

# Smart choice for power distribution



# sentron

3VT



# SIEMENS

# Introducing Sentron VT

## A new generation of Moulded Case Circuit Breakers (MCCBs)

The compact design of **Sentron VT** family of Moulded Case Circuit Breakers (MCCBs) coupled with its excellent features make things easier in the world of electrical distribution.

New **Sentron VT** offers choice of trip units - "Thermomagnetic" trip unit and "Microprocessor based" trip unit for overload and short circuit protection. The Microprocessor based range in addition to wide band overload protection, offers the time based short circuit protection and earth fault protection.

The **Sentron VT** circuit breaker range comply with latest standards : IEC 60947-1, IEC 60947-2, IEC 60947-4-1, IEC 60947-5-1 and have been designed to protect cables, motors, transformers, capacitors, busbars as well as other plant equipment against overload and short circuit.

### Features:

- Current limiting
- Suitable for line-load reversibility
- 3Pole and 4Pole
- 4<sup>th</sup> Pole 100% rated
- Overload protection on 4<sup>th</sup> Pole
- Microprocessor or Thermomagnetic trip unit
- Plug-in and Draw-out versions
- Motorised switching
- Suitable for Isolation
- N, H and L breaking capacities in same frame size
- Shunt release with built-in cut-off contact
- Extension link and phase barriers provided as standard with MCCB

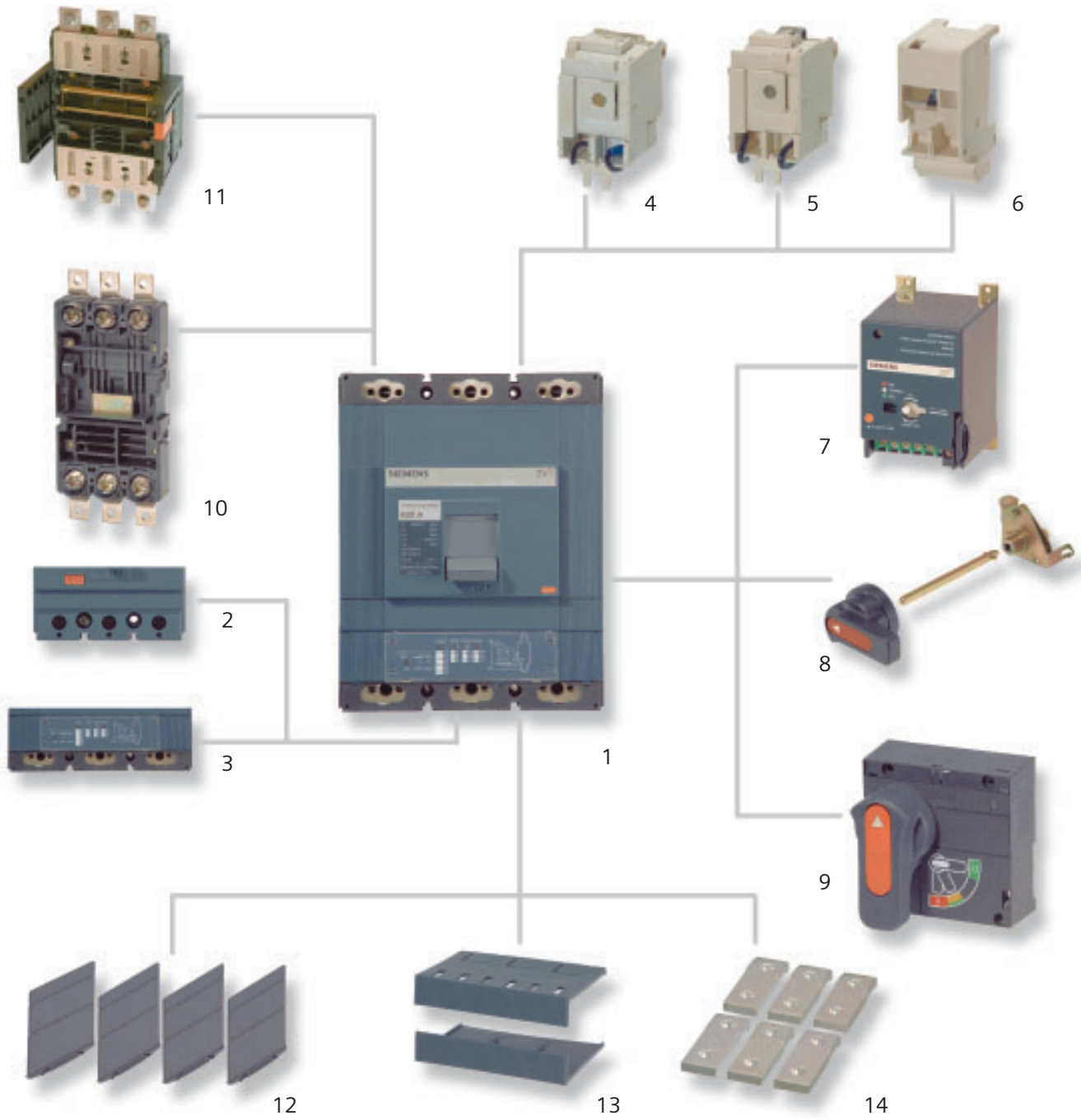


### Benefits:





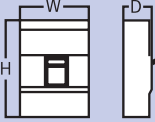
- Economically fulfills high demand of today's electrical distribution system
- Saves panel size and costly floor space due to compact size
- Microprocessor based trip unit ensures accurate protection, measures TRUE RMS current
- Low thermal and dynamic stress on downstream breakers due to low let through energy
- Gives flexibility of remote operation
- Ease of maintenance due to plug-in or draw-out versions
- Offers earth fault protection

# Full Range



- 1 3VT Molded case circuit-breaker
- 2 Thermal-magnetic overcurrent trip unit
- 3 Microprocessor overcurrent trip unit
- 4 Undervoltage release
- 5 Shunt release
- 6 Auxiliary / Alarm switches
- 7 Motorized operating mechanism
- 8 Rotary handle operating mechanism
- 9 Front-operated rotary operating mechanism
- 10 Plug-in base
- 11 Withdrawable version
- 12 Phase barriers
- 13 Terminal covers
- 14 Extended front busbar connecting bars

# Technical Specifications

Type		VT80 N / H	VT81 N / H
			
Rated current $I_n$ at 40°, at 50/60 Hz	A	10, 16, 20, 25, 32, 40, 50, 63	32, 40, 50, 63, 80, 100
Frame size maximum rated current	A	63	100
Rated impulse voltage $U_{imp}$	kV	6	6
Rated insulation voltage $U_i$	V	500 V	500 V
Rated operational AC voltage $U_e$ at 50/60Hz	V	440 V	440 V
Number of poles		3, 4	3, 4
Rated ultimate short-circuit breaking capacity $I_{cu}$ (up to 415V AC 50Hz)	kA	25/50	25/50
Rated service short-circuit breaking capacity $I_{cs}$ (up to 415V AC 50Hz)	kA	18.75/37.5	18.75/37.5
Permissible ambient temperature	Operation °C	-5...+60	-5...+60
Over current trip unit	Thermal magnetic release Microprocessor release	• –	• –
<b>Outline dimension</b> 	W 3P	mm	76.2
	4P	mm	103
	H	mm	120
	D (N/H switching)	mm	79

<sup>1)</sup> In cases where higher current ratings and communication-capability are required, please ask for SENTRON circuitbreaker 3VL

<sup>2)</sup> with ETU

• Available – Not Available

Note: For detail dimensional drawings please contact our Sales Office.

VT82 N / H	VT83 N / H	VT84 N / H	VT85 N/H/L
			
32, 40, 50, 63, 80, 100, 125, 160	160, 200, 250	250, 315, 400	400, 500, 630
160	250	400	630
8	8	8	8
690 V	690 V	690 V	690 V
440 V	440 V	440 V	440 V
3, 4	3, 4	3, 4	3, 4
25/50	35/50	35/50	35/50/65
18.75/37.5	35/37.5	35/37.5	35/37.5/48.75
-5...+60	-5...+60	-5...+60	-5...+60
• -	• •	• •	• •
90 120	105 140	140 184	210 280
120	170/254 <sup>2)</sup>	254	268
70/79	103.5	103.5	103.5

## Motorised drive :

- The **Sentron VT** range of circuit breaker can be equipped with motorised drive for remote closing and opening.
- All motorised drive mechanisms are equipped with a manual operation option for maintenance purpose and emergency operation.
- At site conversion from manually operated MCCB to motor operated MCCB is possible.

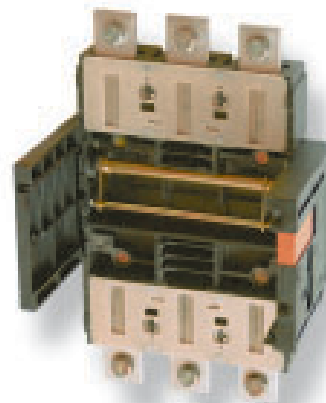


## Plug-in MCCB :

- **Sentron VT** MCCB is available in plug-in type mounting.
- Available upto 400 A in 3 pole and 4 pole options.
- Fullfills demand of electrical inspectorate of physical / visual isolation.

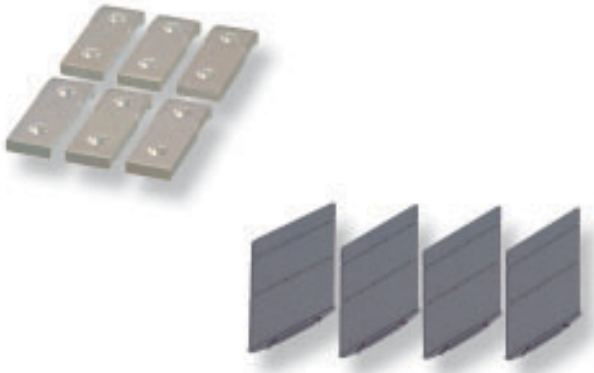
## Draw-out MCCB :

- **Sentron VT** MCCB is available in draw-out type mounting.
- Available for 250 A to 630 A in 3 pole and 4 pole options.
- Fullfills demand of electrical inspectorate of physical / visual isolation.



## Rotary drive :

- The **Sentron VT** circuit breaker can be fitted with either a special rotary drive for direct operations or with the extended rotary drive, for circuit breakers installed in switchgear cubicles and distribution boards.
- All rotary operating mechanism can be padlocked in 'OFF' position with the help of suitable padlocks thereby ensuring complete safety to operating personnel during maintenance.
- Door interlock and defeat facility is available as standard.



## Extension link and Phase Barrier :

- All **Sentron VT** MCCB comes equipped with extension link as well as phase barrier as standard. These help in increasing safety of MCCB installation.

## Added Safety :

**Sentron VT** MCCB are "suitable for isolation" in accordance with (IEC-60947-1; 03.2004, IEC-60947-2; 04.2003)

When MCCB is in OFF position this ensures:

- Rotary handle cannot indicate OFF position unless the contacts are positively open
- Fully open contacts are capable of withstanding over voltage, thus no possibility of re-strike
- MCCB has overvoltage withstand capability between fix and moving contact

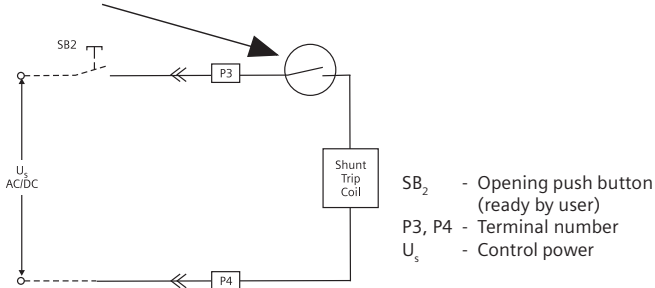
**Sentron VT** MCCB are suitable for "Emergency OFF" duty in accordance with (IEC-60947-1; 03.2004, IEC-60947-2; 04.2003). Hence **Sentron VT** is suitable to be used as:

- Main control switch and emergency OFF switch in conjunction with lockable rotary operating mechanism and terminal cover.



## Shunt Release (ST) :

- It is used for remote tripping of the circuit-breaker
- These devices operate in compliance with IEC 60947 (tripping voltage range 0.70 to 1.10  $U_e$ )
- Shunt Trip coil comes equipped with its dedicated cut-off contact

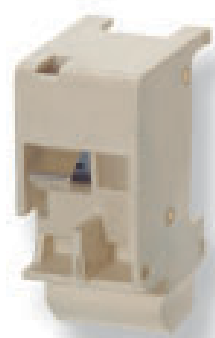


## Undervoltage Release (UVR) :

- All undervoltage releases have been designed and tested to fulfill all applicable requirements in accordance with IEC 60947 (release voltage 0.70 to 0.35  $U_e$ , response voltage 0.85 to 1.10  $U_e$ )
- Undervoltage release is rated for continuous duty

## Auxiliary / Alarm Switches (HS / AS) :

- Auxiliary switches (HS) are used for ON and OFF position indication and control
- The alarm switches (AS) are active when the circuit-breaker has been tripped due to an overcurrent e.g. overload or short-circuit

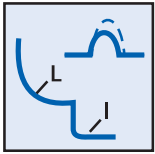


Possible complements for the insulated accessory subsections in the 3VT circuit-breakers

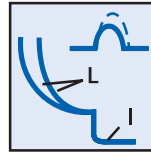
Installation Position of Accessories	Left side	Right side
– – – – switches		Alarm switch Auxiliary switch Auxiliary + Alarm switch Two sets of auxiliary
Shunt trip Shunt trip Shunt trip Shunt trip		– Alarm switch Auxiliary switch Auxiliary + Alarm switch
Under voltage release Under voltage release Under voltage release Under voltage release		– Alarm switch Auxiliary switch Auxiliary + Alarm switch



## Thermal-magnetic overcurrent trip unit :



Overload protection (fixed)  
Short-circuit protection (fixed)

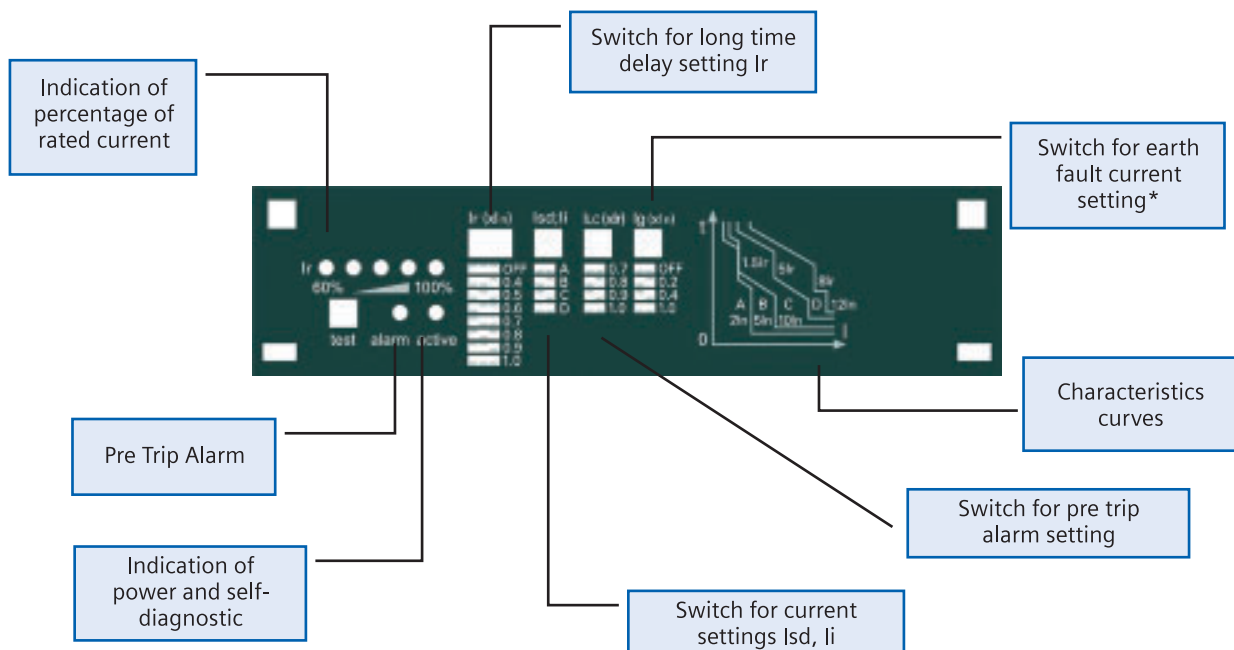


Overload protection (adjustable  $I_R = 0.7$  to  $1 \times I_n$ )  
Short-circuit protection (fixed)

	VT 80 (10 – 63A)	VT 81 (32 – 100A)	VT 82 (32 – 160A)	VT 83 (160 – 250A)	VT 84 (250 – 400A)	VT 85 (400 – 630A)
Fixed O/L - Fixed S/C	✓	✓	✓	✓	✓	✓
Adj. O/L - Fixed S/C	-	-	✓	✓	✓	✓ *
Adj. O/L - Adj. S/C	-	-	-	✓ #	✓ #	✓ #

✓ Available      - Not Available      \* Electronic Trip Unit      # Microprocessor based Trip Unit

## Microprocessor based Trip Unit



### Microprocessor based trip unit settings:

L - Overload protection (adjustable):  $I_r = 0.4 - 1.0 \times I_n$

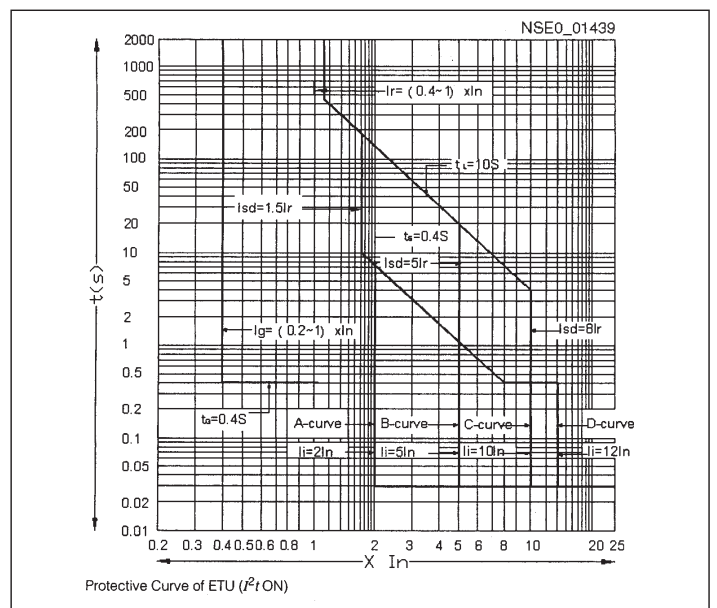
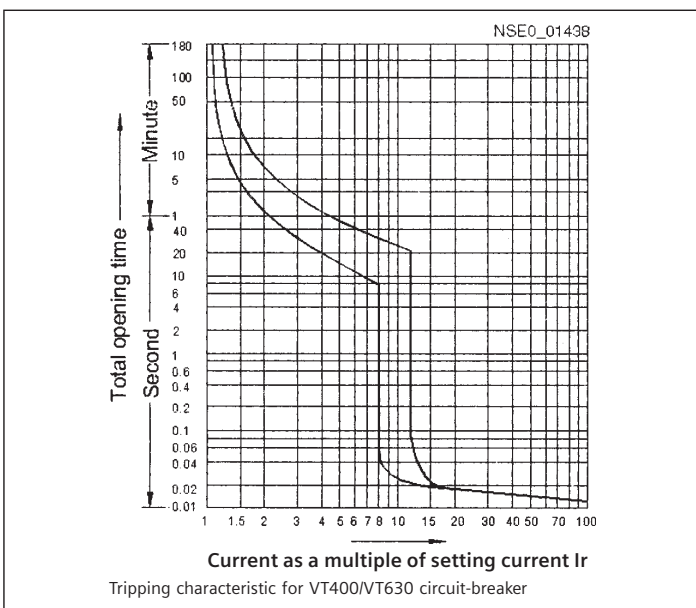
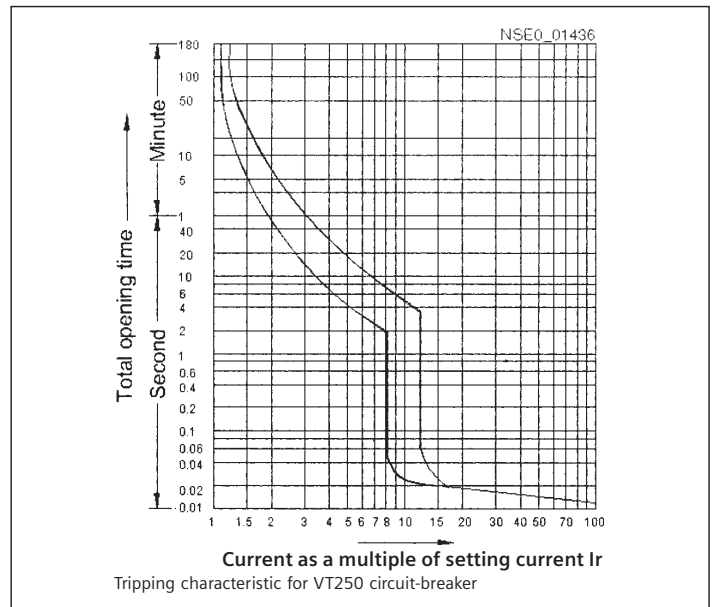
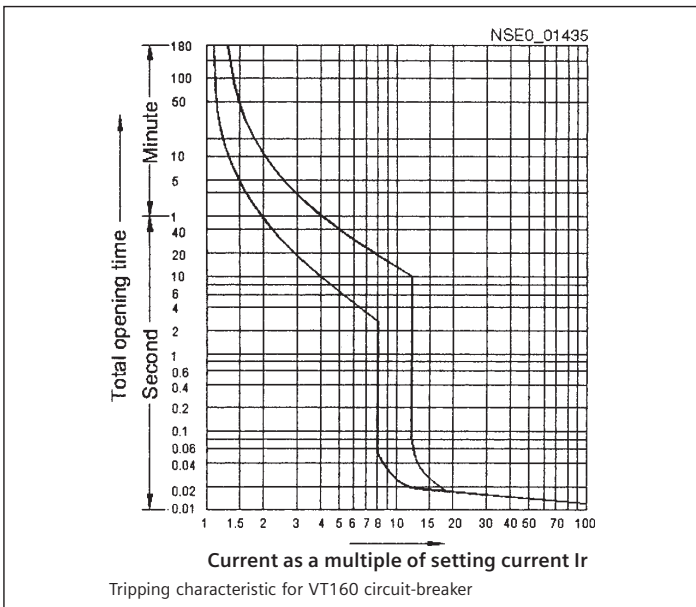
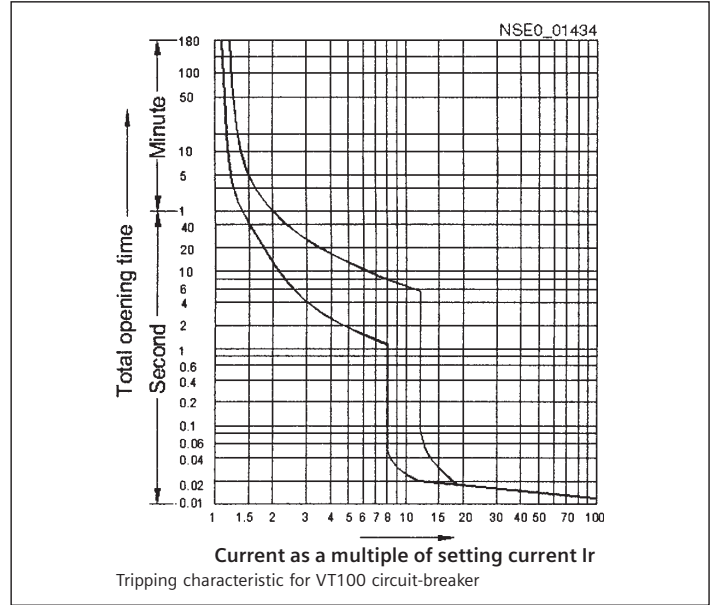
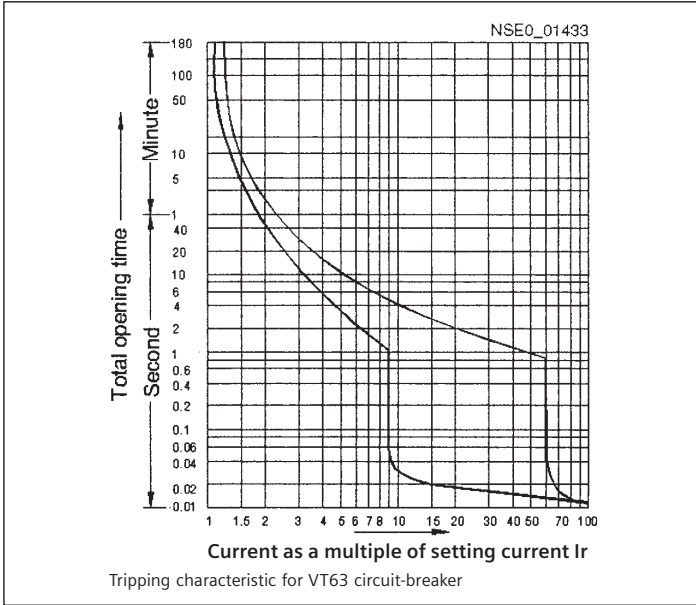
S - Short time short-circuit protection (adjustable):  
 $I_{sd} = 1.5; 5; 8 \times I_r$

I - Short-circuit protection (adjustable):  $I_i = 2; 5; 10;$   
 $12 \times I_n$

G - Ground fault protection (adjustable)<sup>1)</sup>:  $I_g = 0.2;$   
 $0.4; 1.0 \times I_n$ ; OFF

Pre-Alarm:  $I_{LC} = 0.7 - 1.0 \times I_n$

# Characteristic Curves



Curves shown above are average characteristic curves

# Catalogue References

## 3VT MCCB with Thermal - Magnetic trip unit (Overload & Short Circuit protection)

Frame	Br._Cap. Icu @ 415 V	Rated Current	3 Pole Type reference	4 Pole Type reference
VT 80	25 kA	10 A	3VT8010-1AA03-0AA2	3VT8010-1AA04-0AA2
		16 A	3VT8016-1AA03-0AA2	3VT8016-1AA04-0AA2
		20 A	3VT8020-1AA03-0AA2	3VT8020-1AA04-0AA2
		25 A	3VT8025-1AA03-0AA2	3VT8025-1AA04-0AA2
		32 A	3VT8032-1AA03-0AA2	3VT8032-1AA04-0AA2
		40 A	3VT8040-1AA03-0AA2	3VT8040-1AA04-0AA2
		50 A	3VT8050-1AA03-0AA2	3VT8050-1AA04-0AA2
		63 A	3VT8063-1AA03-0AA2	3VT8063-1AA04-0AA2
		80 A	3VT8108-1AA03-0AA2	3VT8108-1AA04-0AA2
		100 A	3VT8110-1AA03-0AA2	3VT8110-1AA04-0AA2
VT 81	25 kA	32 A	3VT8203-1AA03-0AA2	3VT8203-1AA04-0AA2
		63 A	3VT8206-1AA03-0AA2	3VT8206-1AA04-0AA2
		80 A	3VT8208-1AA03-0AA2	3VT8208-1AA04-0AA2
		100 A	3VT8210-1AA03-0AA2	3VT8210-1AA04-0AA2
VT 82	25 kA	125 A	3VT8212-1AA03-0AA2	3VT8212-1AA04-0AA2
		160 A	3VT8216-1AA03-0AA2	3VT8216-1AA04-0AA2
		200 A	3VT8320-1AA03-0AA2	3VT8320-1AA04-0AA2
		250 A	3VT8325-1AA03-0AA2	3VT8325-1AA04-0AA2
VT 84	35 kA	315 A	3VT8431-1AA03-0AA2	3VT8431-1AA04-0AA2
		400 A	3VT8440-1AA03-0AA2	3VT8440-1AA04-0AA2
		500 A	3VT8550-1AA03-0AA2	3VT8550-1AA04-0AA2
VT 85	35 kA	630 A	3VT8563-1AA03-0AA2	3VT8563-1AA04-0AA2
		32 A	3VT8032-2AA03-0AA2	3VT8032-2AA04-0AA2
VT 80	50 kA	63 A	3VT8063-2AA03-0AA2	3VT8063-2AA04-0AA2
		80 A	3VT8108-2AA03-0AA2	3VT8108-2AA04-0AA2
VT 81	50 kA	100 A	3VT8110-2AA03-0AA2	3VT8110-2AA04-0AA2
		125 A	3VT8212-2AA03-0AA2	3VT8212-2AA04-0AA2
		160 A	3VT8216-2AA03-0AA2	3VT8216-2AA04-0AA2
VT 82	50 kA	200 A	3VT8320-2AA03-0AA2	3VT8320-2AA04-0AA2
		250 A	3VT8325-2AA03-0AA2	3VT8325-2AA04-0AA2
VT 83	50 kA	315 A	3VT8431-2AA03-0AA2	3VT8431-2AA04-0AA2
		400 A	3VT8440-2AA03-0AA2	3VT8440-2AA04-0AA2
VT 84	50 kA	500 A	3VT8550-2AA03-0AA2	3VT8550-2AA04-0AA2
		630 A	3VT8563-2AA03-0AA2	3VT8563-2AA04-0AA2
VT 85	50 kA	400 A	3VT8540-3AA03-0AA2	3VT8540-3AA04-0AA2
		630 A	3VT8563-3AA03-0AA2	3VT8563-3AA04-0AA2

## 3VT MCCB with Adjustable Thermal - Magnetic trip unit (Overload & Short Circuit protection)

Frame	Br._Cap. Icu @ 415 V	Rated Current	3 Pole Type reference	4 Pole Type reference
VT 82	25 kA	22 - 32 A	3VT8203-1BA03-0AA2	3VT8203-1BA04-0AA2
		44 - 63 A	3VT8206-1BA03-0AA2	3VT8206-1BA04-0AA2
		56 - 80 A	3VT8208-1BA03-0AA2	3VT8208-1BA04-0AA2
		70 - 100 A	3VT8210-1BA03-0AA2	3VT8210-1BA04-0AA2
		87 - 125 A	3VT8212-1BA03-0AA2	3VT8212-1BA04-0AA2
		112 - 160 A	3VT8216-1BA03-0AA2	3VT8216-1BA04-0AA2
VT 83	35 kA	140 - 200 A	3VT8320-1BA03-0AA2	3VT8320-1BA04-0AA2
		175 - 250 A	3VT8325-1BA03-0AA2	3VT8325-1BA04-0AA2
VT 84	35 kA	220 - 315 A	3VT8431-1BA03-0AA2	3VT8431-1BA04-0AA2
		280 - 400 A	3VT8440-1BA03-0AA2	3VT8440-1BA04-0AA2
VT 85	35 kA	250 - 630 A	3VT8563-1FA03-0AA2 <sup>§</sup>	3VT8563-1FA04-0AA2 <sup>§</sup>
		22 - 32 A	3VT8203-2BA03-0AA2	3VT8203-2BA04-0AA2
VT 82	50 kA	44 - 63 A	3VT8206-2BA03-0AA2	3VT8206-2BA04-0AA2
		56 - 80 A	3VT8208-2BA03-0AA2	3VT8208-2BA04-0AA2
		70 - 100 A	3VT8210-2BA03-0AA2	3VT8210-2BA04-0AA2
		87 - 125 A	3VT8212-2BA03-0AA2	3VT8212-2BA04-0AA2
		112 - 160 A	3VT8216-2BA03-0AA2	3VT8216-2BA04-0AA2
		140 - 200 A	3VT8320-2BA03-0AA2	3VT8320-2BA04-0AA2
VT 83	50 kA	175 - 250 A	3VT8325-2BA03-0AA2	3VT8325-2BA04-0AA2
		220 - 315 A	3VT8431-2BA03-0AA2	3VT8431-2BA04-0AA2
VT 84	50 kA	280 - 400 A	3VT8440-2BA03-0AA2	3VT8440-2BA04-0AA2
		250 - 630 A	3VT8563-2FA03-0AA2 <sup>§</sup>	3VT8563-2FA04-0AA2 <sup>§</sup>
VT 85	50 kA	400 A	3VT8540-3FA03-0AA2 <sup>§</sup>	3VT8540-3FA04-0AA2 <sup>§</sup>
		630 A	3VT8563-3FA03-0AA2 <sup>§</sup>	3VT8563-3FA04-0AA2 <sup>§</sup>

§ - MCCB with electronic trip unit.

## 3VT MCCB with Microprocessor based trip unit (Overload & Short Circuit & Ground Falut Protection #)

Frame	Br._Cap. Icu @ 415 V	Rated Current	3 Pole Type reference	4 Pole Type reference
VT 83	35 kA	160 A	3VT8316-1EA03-0AA2	-
		200 A	3VT8320-1EA03-0AA2	-
		250 A	3VT8325-1EA03-0AA2	3VT8425-1EA04-0AA2
VT 84	35 kA	400 A	3VT8440-1EA03-0AA2	3VT8440-1EA04-0AA2
VT 85		630 A	3VT8563-1EA03-0AA2	3VT8563-1EA04-0AA2
VT 83	50 kA	160 A	3VT8316-2EA03-0AA2	-
		200 A	3VT8320-2EA03-0AA2	-
		250 A	3VT8325-2EA03-0AA2	3VT8425-2EA04-0AA2
VT 84	50 kA	400 A	3VT8440-2EA03-0AA2	3VT8440-2EA04-0AA2
VT 85		630 A	3VT8563-2EA03-0AA2	3VT8563-2EA04-0AA2
VT 85	65 kA	400 A	3VT8540-3EA03-0AA2	3VT8540-3EA04-0AA2
		630 A	3VT8563-3EA03-0AA2	3VT8563-3EA04-0AA2

# - Ground Fault protection is available in case of 4 pole MCCB.

Internal Accessories	Order No. supplement 3VT8... @ @ (13 th 14th digit)
Without auxiliary switch and Without alarm/auxiliary switch	0A
With auxiliary switch (HS) and alarm switch (AS) 1 x HS 1 x HS + 1 x AS	0 B 0 D
With shunt release (ST) 220V AC/DC	2 G
With shunt release (ST) + Aux (HS + AS) 220V AC/DC	2 K
With undervoltage release (UVR) 220V AC/DC	2 L
With undervoltage release (UVR) + Aux (HS + AS) 220V AC/DC	2 P

External Accessories	Order No. supplement 3VT8... @ @ (15 th 16th digit)
Standard fixed type	A 2
Plug-in MCCB	F 2
Draw-out MCCB	H 2

Frame	Door operated rotary drive Type reference	Direct MCCB operated rotary drive Type reference	Motorised Drive 220V AC Type reference
VT 80	3VT9100-3MG12	-	-
VT 81	3VT9100-3MG12	-	-
VT 82	3VT9200-3MG12	-	3VT9200-3MN22
VT 83	3VT9300-3MG12	3VT9300-3MC12	3VT9300-3MN22
VT 84	3VT9400-3MG12	3VT9400-3MC12	3VT9400-3MN22
VT 85	3VT9500-3MG12	3VT9500-3MC12	3VT9500-3MN22

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