

We respect your choice



Datasheet

sentron VL

SIEMENS

SENTRON VL ...

From the Inventors of the Switching Principles

Introduction

The compact design of SENTRON VL family of Moulded Case Circuit Breakers (MCCB) coupled with their excellent features make things easier in the world of electrical distribution.

Designed with minimum parts and maximum modularity, the new SENTRON VL range of Moulded Case Circuit Breaker (MCCB) offers two choices of trip units – “Thermomagnetic” trip unit and “Microprocessor” trip unit.

The thermomagnetic (TM) range offers adjustable overload protection and is available from 20A to 630A. The microprocessor (ETU) range in addition to wide band overload protection, offers the option of time selective short circuit protection and is available from 63A to 1600A. The incoming and outgoing side of the circuit breaker can be selected as desired.

The SENTRON VL range of circuit breakers conform to the latest standards (IS 13 947 and IEC 60 947) and have been designed to protect cables, motors, transformers, wiring busbars, as well as other plant equipment against thermal overload and short circuits.

High performance:

The SENTRON VL range of circuit breakers are rated for operation with no derating upto 50°C ambient. The entire range of SENTRON VL circuit breakers offers service short circuit breaking capacity (Ics) equal to that of the ultimate short circuit breaking capacity (Icu) i.e. $I_{cs} = 100\% I_{cu}$.

Perfectly Modular:

Changes are often unavoidable – particularly in the final stages of a project. Field installable “snap-in” internal accessories of SENTRON VL circuit breaker allows easy exchange or retrofit of accessories on site without the need of any special tools.

Operational Safety:

The SENTRON VL circuit breakers are suitable for **isolation** as defined by IS 13 947 & IEC 60 947.

Padlocking in the “OFF” position also guarantees door interlocking feature thereby ensuring complete safety to the operating personnel during maintenance.

Type 2 Co-ordination*:

Selection of protection switchgear as per Type 2 Co-ordination is the most preferred industrial practice for motor protection, as not only it provides a “complete” protection, but is also economical in the long run.

With the Sentron 3VL MCCB and 3RV MPCB, Siemens offers a completely tested Type 2 selection, as per IS13947 at I_q of 50kA for the motor feeders.

Communication Capability:

The Sentron range of circuit breakers offers innovative communication solutions. Capable of communicating on Profibus-DP, the Sentron range of circuit breakers offers a complete “intelligent” solution for the power distribution system.

Wide Range of Applications:

The SENTRON VL range of circuit breaker is suitable for wide range of applications viz,

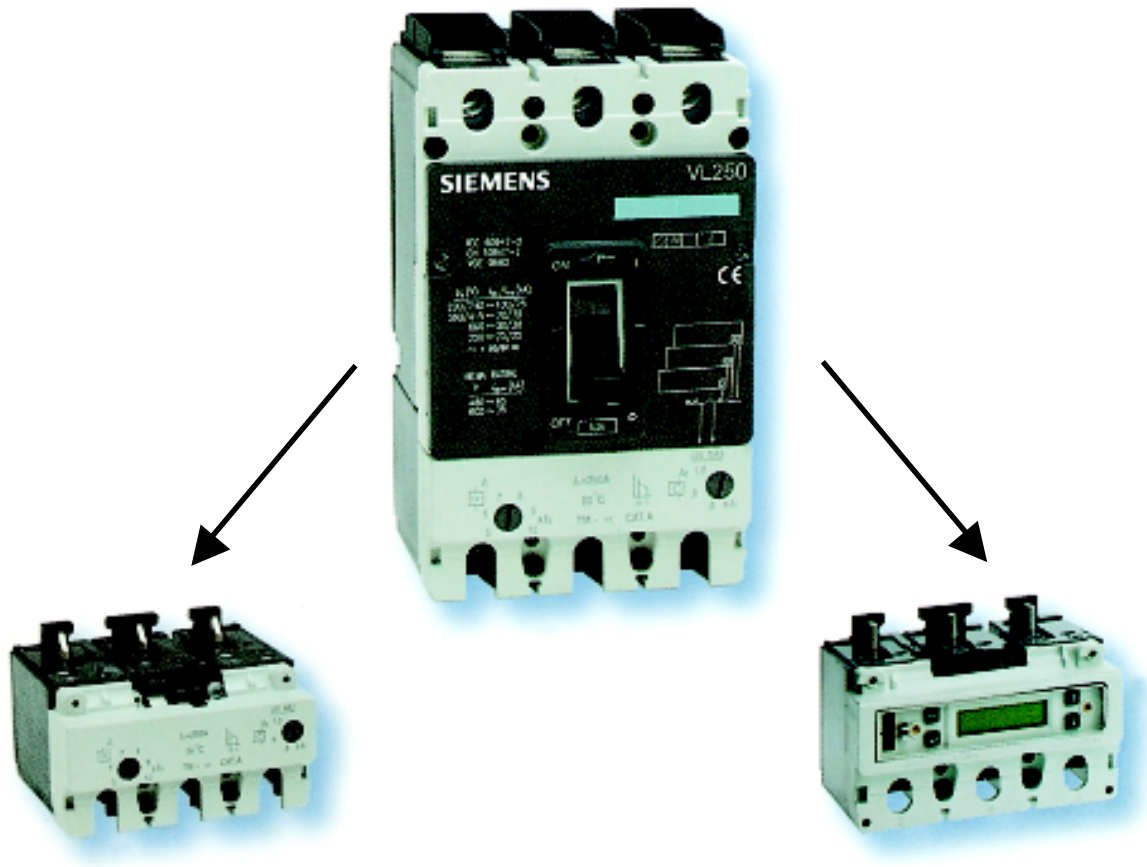
- Line protection
- Transformer protection
- Motor protection
- Generator protection
- DC Network protection
- Earth Leakage and Earth Fault protection
- 400 Hz system

* A complete Type 2 selection chart is available on page 11.

Customised Protection:

The SENTRON VL range of circuit breakers offers two options of trip units – “Thermomagnetic” trip unit (TM) and “Microprocessor” trip unit (ETU).

The entire range is easily upgradable from one version of the release to another, giving utmost flexibility during design & planning.



Thermomagnetic Trip Unit (TM)
20A to 630A

Microprocessor Trip Unit (ETU)
63A to 1600A

Function overview of SENTRON VL trip units:

| Trip Unit* | | TM | ETU10 | ETU20 | |
|-------------------|----------|---|--------------------------|-----------------------------|-------------------------------------|
| Protection | | | | | |
| | L | Overload protection Setting range (I_r) | 0.8 ... 1.0 x I_n | 0.4 ... 1.0 x I_n^\dagger | |
| | S | Short time-delay short-circuit protection Short circuit setting (I_{sd}) Time delay setting (t_{sd}) | – | – | 1.5 ... 10 x I_r 0 ... 0.5 sec |
| | I | Instantaneous protection Setting range (I_i) | Adjustable ¹⁾ | 1.25 ... 11 x I_n | 11 x I_n (Fixed) |

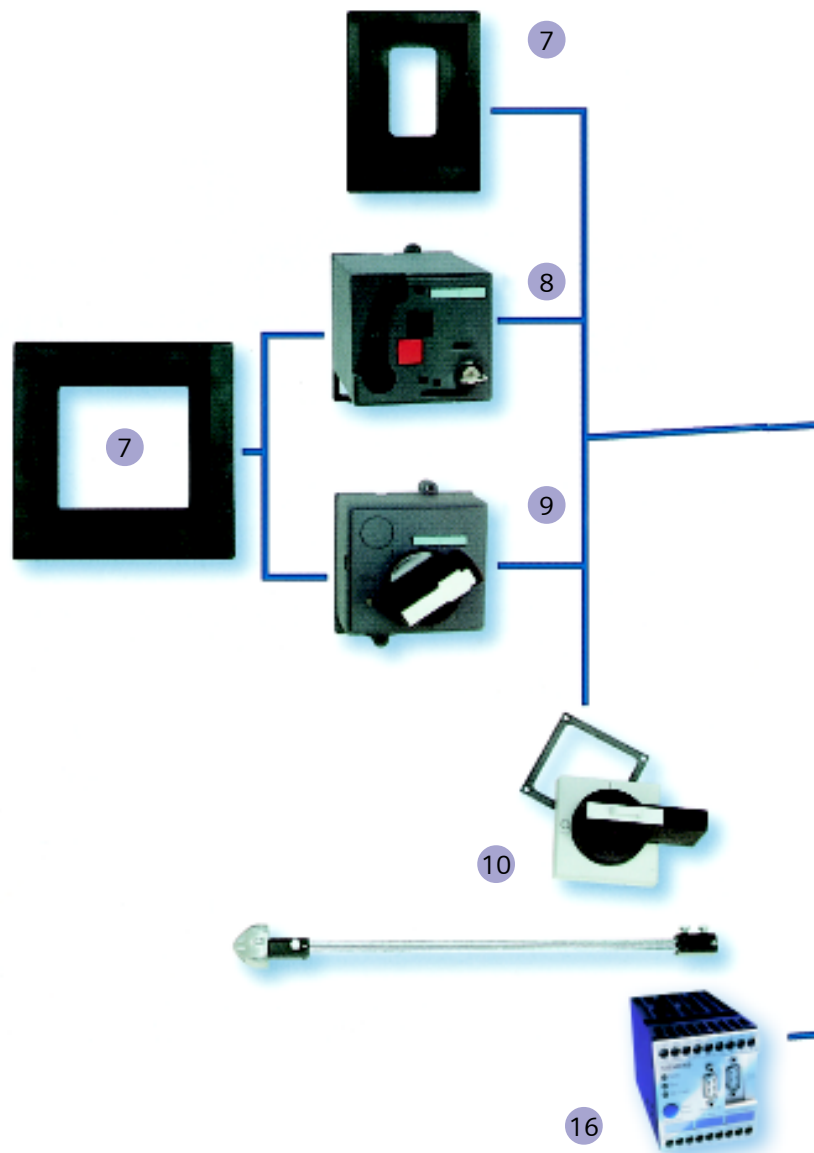
¹⁾ Except for VL160X circuit breaker.

* For information about other trip units with earth fault, please contact our Sales Office.

† With adjustable time delay.

Modules and more: SENTRON VL with optional accessories



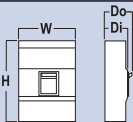
- 1 Plug-In/Draw-Out Base
- 2 Draw-Out Assembly Side Plates
- 3 Interphase Shields
- 4 Flared Busbar Extensions
- 5 Extended Terminal Cover
- 6 Standard Terminal Cover
- 7 Cover Frame for Door Cutout
- 8 Motorised Drive (stored energy operator)
- 9 Special Drive, Direct
- 10 Rotary Drive, Extended
- 11 SENTRON VL Circuit-Breaker
- 12 Internal Accessories
- 13 Electronic Trip Unit ETU/LCD
- 14 Thermal Magnetic Trip Unit TM
- 15 Residual Current Device – RCD
- 16 SIMOCODE-DP
- 17 COM10 PROFIBUS Module
- 18 Hand-held Electronic Release Test Kit
- 19 Rear Terminals – Flat and Round



SENTRON VL: A system-compatible solution, to optimise power and distribution systems as a whole and to save significant measure of costs.

Technical Overview

SENTRON VL Moulded Case Circuit-Breakers






| Type | | VF100 / VF125 | VL160X | | |
|---|-----------------------|---|---|-----------|-----|
| | |  |  | | |
| Electrical Characteristics as per IS 13947-2, IEC 60 947-2 and EN 60 947-2 | | | | | |
| Max. Rated Current I_n | A | 100/125 | | 160 | |
| Number of Poles | | 3 ¹⁾ | 4 | 3 4 | |
| Rated operational Voltage U_e | AC 50/60 Hz | 415 | | 690 | |
| | DC ²⁾ | — | — | 600 750 | |
| Rated insulation voltage U_i | V | 690 | | 800 | |
| Rated impulse withstand voltage U_{imp} | Main conducting paths | 6 | | 8 | |
| | Auxiliary Circuits | 4 | | 4 | |
| Rated ultimate short-circuit breaking capacity I_{cu} (r.m.s.) upto 415 V AC | Economy | 18kA | | — | |
| | Standard | 25kA | | 40kA | |
| | High | — | | 70kA | |
| $I_{cs} = \%I_{cu}$ | | 50 | | 100 | |
| Rated short-circuit breaking capacity upto 600 V DC (3 paths in series) | kA | — | | 30kA | |
| Suitable for isolation | | ✓ | | ✓ | |
| Permissible loading of fixed type MCCBs | upto 40°C | 100 | | 100 | |
| | at 50°C | 92 | | 100 | |
| | at 60°C | 83 | | 93 | |
| | at 70°C | 73 | | 86 | |
| Endurance | operating cycles | 10000 | | 20000 | |
| Max. switching frequency | 1/h | 120 | | 120 | |
| Overcurrent Release | | | | | |
| Thermomagnetic release | TM | ✓ ⁴⁾ | | ✓ | |
| Microprocessor release | ETU | — | | — | |
| PROFIBUS module | COM 10 | — | | — | |
| SIMOCODE-DP | | ✓ | | ✓ | |
| Residual current device | RCD | — | | ✓ | |
| Internal Accessories | | | | | |
| Undervoltage release | | — | | ✓ | |
| Shunt release | | ✓ | | ✓ | |
| Auxiliary switch | | ✓ | | ✓ | |
| Alarm switch | | ✓ | | ✓ | |
| External Accessories | | | | | |
| Rotary drive, extended | | ✓ | | ✓ | |
| Special drive, direct | | — | | ✓ | |
| Motorised drive | | — | | ✓ | |
| Plug-in | | — | | ✓ | |
| Drawout | | — | | — | |
| Dimensions | | | | | |
|  | W | 76 | 101 | 105 | 139 |
| | H | 124/130 | 124/130 | 157 | 157 |
| | Di | 78 | 78 | 81 | 81 |
| | Do | 93 | 93 | 107 | 107 |

¹⁾ For information about 1 and 2 pole MCCB, please contact our sales office

²⁾ Apply to Thermomagnetic circuit breakers only. DC rating above 630A, available on request

³⁾ 70kA rating available on request

⁴⁾ Fixed thermal and fixed short circuit

| VL160 / VL250 | | VL400 | | VL630 | | VL800 | | VL1250 / VL1600 | |
|--|--------------|---|--------------|---|--------------|---|-------------------------|---|-------------------------|
|  | |  | |  | |  | |  | |
| 160/250 | | 400 | | 630 | | 800 | | 1250/1600 | |
| 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 |
| 600 | 690 750 | 600 | 690 750 | 600 | 690 750 | — | 690 — | — | 690 — |
| 800 | | 800 | | 800 | | 800 | | 800 | |
| 8 | 4 | 8 | 4 | 8 | 4 | 8 | 4 | 8 | 4 |
| — | 40kA 70kA | — | 45kA 70kA | — | 45kA 70kA | — | — 50kA ³⁾ | — | — 50kA ³⁾ |
| 100 | | 100 | | 100 | | 100 | | 100 | |
| 30kA | | 30kA | | 30kA | | — | | — | |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| 100 | | 100 | | 100 | | 100 | | 100 | |
| 100 | | 100 | | 100 | | 100 | | 100 | |
| 93 | | 93 | | 93 | | 95 | | 95 | |
| 86 | | 86 | | 86 | | 86 | | 86/80 | |
| 20000 | | 20000 | | 10000 | | 5000 | | 3000 | |
| 120 | | 120 | | 60 | | 60 | | 30 | |
| ✓ | | ✓ | | ✓ | | — | | — | |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| ✓ | | ✓ | | ✓ | | ✓ | | — | |
| ✓ | | ✓ | | — | | — | | — | |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| 105 | 139 | 139 | 183 | 190 | 253 | 190 | 253 | 229 | 305 |
| 175 | 175 | 279 | 279 | 279 | 279 | 406 | 406 | 406 | 406 |
| 81 | 81 | 102 | 102 | 102 | 102 | 114 | 114 | 152 | 152 |
| 107 | 107 | 138 | 138 | 138 | 138 | 151 | 151 | 209 | 209 |

Sentron VL

Setting the benchmarks with solutions

Earth Fault Protection

The SENTRON VL circuit breaker with ETU release can be equipped with earth fault protection. The earth fault release "G" detects fault currents flowing to the ground which otherwise could cause fire.

Residual Current Device (RCD)

This device offers residual current protection and is provided as an accessory to the VL160X to VL400 MCCB with TM trip units. The RCD and MCCB combination ensures tripping both for residual sinusoidal alternating currents and residual pulsating direct currents. The differential current is settable from 0.03A to 3A while the delay time can be set from Instantaneous to 1 sec.

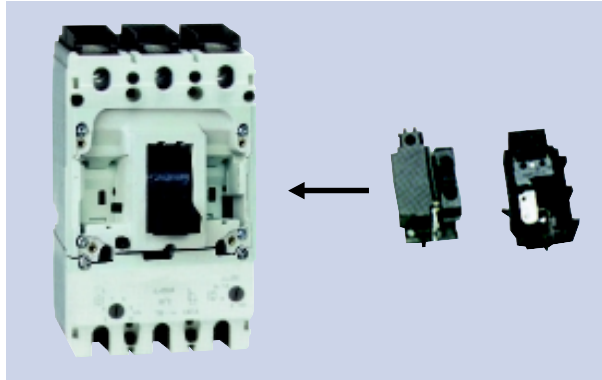
Rotary Drive:

SENTRON VL circuit breakers can be fitted with either the special drive for direct operation or with the Rotary drive extended, for circuit-breakers installed in switchgear cubicles and distribution boards. The Rotary drive extended comes with door interlocking feature and provision for padlocking. Padlocking in the "OFF" position also guarantees door interlocking feature thereby ensuring complete safety to operating personnel during maintenance.

Interlocking of Circuit-breakers

Interlocking between two or more circuit breakers can be achieved using Castell Locks.

Two SENTRON VL circuit breakers can also be mechanically interlocked by means of Bowden cable or Walking beam interlocking mechanisms. Interlocking can be accomplished between equal frame sizes or one size different (e.g. VL250 and VL400).



Auxiliary Releases and Switches

Only two groups of accessories cover the entire product range of SENTRON VL. The internal accessories such as shunt release, undervoltage release, auxiliary and alarm switches can be easily installed at site without any special tools due to "snap-in" technology.

Motorised Drive:

The SENTRON VL range of circuit-breakers can be equipped with motorised drive for remote closing and opening. This can also switch the circuit-breaker locally and comes as a standard with locking device for padlocks.



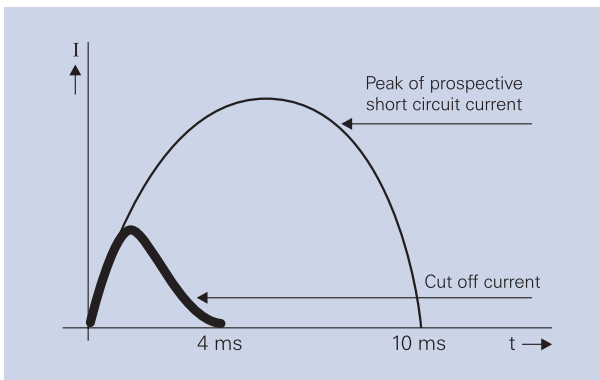
Plug-in / Draw-out Assembly:

The basic version of SENTRON VL circuit-breaker can be easily converted into a plug-in or draw-out version. Plug-in and draw-out assembly simplifies the front installation and removal of a SENTRON VL circuit-breaker without the need to disconnect the incoming or outgoing cables or busbars.



Current Limiting

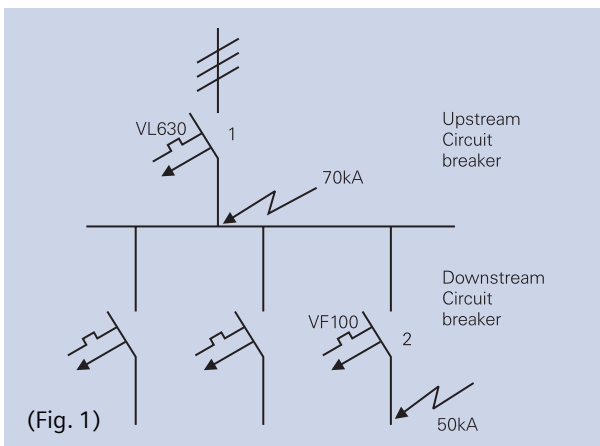
In the event of a short circuit, the contacts of SENTRON VL MCCB open much before the peak prospective value of the short circuit current is reached thereby limiting the fault current. Current limiting restricts the dangerous effects of short circuits by reducing the thermal and mechanical stresses on the cables and associated components, thereby ensuring safety to the plant and the operating personnel.



Back-up Protection* (Circuit breakers in Cascade)

The current limiting feature of SENTRON VL circuit breakers allows a certain degree of freedom in the system design and in optimising protection equipment for economic considerations.

Cascading refers to this degree of freedom, where due to the current limiting feature of the Sentron VL circuit breaker, a MCCB of the breaking capacity lower than the prospective short circuit current at the point of installation can be used in cascade with another



upstream breaker. The combination of these series connected breakers has a higher breaking capacity than the prospective short circuit current.

In practice it means that in Fig. 1, at point (2) in the network with a prospective short circuit of say 50kA, a device of 18kA breaking capacity (eg type VF100) can also be used if back-up protection is provided by an upstream SENTRON VL 630 (70kA) circuit breaker at point 1. i.e. the combination of SENTRON VL and VF100 has a breaking capacity equal to, or in excess of 50kA.

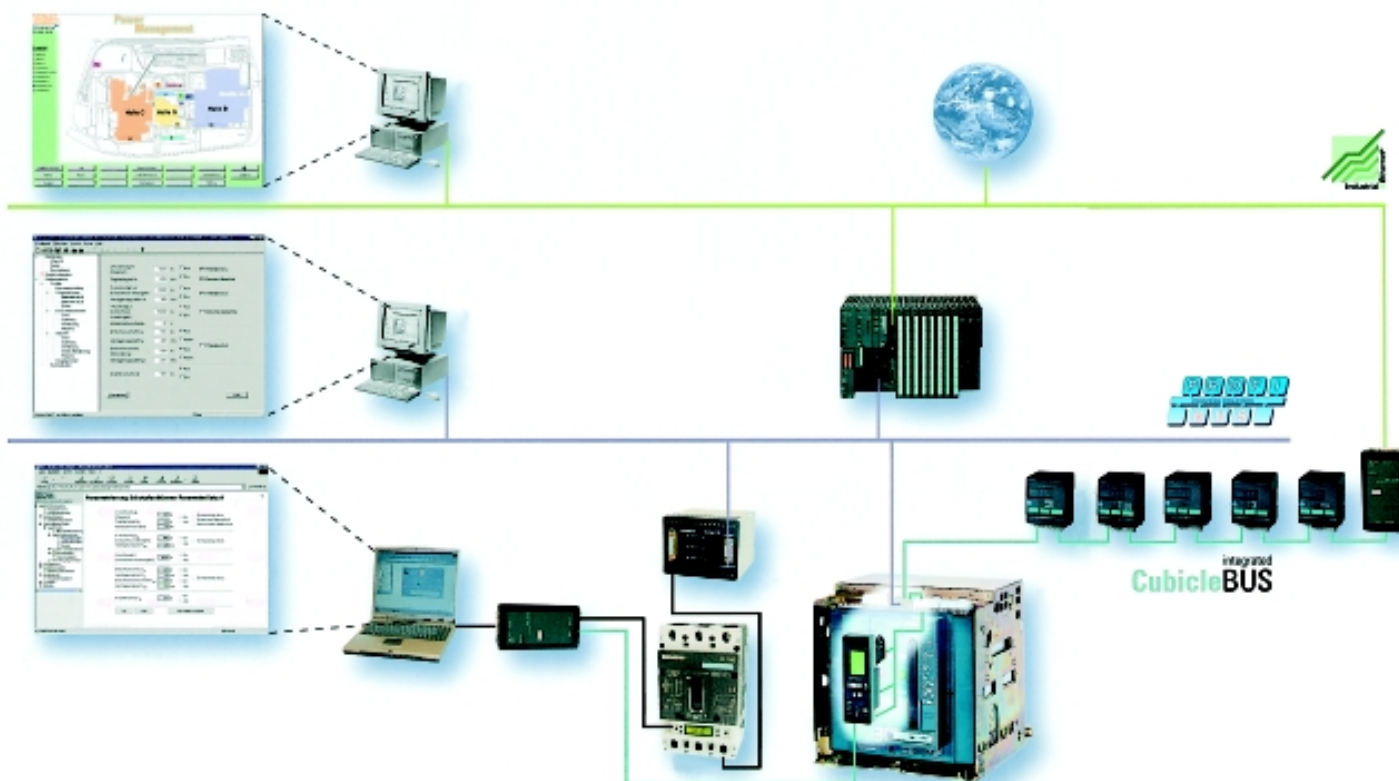
Discrimination*

Discriminative protection means optimal coordination between series connected circuit-breakers. One refers to the overload and short-circuit protection as being "discriminative" when only the circuit-breaker located immediately upstream from the point of fault opens in the event of an overload or short-circuit. Current-based and time-based discrimination can be achieved with SENTRON VL range of MCCB. Discrimination limit for a combination of upstream and downstream breakers specifies the value of short circuit current till which current based discrimination can be achieved. This help the system designer in making the selection of breakers for the given system.

* For more details about discrimination and cascading tables contact our Sales Office.

Sentron VL

Leaders in Communication Technology



Communication:

The demand from the power distribution systems are continuously increasing. Breakers are no longer the simple mechanical on-off switch with overload and short circuit protection for distribution system. Breakers have to play a much vital role by providing information such as the breakers status, fault diagnostics, submetering data etc.

Circuit breakers with communication capability are ideally suited to provide such information. With the Sentron range of breakers, Siemens provides a complete intelligent solution for the power distribution feeders. The Sentron circuit breakers not only meet the demand of the modern plants of communication capability but also provide utmost flexibility in system design and ease of implementation.

Sentron is the first range of circuit breakers that can be parameterised, diagnosed and controlled remotely without the use of a field bus system, by using a hand held Breaker Data Adapter (BDA), a state-of-art internet compatible parameterisation device for the Sentron circuit breakers.

In case if the integration is required through field bus system, Sentron circuit breakers support open

architecture protocol of Profibus-DP. For power distribution system where extensive data like operating commands, breaker status, trip events with time stamp, measured values is to be transmitted, Sentron VL can be integrated in the communication system with the Com 10 module making the data available on Profibus-DP.

Many a times status of critical motor feeders is needed in the central control room. Sentron VL breakers alongwith SIMOCODE-DP provides the intelligent motor control centre which not only offers motor protection but is also capable of communicating on Profibus-DP.

The following diagram provides an overview of the different communication options available with Sentron circuit breakers. It illustrates the high level of system flexibility enabling new and innovative ideas to be implemented.

Starting at the lowest level with simple parameterisation of the circuit breakers to the field level with PLC and Switch ES software, facilitating connection through intranet / internet. The system has the associated potential for saving on power costs by means of intelligent power management.

Fuseless Motor Feeder Selection Type 2, I_q = 50kA / 415VAC as per IS13947-2

Direct-on-line Feeder, Class 10

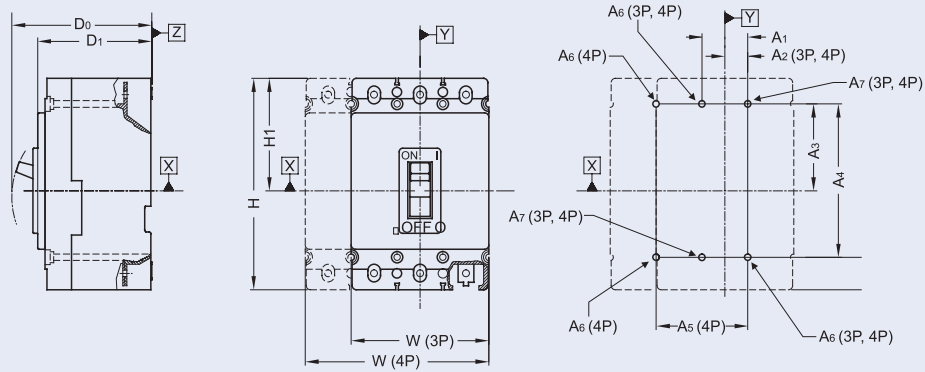
| SL Motor | | Circuit Breaker | | Contactor | | Bi-relay | |
|--------------------------|---------------------|---------------------|------|-----------|-----|-------------|--------------|
| kW/HP 415V, 3ph, 50Hz | I _L A | Type | A | Type | A | Type | Range (A) |
| 0.37/0.5 | 1 | 3RV11 21-0KA10 | 1.25 | 3TF30 | 9 | # | 0.9 - 1.25 |
| 0.55/0.75 | 1.3 | 3RV11 21-1AA10 | 1.6 | 3TF30 | 9 | # | 1.1 - 1.6 |
| 0.75/1 | 1.9 | 3RV11 21-1BA10 | 2 | 3TF30 | 9 | # | 1.4 - 2. |
| 1.1/1.5 | 2.6 | 3RV11 21-1DA10 | 3.2 | 3TF31 | 12 | # | 2.2 - 3.2 |
| 1.5/2 | 3.7 | 3RV11 21-1EA10 | 4 | 3TF32 | 16 | # | 2.8 - 4 |
| 2.2/3 | 4.8 | 3RV11 21-1FA10 | 5 | 3TF32 | 16 | # | 3.5 - 5 |
| 3.7/5 | 7.8 | 3RV11 21-1HA10 | 8 | 3TF32 | 16 | # | 5.5 - 8 |
| 5.5/7.5 | 11.2 | 3RV11 21-1KA10 | 12.5 | 3TF44 | 32 | # | 9 - 12.5 |
| 7.5/10 | 16 | 3RV11 21-4AA10 | 16 | 3TF44 | 32 | # | 11 - 16 |
| 9.3/12.5 | 19 | 3RV11 21-4BA10 | 20 | 3TF44 | 32 | # | 14 - 20 |
| 11/15 | 20.8 | 3RV11 21-4CA10 | 22 | 3TF44 | 32 | # | 17 - 22 |
| 15/20 | 28 | 3RV11 31-4EA10 | 32 | 3TF45 | 38 | # | 22 - 32 |
| 18.5/25 | 34 | 3RV11 31-4FA10 | 40 | 3TF46 | 45 | # | 28 - 40 |
| 22/30 | 40 | 3RV11 31-4GA10 | 45 | 3TF48 | 75 | # | 36 - 45 |
| 30/40 | 53 | 3RV11 42-4JA10 | 63 | 3TF48 | 75 | # | 45 - 63 |
| 37/50 | 65 | 3RV11 42-4KA10 | 75 | 3TF50 | 110 | # | 57 - 75 |
| 45/60 | 78 | 3RV11 42-4LA10 | 90 | 3TF50 | 110 | # | 70 - 90 |
| 55/75 | 96 | 3RV11 42-4MA10 | 100 | 3TF52 | 170 | # | 80 - 100 |
| 75/100 | 131 | 3VL27 16-2DK36-0AA0 | 160 | 3TF52 | 170 | 3UA62 30-5A | 85-135 |
| 90/125 | 156 | 3VL37 25-2DK36-0AA0 | 250 | 3TF53 | 205 | 3UA62 30-5B | 115-180 |
| 110/150 | 189 | 3VL37 25-2DK36-0AA0 | 250 | 3TF53 | 205 | 3UA62 30-5C | 160 - 250 |
| 132/180 | 227 | 3VL37 25-2DK36-0AA0 | 250 | 3TF54 | 250 | 3UA62 30-5C | 160 - 250 |
| 160/215 | 271 | 3VL47 40-2DK36-0AA0 | 400 | 3TF55 | 300 | 3UA62 30-5D | 200 - 320 |
| 200/270 | 339 | 3VL47 40-2DK36-0AA0 | 400 | 3TF56 | 400 | 3UA62 30-5E | 250 - 400 |
| 250/335 | 398 | 3VL57 63-2DK36-0AA0 | 630 | 3TF57 | 475 | 3UA68 30-3F | 320 - 500 |

3RV11 comes with integral relay function, hence external bi-relay is eliminated.

Star-Delta Feeder, Class 10

| SL Motor | | | Circuit Breaker | | Contactor | | Contactor | | Bi-relay | |
|--------------------------|---------------------|----------------------|---------------------|------|------------|-----|-----------|-----|---------------|--------------|
| kW/HP 415V, 3ph, 50Hz | I _L A | I _{ph} A | Type | A | Line/Delta | | Star | | Type | Range (A) |
| 2.2/3 | 4.8 | 2.8 | 3RV13 21-1FC10 | 5 | 3TF32 | 16 | 3TF30 | 9 | 3UA52 00-1D | 2 - 3.2 |
| 3.7/5 | 7.8 | 4.5 | 3RV13 21-1HC10 | 8 | 3TF32 | 16 | 3TF30 | 9 | 3UA52 00-1F | 3.2 - 5 |
| 5.5/7.5 | 11.2 | 6.5 | 3RV13 21-1KC10 | 12.5 | 3TF44 | 32 | 3TF30 | 9 | 3UA52 00-1H | 5.5 - 8 |
| 7.5/10 | 16 | 9.2 | 3RV13 21-4AC10 | 16 | 3TF44 | 32 | 3TF30 | 9 | 3UA52 00-1J | 6.3 - 10 |
| 9.3/12.5 | 19 | 11 | 3RV13 21-4CC10 | 22 | 3TF44 | 32 | 3TF30 | 9 | 3UA52 00-1K | 8 - 12.5 |
| 11/15 | 20.8 | 12 | 3RV13 21-4CC10 | 22 | 3TF44 | 32 | 3TF30 | 9 | 3UA52 00-1K | 8 - 12.5 |
| 15/20 | 28 | 16.2 | 3RV13 31-4EC10 | 32 | 3TF45 | 38 | 3TF32 | 16 | 3UA52 00-2B | 12.5 - 20 |
| 18.5/25 | 34 | 19.7 | 3RV13 31-4FC10 | 40 | 3TF46 | 45 | 3TF44 | 32 | 3UA52 00-2C | 16 - 25 |
| 22/30 | 40 | 23.2 | 3RV13 31-4GC10 | 45 | 3TF48 | 75 | 3TF44 | 32 | 3UA52 00-2C | 16 - 25 |
| 30/40 | 53 | 30.6 | 3RV13 41-4JC10 | 63 | 3TF48 | 75 | 3TF44 | 32 | 3UA55 00-2D | 20 - 32 |
| 37/50 | 65 | 37.5 | 3RV13 41-4KC10 | 75 | 3TF50 | 110 | 3TF44 | 32 | 3UA55 00-2R | 32 - 40 |
| 45/60 | 78 | 45 | 3RV13 41-4LC10 | 90 | 3TF50 | 110 | 3TF44 | 32 | 3UA55 00-8M | 36 - 45 |
| 55/75 | 96 | 55.4 | 3RV13 41-4MC10 | 100 | 3TF52 | 170 | 3TF44 | 32 | 3UA58 00-2TZ1 | 40 - 57 |
| 75/100 | 131 | 75.6 | 3VL27 16-2DK36-0AA0 | 160 | 3TF52 | 170 | 3TF47 | 63 | 3UA58 00-8YZ1 | 70 - 95 |
| 90/125 | 156 | 90.1 | 3VL37 25-2DK36-0AA0 | 250 | 3TF53 | 205 | 3TF47 | 63 | 3UA58 30-5B | 70 - 95 |
| 110/150 | 189 | 109 | 3VL37 25-2DK36-0AA0 | 250 | 3TF53 | 205 | 3TF50 | 110 | 3UA58 30-5D | 95 - 120 |
| 132/180 | 227 | 131.1 | 3VL37 25-2DK36-0AA0 | 250 | 3TF54 | 250 | 3TF50 | 110 | 3UA62 30-5B | 115 - 180 |
| 160/215 | 271 | 156.5 | 3VL47 40-2DK36-0AA0 | 400 | 3TF55 | 300 | 3TF50 | 110 | 3UA62 30-5B | 115 - 180 |
| 200/270 | 339 | 195.7 | 3VL47 40-2DK36-0AA0 | 400 | 3TF56 | 400 | 3TF52 | 170 | 3UA62 30-5C | 160 - 250 |
| 250/335 | 398 | 229.8 | 3VL57 63-2DK36-0AA0 | 630 | 3TF57 | 475 | 3TF54 | 250 | 3UA62 30-5D | 160 - 250 |

Dimensions



Overall Dimensions

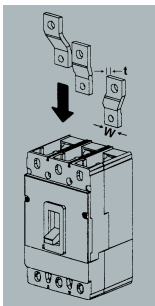
| | VF100/125 | | VL160X | VL160/250 | VL400 | VL630 | VL800 | VL1250/1600 |
|----------------|-----------|-----|-----------|-----------|-----------|-----------|-----------|-------------|
| H | 124 | 130 | 157 | 175 | 279 | 279 | 406 | 406 |
| H ₁ | 64 | 64 | 84 | 88 | 150 | 150 | 213 | 222 |
| W(3P/4P) | (76/101) | | (105/139) | (105/139) | (139/183) | (190/253) | (190/253) | (229/305) |
| D ₁ | 78 | | 81 | 81 | 102 | 102 | 114 | 152 |
| D ₀ | 93 | | 107 | 107 | 138 | 138 | 151 | 209 |

Mounting Dimensions

| | | | | | | | |
|----------------|------|-------|-------|-------|-------|-------|-------|
| A ₁ | 25.4 | 35 | 35 | 44 | 63 | 63 | 76 |
| A ₂ | 12.7 | 17.5 | 17.5 | 22 | 31.5 | 31.5 | 38 |
| A ₃ | 45.7 | 65 | 65 | 134.5 | 134.5 | 134.5 | 199.5 |
| A ₄ | 89 | 114.5 | 131.5 | 247.5 | 247.5 | 247.5 | 362 |
| A ₅ | 50.8 | 70 | 70 | 88 | 126 | 126 | 153 |

Mounting Hole

| | | | | | | | |
|----------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| A ₆ | 2 X Ø 4.5 (3P) 4 X Ø 4.5 (4P) | 2 X Ø 5.2 (3P) 4 X Ø 5.2 (4P) | 2 X Ø 5.2 (3P) 4 X Ø 5.2 (4P) | 2 X Ø 7.1 (3P) 3 X Ø 7.1 (4P) | 2 X Ø 7.1 (3P) 3 X Ø 7.1 (4P) | 2 X Ø 7.1 (3P) 3 X Ø 7.1 (4P) | 2 X Ø 7.1 (3P) 3 X Ø 7.1 (4P) |
| A ₇ | - | - | - | 2 X Ø 7.1 (3P) 1 X Ø 7.1 (4P) | 2 X Ø 7.1 (3P) 1 X Ø 7.1 (4P) | 2 X Ø 7.1 (3P) 1 X Ø 7.1 (4P) | 2 X Ø 7.1 (3P) 2 X Ø 7.1 (4P) |



| | VF100/125 | | VL160X | | VL160/250 | | VL400 | | VL630 | | VL800 | | VL1250 | |
|------------------|-----------|----------|------------------|----------|------------------|----------|------------------|----------|------------------|----------|------------------|----------|------------------|--|
| | Standard | Standard | With Busbar Ext. | Standard | With Busbar Ext. | Standard | With Busbar Ext. | Standard | With Busbar Ext. | Standard | With Busbar Ext. | Standard | With Busbar Ext. | |
| Pitch | 24.5 | 35 | 44.5 | 35 | 44.5 | 44.5 | 63.5 | 63.5 | 76 | 63.5 | 76 | 76 | 76 | |
| Width (mm) W | * | 20 | 25 | 25 | 30 | 30 | 40 | 40 | 50 | 50 | 50 | 60 | 60 | |
| Thickness (mm) t | * | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 15 | 15 | 20 | 20 | |
| Screws | * | M5 | M6 | M5/M8 | M6/M10 | M8 | M10 | 2xM6 | M10 | 2xM8 | M12 | 2xM8 | 2xM12 | |

* Box type terminal suitable for conductor cross section of 10mm² upto 40A, 50mm² for 45A to 100A & 70mm² for 125A.

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'Product development is a continuous process. Consequently, the data indicated in this booklet is subject to change without prior notice. For latest issue contact our Sales Offices.'