN VDE 0690 Part 1
- Climate-proof acc. to DIN IEC 68 Part 30-2
- CCC, Gost
- Shipbuilding, e.g.: GL, ABS, LRS, PRS.

Designs according to UL 489 are also available for international use. 3WL air circuit breakers/non-automatic air circuit breakers according to UL 489 up to 5000 A, see Catalog LV 16. (Order no. E86060-K1816-A101-A2-7600).

---

Figure 1: 3WL air circuit breaker, withdrawable

Figure 2: 3WL air circuit breaker, fixed mounting
### Technical specifications

#### Air Circuit Breakers

**3WL air circuit breakers/non-automatic air circuit breakers up to 6300 A (AC)**

<table>
<thead>
<tr>
<th>Size</th>
<th>I, II, III</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated current $I_{n}$ A</td>
<td>630, 800, 1000, 1250, 1600, 2000, 2500, 3200, 4000, 5000, 6300</td>
<td>1000, 2000, 4000</td>
</tr>
<tr>
<td>Number of poles</td>
<td>3-pole, 4-pole</td>
<td>3-pole, 4-pole</td>
</tr>
<tr>
<td>Rated operational voltage $U_{ac}$ V AC</td>
<td>... 690/1000/1150</td>
<td>--</td>
</tr>
<tr>
<td>Rated ultimate short-circuit breaking capacity at 500 V AC kA</td>
<td>Size I 55/66, Size II 66/80/100, Size III 100/150 (3-pole), 130 (4-pole)</td>
<td>30/25/20 (at 300/600/1000 V DC)</td>
</tr>
<tr>
<td>Endurance Operating cycles</td>
<td>20000</td>
<td>15000</td>
</tr>
</tbody>
</table>

#### 3WL non-automatic air circuit breakers up to 4000 A (DC)

<table>
<thead>
<tr>
<th>Size</th>
<th>I, II, III</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operational voltage $U_{dc}$ V DC</td>
<td>--</td>
<td>... 1000</td>
</tr>
<tr>
<td>Rated ultimate short-circuit breaking capacity at 500 V AC kA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Endurance Operating cycles</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

#### Mounting position

- Degree of protection
  - With cover: IP55
  - Without cover (with door sealing frame): IP51

#### Dimensions 3-/4-pole

<table>
<thead>
<tr>
<th>W mm</th>
<th>320/410</th>
<th>460/590</th>
<th>704/914</th>
<th>460/590</th>
</tr>
</thead>
<tbody>
<tr>
<td>H mm</td>
<td>434</td>
<td>434</td>
<td>434</td>
<td>434</td>
</tr>
<tr>
<td>D mm</td>
<td>291</td>
<td>291</td>
<td>291</td>
<td>291</td>
</tr>
<tr>
<td>H mm</td>
<td>465,5</td>
<td>465,5</td>
<td>465,5</td>
<td>465,5</td>
</tr>
<tr>
<td>D mm</td>
<td>471</td>
<td>471</td>
<td>471</td>
<td>471</td>
</tr>
</tbody>
</table>

#### Type

<table>
<thead>
<tr>
<th>ETU15B1)</th>
<th>ETU25B</th>
<th>ETU27B</th>
<th>ETU45B</th>
<th>ETU76B</th>
</tr>
</thead>
</table>

#### Electronic releases for SENTRON 3WL circuit breakers

- **Overload protection**
- **Short-time delayed short-circuit protection**
- **Instantaneous short-circuit protection**
- **Neutral conductor protection**
- **Ground-fault protection**
- **Zone Selective Interlocking**
- **LCD, 4-line**
- **LCD, graphic**
- **Communication through PROFIBUS DP**
- **Measurement function Plus**
- **Selectable parameter sets**
- **Parameters freely programmable**
- **CubicleBUS**

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1) ETU15B cannot be used with 3WL circuit breakers, size III.

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3WL air circuit breakers/non-automatic air circuit breakers according to UL 489 up to 5000 A, see Catalog LV 16.

SENTRON transfer switching control unit for ATSE, see chapter "Monitoring devices".
## Switching capacity

<table>
<thead>
<tr>
<th>Size</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>3WL11</td>
<td>3WL12</td>
<td>3WL13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Switching capacity class</th>
<th>N</th>
<th>S</th>
<th>S</th>
<th>N</th>
<th>S</th>
<th>S</th>
<th>H</th>
<th>H</th>
<th>C</th>
<th>C</th>
</tr>
</thead>
</table>

### Short-circuit breaking capacity

#### Rated operational voltage $U_e$ up to 415 V AC
- $I_{cu}$ (kA): 55, 66, 66, 80, 100, 100, 150, 130
- $I_{cs}$ (kA): 55, 66, 66, 80, 100, 100, 150, 130
- $I_{cm}$ (kA): 121, 145, 145, 176, 220, 220, 330, 286

#### Rated operational voltage $U_e$ up to 500 V AC
- $I_{cu}$ (kA): 42, 50, 50, 75, 85, 85, 100, 130
- $I_{cs}$ (kA): 42, 50, 50, 75, 85, 85, 100, 130
- $I_{cm}$ (kA): 88, 105, 105, 165, 187, 187, 330, 286

#### Rated operational voltage $U_e$ up to 690 V AC
- $I_{cu}$ (kA): 42, 50, 50, 75, 85, 85, 100, 130
- $I_{cs}$ (kA): 42, 50, 50, 75, 85, 85, 100, 130
- $I_{cm}$ (kA): 88, 105, 105, 165, 187, 187, 330, 286

#### Rated operational voltage $U_e$ up to 1000 V /1150 V AC
- $I_{cu}$ (kA): 42, 50, 50, 75, 85, 85, 100, 130
- $I_{cs}$ (kA): 42, 50, 50, 75, 85, 85, 100, 130
- $I_{cm}$ (kA): 88, 105, 105, 165, 187, 187, 330, 286

### Rated short-time withstand current $I_{cw}$ of the circuit breakers

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>I</th>
<th>0.5 s</th>
<th>1 s</th>
<th>2 s</th>
<th>3 s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>kA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.5 s</td>
<td>55</td>
<td>66</td>
<td>66</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>1 s</td>
<td>42</td>
<td>50</td>
<td>55</td>
<td>66</td>
<td>80</td>
</tr>
<tr>
<td>2 s</td>
<td>29.5</td>
<td>35</td>
<td>39</td>
<td>46</td>
<td>65</td>
</tr>
<tr>
<td>3 s</td>
<td>24</td>
<td>29</td>
<td>32</td>
<td>37</td>
<td>50</td>
</tr>
</tbody>
</table>

### Short-circuit breaking capacity $I_{cc}$ of the non-automatic air circuit breakers

<table>
<thead>
<tr>
<th>Voltage</th>
<th>$I_{cc}$ (kA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 500 V AC</td>
<td>35</td>
</tr>
<tr>
<td>Up to 690 V AC</td>
<td>42</td>
</tr>
<tr>
<td>Up to 1000 V</td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>$I_{cw}$ (kA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 s</td>
<td>55</td>
</tr>
<tr>
<td>1 s</td>
<td>42</td>
</tr>
<tr>
<td>2 s</td>
<td>29.5</td>
</tr>
<tr>
<td>3 s</td>
<td>24</td>
</tr>
</tbody>
</table>

### Circuit breaker types

- **N**: Circuit breaker with ECO switching capacity
- **S**: Circuit breaker with standard switching capacity
- **H**: Circuit breaker with high switching capacity
- **C**: Circuit breaker with very high switching capacity
- **DC**: Non-automatic air circuit breakers with DC switching capacity

1. Size II with $I_{n\text{max}} \leq 2500$ A.
2. Size II with $I_{n\text{max}} = 3200$ A and $I_{n\text{max}} = 4000$ A.
3. At a rated voltage of $\geq 690$ V the $I_{cw}$ value of the circuit breaker cannot be greater than the $I_{cu}$ or $I_{cs}$ value at $690$ V.
4. Rated operational voltage $U_e = 1150$ V.
5. At $U_e = 220$ V DC.
6. At $U_e = 300$ V DC.
7. At $U_e = 600$ V DC.
8. At $U_e = 1000$ V DC.
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