

# SENTRON Switching and Protection Devices – Molded Case Circuit Breakers

## Introduction

## Overview



| Type | VL160X/3VL1 | VL160/3VL2 | VL250/3VL3 | VL400/3VL4 |
|------|-------------|------------|------------|------------|
|------|-------------|------------|------------|------------|

### Molded case circuit breakers

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

|                                                                    |   |           |     |           |     |           |     |            |     |
|--------------------------------------------------------------------|---|-----------|-----|-----------|-----|-----------|-----|------------|-----|
| Rated current $I_n$<br>at 50 °C ambient temperature <sup>1)</sup>  | A | 16 to 160 |     | 26 to 160 |     | 80 to 250 |     | 125 to 400 |     |
| Number of poles                                                    |   | 3         | 4   | 3         | 4   | 3         | 4   | 3          | 4   |
| Rated operational voltage $U_e$<br>AC 50/60 Hz<br>DC <sup>2)</sup> | V | 690       | 690 | 690       | 690 | 690       | 690 | 690        | 690 |
|                                                                    | V | 500       | 500 | 600       | 600 | 600       | 600 | 600        | 600 |
| <b>Electronic trip units</b>                                       |   |           |     |           |     |           |     |            |     |
| Thermal-magnetic                                                   |   | ✓         | ✓   | ✓         | ✓   | ✓         | ✓   | ✓          | ✓   |
| Electronic ETU LCD                                                 |   | --        | --  | ✓         | ✓   | ✓         | ✓   | ✓          | ✓   |
| Replaceable                                                        |   | --        | --  | ✓         | ✓   | ✓         | ✓   | ✓          | ✓   |
| PROFIBUS module COM10                                              |   | --        | --  | ✓         | ✓   | ✓         | ✓   | ✓          | ✓   |

#### Dimensions

|  |   |    |     |     |     |     |     |     |     |     |
|--|---|----|-----|-----|-----|-----|-----|-----|-----|-----|
|  | A | mm | 105 | 139 | 105 | 139 | 105 | 139 | 139 | 183 |
|  | B | mm | 157 | 157 | 175 | 175 | 175 | 175 | 279 | 279 |
|  | C | mm | 81  | 81  | 81  | 81  | 81  | 81  | 102 | 102 |
|  | D | mm | 107 | 107 | 107 | 107 | 107 | 107 | 138 | 138 |

#### Switching capacity $I_{cu}/I_{cs}$ RMS value according to IEC 60947-2

|                                              |    |                    |         |         |         |         |
|----------------------------------------------|----|--------------------|---------|---------|---------|---------|
| Standard switching capacity N <sup>3)</sup>  |    |                    |         |         |         |         |
| up to 240 V AC                               | kA | 65/65              | 65/65   | 65/65   | 65/65   | 65/65   |
| up to 415 V AC                               | kA | 40/40              | 40/40   | 40/40   | 40/40   | 45/45   |
| up to 440 V AC                               | kA | 25/20              | 25/20   | 25/20   | 25/20   | 35/26   |
| up to 500/525 V AC                           | kA | 18/14              | 25/20   | 25/20   | 25/20   | 25/20   |
| up to 690 V AC                               | kA | 8/4 <sup>4)</sup>  | 12/6    | 12/6    | 12/6    | 15/8    |
| up to 250 V DC <sup>5)</sup>                 | kA | 30/30              | 32/32   | 32/32   | 32/32   | 32/32   |
| up to 500 V DC <sup>5)</sup>                 | kA | --                 | --      | --      | --      | --      |
| up to 600 V DC <sup>5)</sup>                 | kA | --                 | --      | --      | --      | --      |
| NEMA breaking capacity <sup>6)</sup>         |    |                    |         |         |         |         |
| up to 480 V AC                               | kA | 25                 | 25      | 25      | 25      | 35      |
| up to 600 V AC                               | kA | 8 <sup>4)</sup>    | 12      | 12      | 12      | 20      |
| High switching capacity H <sup>3)</sup>      |    |                    |         |         |         |         |
| up to 240 V AC                               | kA | 100/75             | 100/75  | 100/75  | 100/75  | 100/75  |
| up to 415 V AC                               | kA | 70/70              | 70/70   | 70/70   | 70/70   | 70/70   |
| up to 440 V AC                               | kA | 42/32              | 50/38   | 50/38   | 50/38   | 50/38   |
| up to 500/525 V AC                           | kA | 30/23              | 40/30   | 40/30   | 40/30   | 40/30   |
| up to 690 V AC                               | kA | 12/6 <sup>4)</sup> | 12/6    | 12/6    | 12/6    | 15/8    |
| up to 250 V DC <sup>5)</sup>                 | kA | 30/30              | 32/32   | 32/32   | 32/32   | 32/32   |
| up to 500 V DC <sup>5)</sup>                 | kA | 30/30              | 32/32   | 32/32   | 32/32   | 32/32   |
| up to 600 V DC <sup>5)</sup>                 | kA | --                 | --      | --      | --      | --      |
| NEMA breaking capacity <sup>6)</sup>         |    |                    |         |         |         |         |
| up to 480 V AC                               | kA | 42                 | 50      | 50      | 50      | 50      |
| up to 600 V AC                               | kA | 12 <sup>4)</sup>   | 12      | 12      | 12      | 20      |
| Very high switching capacity L <sup>3)</sup> |    |                    |         |         |         |         |
| up to 240 V AC                               | kA | --                 | 200/150 | 200/150 | 200/150 | 200/150 |
| up to 415 V AC                               | kA | --                 | 100/75  | 100/75  | 100/75  | 100/75  |
| up to 440 V AC                               | kA | --                 | 75/50   | 75/50   | 75/50   | 75/50   |
| up to 500/525 V AC                           | kA | --                 | 50/38   | 50/38   | 50/38   | 50/38   |
| up to 690 V AC                               | kA | --                 | 12/6    | 12/6    | 12/6    | 15/8    |
| up to 250 V DC <sup>5)</sup>                 | kA | --                 | 32/32   | 32/32   | 32/32   | 32/32   |
| up to 500 V DC <sup>5)</sup>                 | kA | --                 | 32/32   | 32/32   | 32/32   | 32/32   |
| up to 600 V DC <sup>5)</sup>                 | kA | --                 | 32/32   | 32/32   | 32/32   | 32/32   |
| NEMA breaking capacity <sup>6)</sup>         |    |                    |         |         |         |         |
| up to 480 V AC                               | kA | --                 | 75      | 75      | 75      | 75      |
| up to 600 V AC                               | kA | --                 | 12      | 12      | 12      | 20      |

✓ Available

-- Not available

Standard switching capacity N

High switching capacity H

Very high switching capacity L

For 3VL molded case circuit breakers according to UL 489 see Catalog LV 16.

<sup>1)</sup> 3VF2 at 40 °C ambient temperature.

<sup>2)</sup> Rated DC voltage applies only for circuit breakers with thermal-magnetic trip unit.



VL630/3VL5



VL800/3VL6



VL1250/3VL7



VL1600/3VL8



3VF2

3VL molded case circuit breakers up to 1600 A

252 to 630

320 to 800

400 to 1250

640 to 1600

3VF2 molded case circuit breakers up to 100 A

16 to 100

3

4

3

4

3

4

3

4

3 and 4

690  
600

690  
600

690  
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690  
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690  
--

690  
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690  
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690  
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up to 415  
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✓

✓

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✓

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✓

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190  
279  
102  
138

253  
279  
102  
138

190  
406  
114  
151

253  
406  
114  
151

229  
406  
152  
207

305  
406  
152  
207

229  
406  
152  
207

305  
406  
152  
207

76/102  
124  
68  
73

65/65  
45/45  
35/26  
25/20  
20/10  
32/32  
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65/65  
50/50  
35/26  
25/20  
20/10

65/35  
50/25  
35/26  
25/20  
20/10

65/35  
50/25  
35/26  
25/20  
20/10

65/33  
18/9  
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25  
20

25  
20

25  
20

25  
20

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--

100/75  
70/70  
50/38  
40/30  
30/15  
32/32  
32/32  
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100/75  
70/70  
50/38  
40/30  
30/15

100/50  
70/35  
50/38  
40/30  
30/15

100/50  
70/35  
50/38  
40/30  
30/15

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50  
30

50  
30

50  
30

50  
30

--  
--

200/150  
100/75  
75/50  
50/38  
35/17

200/150  
100/75  
75/50  
50/38  
35/17

200/100  
100/50  
75/50  
50/38  
35/17

200/100  
100/50  
75/50  
50/38  
35/17

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32/32  
32/32  
32/32

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65  
35

65  
35

65  
35

65  
35

--  
--

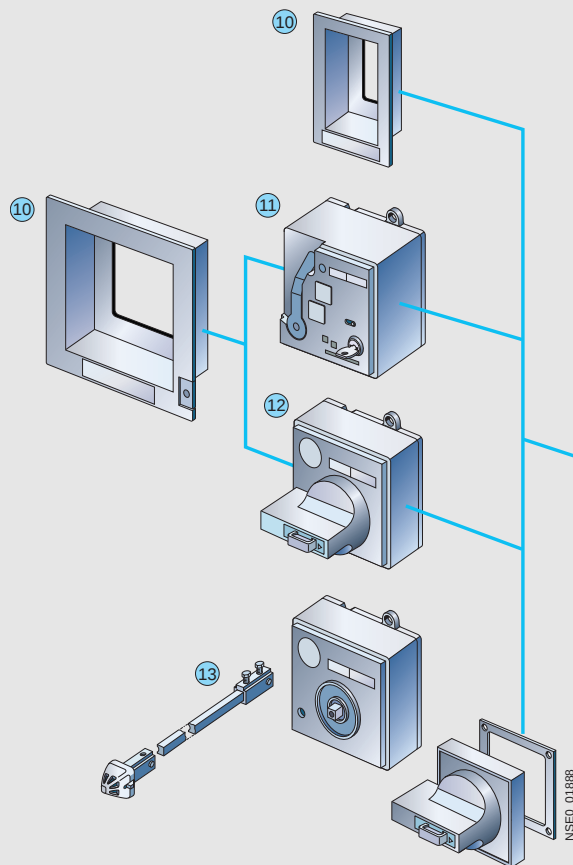
<sup>3)</sup> At 240 V AC, 415 V AC and 525 V AC max. 5 % overvoltage, at 440 V AC, 500 V AC and 690 V AC max. 10 % overvoltage, at 240 V DC, 500 V DC and 600 V DC max. 5 % overvoltage.

<sup>4)</sup> Rated current  $I_n \geq 25$  A.

<sup>5)</sup> The maximum permitted DC voltage for each conducting path needs to be taken into account for DC switching applications, [see Technical Information LV 1T, "Configuring", "Switching of DC Currents"](#); time constant  $t = 15$  ms.

<sup>6)</sup> The NEMA breaking capacity can be found on the rating plate of each IEC circuit breaker.

## Introduction



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- ② Side walls for withdrawable version (pages 16/49 to 16/54)
- ③ Phase barriers (pages 16/56 to 16/61)
- ④ Flared front busbar connecting bars (pages 16/56 to 16/61)
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- ⑥ Multiple feed-in terminals for Al/Cu (pages 16/58 to 16/61)
- ⑦ Box terminals for Cu (pages 16/56 to 16/61)
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- ⑩ Masking frames/cover frames for door cut-out (pages 16/70 to 16/73)
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- ⑭ SENTRON 3VL circuit breakers (pages 16/8 to 16/39)
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- ⑯ Solid-state overcurrent trip units (pages 16/10 to 16/17, 16/21, 16/28 to 16/33, 16/37)
- ⑰ Thermal/magnetic overcurrent trip units (pages 16/8 to 16/13, 16/20, 16/22 to 16/29, 16/36)
- ⑱ RCD modules (page 16/55)
- ⑲ Rear terminals – flat and round (pages 16/56 to 16/61)
- ⑳ COM10 communications modules to the PROFIBUS DP (page 16/74)
- ㉑ Function testers for electronic trip units (pages 16/62 to 16/67)

