



# SENTRON 3VL

## Molded Case Circuit Breakers

Switching, Protection, Measuring and Monitoring Devices



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.

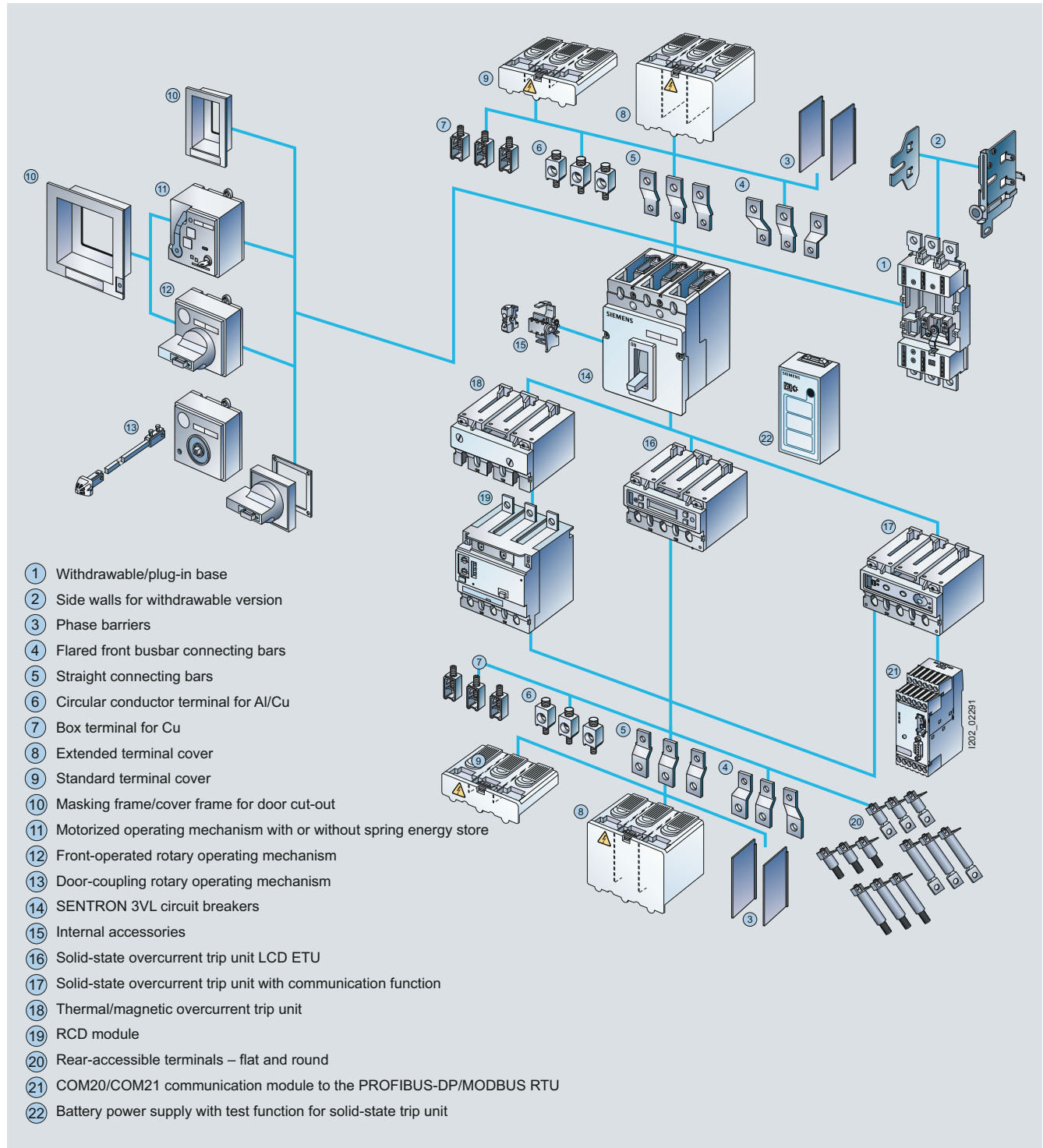
### Highlights

- 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

**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)
- Disconnecter 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)

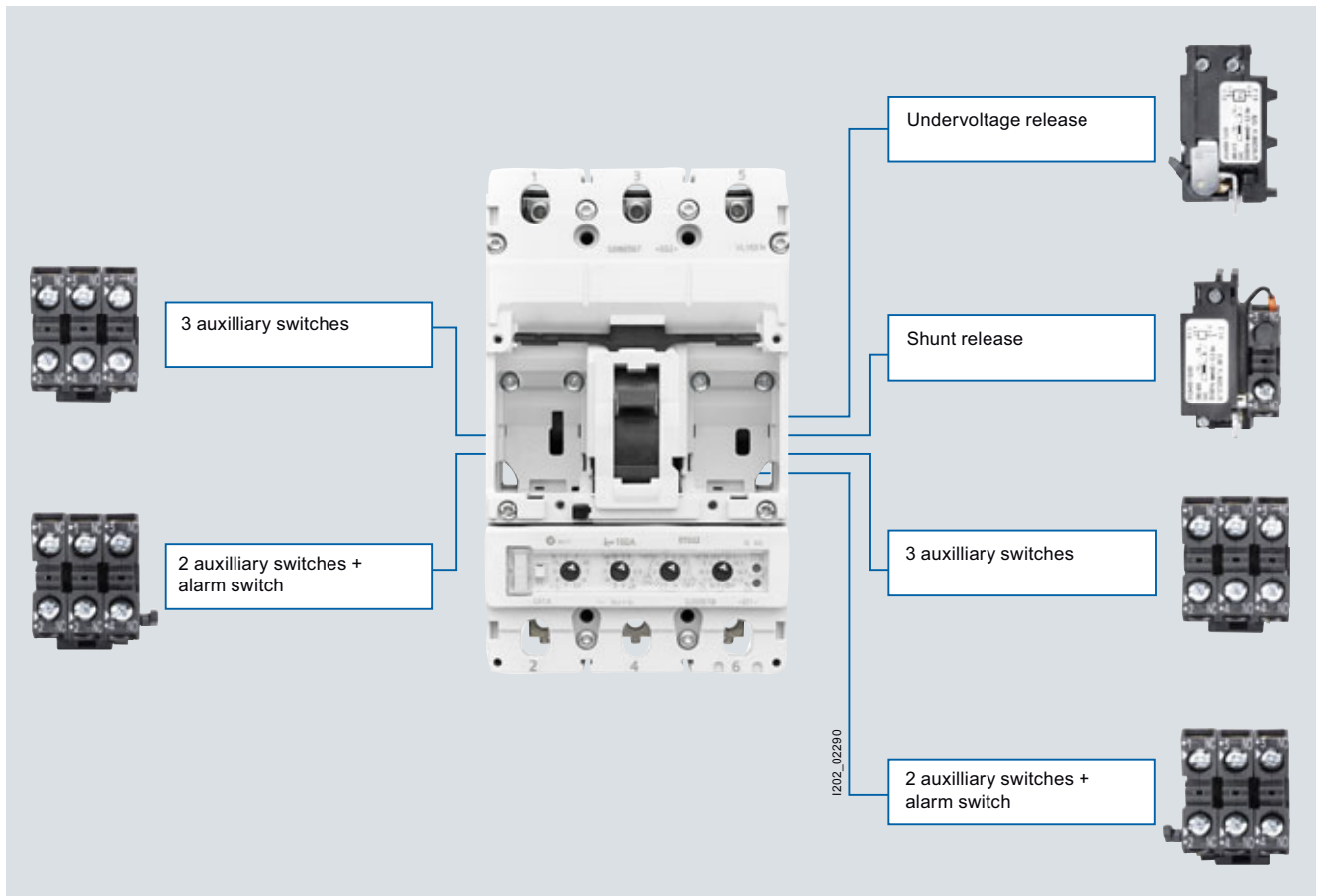


Image shows possible attachment of internal accessories for 3VL 2 and 3VL 3



3VL circuit breaker and communication module

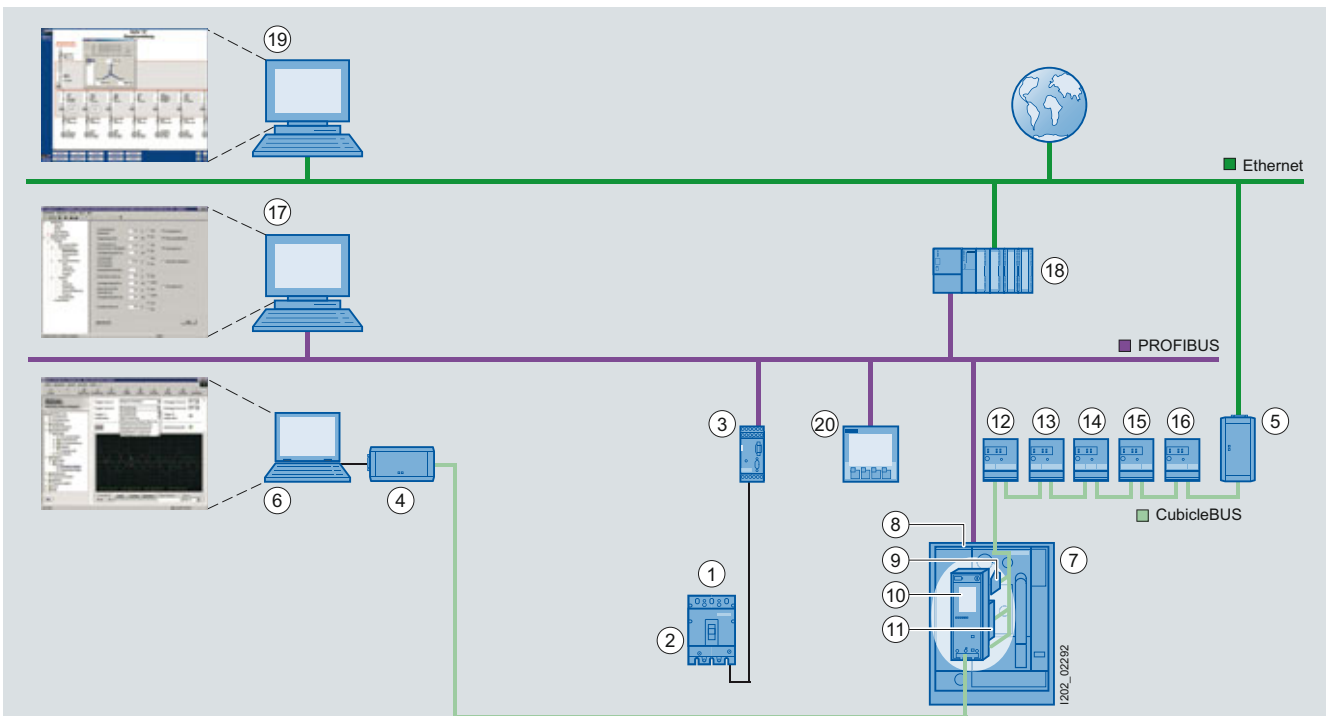
### Unlimited communication: with the innovative COM20 and COM21 modules

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



- |   |   |
|---|---|
| ① SENTRON 3VL   | ⑪ Measurement function <i>Plus</i>                        |
| ② Electronic ETU release                                  | ⑫ ZSI module  |
| ③ COM20 PROFIBUS module <sup>1)</sup> complete with ZSI   | ⑬ Digital output module with relay contacts               |
| ④ Breaker Data Adapter (BDA)                              | ⑭ Digital output module with relay contacts, configurable |
| ⑤ BDA <i>Plus</i> with Ethernet interface                 | ⑮ Analog output module                                    |
| ⑥ Browser-capable input and output device (e.g. notebook) | ⑯ Digital input module                                    |
| ⑦ SENTRON 3WL   | ⑰ Switch ES Power on PC                                   |
| ⑧ COM15 PROFIBUS module <sup>2)</sup>                     | ⑱ SIMATIC powerrate                                       |
| ⑨ Breaker Status Sensor (BSS)                             | ⑳ SENTRON PAC   |
| ⑩ Electronic ETU release                                  |   |

<sup>1)</sup> For a MODBUS connection the COM21 module is required.

<sup>2)</sup> For a MODBUS connection the COM16 module is required.

Increased plant availability through multi-family communication

## Technical specifications



Type VL160X/3VL1 VL160/3VL2 VL250/3VL3 VL400/3VL4 VL630/3VL5 VL800/3VL6 VL1250/3VL7 VL1600/3VL8

### Molded case circuit breakers

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

Rated current $I_n$ at 50 °C ambient temperature	A	16 ... 160	50 ... 160	200 ... 250	200 ... 400	315 ... 630	800	1000 ... 1250	1600
Number of poles		3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Rated operational voltage $U_e$ AC 50/60 Hz	V	690	690	690	690	690	690	690	690
DC <sup>1)</sup>	V	500	600	600	600	600	--	--	--
<b>Electronic releases</b>									
Thermal-magnetic		✓	✓	✓	✓	✓	--	--	--
Electronic LCD ETU/ETU		--	✓	✓	✓	✓	✓	✓	✓
Communication-capable		--	✓	✓	✓	✓	✓	✓	✓

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

Standard switching capacity N <sup>2)</sup> (N)									
Up to 240 V AC	kA	65/65	65/65	65/65	65/65	65/65	65/65	65/35	65/35
Up to 415 V AC	kA	55/55	55/55	55/55	55/55	55/55	55/55	55/28	55/28
Up to 440 V AC	kA	25/20	25/20	25/20	35/26	35/26	35/26	35/26	35/26
Up to 500/525 V AC	kA	18/14	25/20	25/20	25/20	25/20	25/20	25/20	25/20
Up to 690 V AC	kA	8/4 <sup>3)</sup>	12/6	12/6	15/8	20/10	20/10	20/10	20/10
Up to 250 V DC <sup>4)</sup>	kA	30/30	32/32	32/32	32/32	30/30	--	--	--
Up to 500 V DC <sup>4)</sup>	kA	--	--	--	--	--	--	--	--
Up to 600 V DC <sup>4)</sup>	kA	--	--	--	--	--	--	--	--
NEMA breaking capacity <sup>5)</sup>	kA	25	25	25	35	25	25	25	25
Up to 480 V AC	kA	8 <sup>3)</sup>	12	12	20	20	20	20	20
Up to 600 V AC	kA	--	--	--	--	--	--	--	--
High switching capacity H <sup>2)</sup> (H)									
Up to 240 V AC	kA	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	70/35	70/35
Up to 440 V AC	kA	42/32	50/38	50/38	50/38	50/38	50/38	50/38	50/38
Up to 500/525 V AC	kA	30/23	40/30	40/30	40/30	40/30	40/30	40/30	40/30
Up to 690 V AC	kA	12/6 <sup>3)</sup>	12/6	12/6	15/8	20/10	20/10	30/15	30/15
Up to 250 V DC <sup>4)</sup>	kA	30/30	32/32	32/32	32/32	30/30	--	--	--
Up to 500 V DC <sup>4)</sup>	kA	30/30	32/32	32/32	32/32	30/30	--	--	--
Up to 600 V DC <sup>4)</sup>	kA	--	--	--	--	--	--	--	--
NEMA breaking capacity <sup>5)</sup>	kA	42	50	50	50	50	50	50	50
Up to 480 V AC	kA	12 <sup>3)</sup>	12	12	20	30	30	30	30
Up to 600 V AC	kA	--	--	--	--	--	--	--	--
Very high switching capacity L <sup>2)</sup> (L)									
Up to 240 V AC	kA	--	200/150	200/150	200/150	200/150	200/150	200/100	200/100
Up to 415 V AC	kA	--	100/75	100/75	100/75	100/75	100/75	100/50	100/50
Up to 440 V AC	kA	--	75/50	75/50	75/50	75/50	75/50	75/50	75/50
Up to 500/525 V AC	kA	--	50/38	50/38	50/38	50/38	50/38	50/38	50/38
Up to 690 V AC	kA	--	12/6	12/6	15/8	20/10	20/10	35/17	35/17
Up to 250 V DC <sup>4)</sup>	kA	--	32/32	32/32	32/32	30/30	--	--	--
Up to 500 V DC <sup>4)</sup>	kA	--	32/32	32/32	32/32	30/30	--	--	--
Up to 600 V DC <sup>4)</sup>	kA	--	32/32	32/32	32/32	30/30	--	--	--
NEMA breaking capacity <sup>5)</sup>	kA	--	75	75	75	65	65	65	65
Up to 480 V AC	kA	--	12	12	20	35	35	35	35
Up to 600 V AC	kA	--	--	--	--	--	--	--	--

- ✓ Available  
-- Not available

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

<sup>2)</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 250/500/600 V DC max. 5 % overvoltage.

<sup>3)</sup> Rated current  $I_n \geq 25$  A.

<sup>4)</sup> 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](http://www.siemens.com/lowvoltage/support); Time constant  $\tau = 15$  ms.

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

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