

# The easy choice for quality and value

## EasyPact CVS

LV circuit breakers from 100A to 630A



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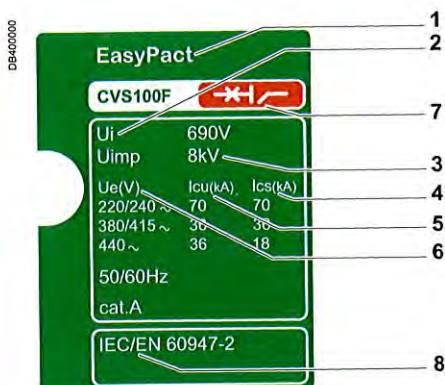
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**Schneider**  
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Standardised characteristics indicated on the rating plate:

- 1 Type of device: frame size and breaking capacity class
- 2  $U_i$ : rated insulation voltage.
- 3  $U_{imp}$ : rated impulse withstand voltage.
- 4  $I_{cs}$ : service breaking capacity.
- 5  $I_{cu}$ : ultimate breaking capacity for various values of the rated operational voltage  $U_e$
- 6  $U_e$ : operational voltage.
- 7 Suitable for isolation symbol.
- 8 Reference standard.

**Note:** when the circuit breaker is equipped with an extended rotary handle, the door must be opened to access the rating plate.

## Compliance with standards

EasyPact CVS circuit breakers and auxiliaries comply with the following international recommendations:

- IEC 60947-1: general rules
- IEC 60947-2: circuit breakers

## Pollution degree

EasyPact CVS circuit breakers are certified for operation in pollution-degree III environments as defined by IEC standards 60947-1 and 60664-1 (industrial environments).

## Climatic withstand

EasyPact CVS circuit breakers have successfully passed the tests defined by the following standards for extreme atmospheric conditions:

- IEC 60068-2-1: dry cold (-55°C)
- IEC 60068-2-2: dry heat (+85°C)
- IEC 60068-2-30: damp heat (95 % relative humidity at 55°C)
- IEC 60068-2-52 severity level 2: salt mist.

## Environment

EasyPact CVS respects the European environment directive EC/2002/95 concerning the restriction of hazardous substances (RoHS).

All EasyPact CVS production sites have set up an ISO 14001 certified environmental management system.

## Ambient temperature

■ EasyPact CVS circuit breakers can be used between -25°C and +70°C. For temperatures higher than 40°C (65°C for circuit breakers used to protect motor feeders), devices must be derated ([see page B-1](#)).

■ Circuit breakers should be put into service under normal ambient, operating-temperature conditions. Exceptionally, the circuit breaker can be put into service when the ambient temperature is between -35°C and -25°C.

■ The permissible storage-temperature range for EasyPact CVS circuit breakers in the original packing is -50°C and +85°C.

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## Suitable for isolation with positive contact indication

All EasyPact CVS circuit breakers are suitable for isolation as defined in IEC standard 60947-2:

- The isolation position corresponds to the O (OFF) position.
- The operating handle cannot indicate the OFF position unless the contacts are effectively open.
- Padlocks cannot be installed unless the contacts are open.

Installation of a rotary handle does not alter the reliability of the position-indication system.

The isolation function is certified by tests guaranteeing:

- The mechanical reliability of the position-indication system
- The absence of leakage currents
- Over voltage withstand capacity between upstream and downstream connections.

The tripped position does not ensure isolation with positive contact indication.

Only the OFF position guarantees isolation.

## Degree of protection

The following indications are in accordance with standards IEC 60529 (IP degree of protection) and IEC 62262 (IK protection against external mechanical impacts).

### Bare circuit breaker:

- with toggle: IP40, IK07 front face
- with extended rotary handle: IP 55, IK08



PB106447



EasyPact CVS100/160/250

PB106448



EasyPact CVS400/630

### Common characteristics

Rated voltages			
Insulation voltage (V)	<b>Ui</b>		690
Impulse withstand voltage (kV)	<b>Uimp</b>		8
Operational voltage (V)	<b>Ue</b>	AC 50/60 Hz	440
Suitability for isolation		IEC/EN 60947-2	yes
Utilisation category			A
Pollution degree		IEC 60664-1	3

### Circuit breakers

#### Performance

##### Electrical characteristics as per IEC 60947-2

Rated current (A)	<b>In</b>	40 °C
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Number of poles

##### Breaking capacity levels

Breaking capacity (kA rms)			
<b>Icu</b>	AC 50/60 Hz	220/240 V	380/415 V
			440 V

Service breaking capacity (kA rms)			
<b>Ics</b>	AC 50/60 Hz	220/240 V	380/415 V
			440 V

Durability (C-O cycles)	Mechanical		
	Electrical	415V	In/2 In

#### Protection

Short-circuit protection	Magnetic only
Overload/short-circuit protection	Thermal magnetic

#### Installation/connections

##### Dimensions and weights

Dimensions (mm)	Fixed, front connections
W x H x D	
Weight (kg)	Fixed, front connections

##### Connections

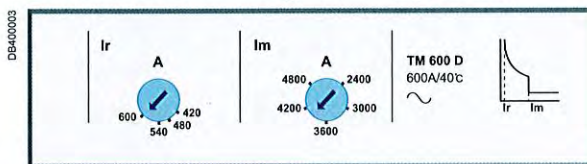
Connection terminals	Pitch	Without/With spreaders
Large Cu or Al cables	Cross-section	mm <sup>2</sup>

CVS100	CVS160	CVS250	CVS400	CVS630
<b>100</b>	<b>160</b>	<b>250</b>	<b>400</b>	<b>600</b>
3	3	3	3	3
F	F	F	F	F
70	70	70	40	40
36	36	36	36	36
36	36	36	30	30
70	70	70	40	40
36	36	36	36	36
18	18	18	23	23
30000	25000	20000	15000	15000
30000	25000	20000	12000	8000
12000	12000	10000	6000	4000
■	■	■	■	■
■	■	■	■	■
105 x 161 x 86	105 x 161 x 86	105 x 161 x 86	140 x 255 x 110	140 x 255 x 110
1.8	1.8	2.0	4.7	5.2
35/45 mm	35/45 mm	35/45 mm	45/52.5 mm 45/70 mm	45/52.5 mm 45/70 mm
300	300	300	4 x 240	4 x 240



TM-D thermal-magnetic trip units can be used on EasyPact CVS100-630 circuit breakers with performance levels B/F/N.

## TM-D thermal-magnetic trip units



### Protection

TM-D trip units are used mainly in electrical distribution applications for protection of cables supplied by transformers.

#### Thermal protection (Ir)

Thermal protection operates according to:

- Ir that can be adjusted in amps from 0.7 to 1 times the rating of the trip unit (16 A to 250 A), corresponding to settings from 11 to 250 A for the range of trip units
- a non-adjustable time delay.

#### Magnetic protection (Im)

Short-circuit protection with a fixed or adjustable pick-up Im that initiates instantaneous tripping if exceeded.

- TM-D: fixed pick-up, Im, for 16 to 250 A ratings and adjustable from 5 to 10 x In for 400 A ratings, 4.2 to 8.3 x In for 600 A rating.

Thermal-magnetic trip units		TM16D to 250D	TM320D to 600D
Ratings (A)	In at 40 °C <sup>(1)</sup>	16 25 32 40 50 63 80 100 125 160 200 250	320 400 500 600
Circuit breaker	CVS100	■ ■ ■ ■ ■ ■ ■ ■ - - - -	
	CVS160	- - - - - - - ■ ■ ■ - -	
	CVS250	- - - - - - - - - ■ ■ ■	
	CVS400		■ ■ - -
	CVS630		- - ■ ■
<b>Magnetic protection</b>			
Pick-up (A)	Im	fixed	adjustable
accuracy ±20 %	CVS100	190 300 400 500 500 500 640 800	
	CVS160/250		800 1250 1250 2000 2500
	CVS400		1600 to 3200 (320A), 2000 to 4000 (400A)
	CVS630		2500 to 5000
<b>Thermal protection</b>			
Pick-up (A) tripping between 1.05 and 1.30 Ir	Ir = In x ...	adjustable in amps from 0.7 to 1 x In	

(1) For temperatures not equal to 40°C, the thermal protection characteristics are modified. See the temperature derating table on page B-1.

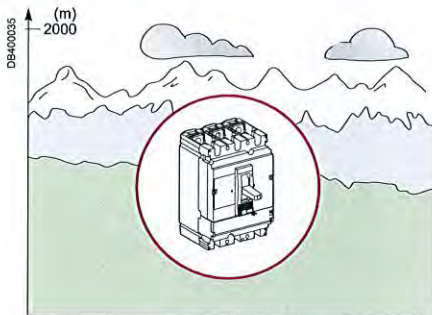
Note: All the trip units have a transparent lead-sealable cover that protects access to the adjustment dials.



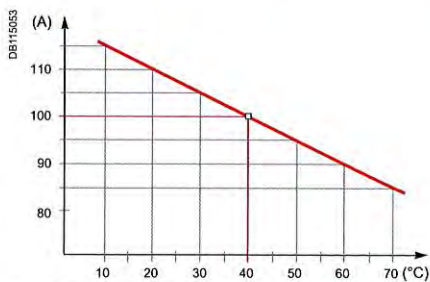
# Installation recommendations

# Operating conditions and temperature derating

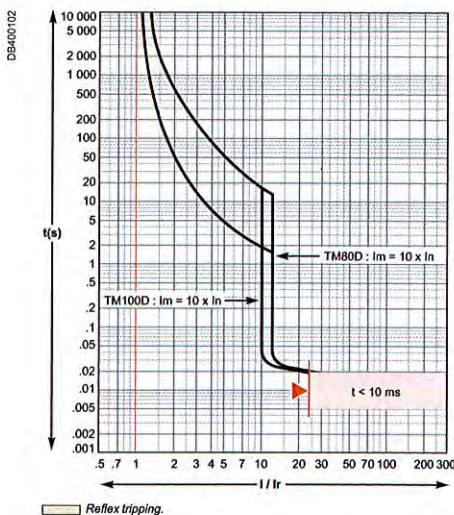
When thermal-magnetic trip units are used at ambient temperatures other than 40 °C, the Ir pick-up is modified.



Electronic trip units are not affected by variations in temperature. If the trip units are used in high-temperature environments, the ETS setting must nevertheless take into account the temperature limits of the circuit breaker.



Temperature derating curve for CVS100.



Reflex tripping.

Thermal-protection curve with minimum and maximum values.

## Altitude derating

Altitude does not significantly affect the characteristics of EasyPact CVS circuit breakers up to 2000 m. Above this altitude, it is necessary to take into account the decrease in the dielectric strength and cooling capacity of air.

## Vibrations

CVS devices resist electromagnetic or mechanical vibrations.

Tests are carried out in compliance with standard IEC 60068-2-6 for the levels required by merchant-marine inspection organisations (Veritas, Lloyds, etc.):

- 2 to 13.2 Hz: amplitude  $\pm 1$  mm
- 13.2 to 100 Hz: constant acceleration 0.7 g.

Excessive vibration may cause tripping, breaks in connections or damage to mechanical parts.

## Degree of protection

CVS circuit breakers have been tested for degree of protection (IP) and mechanical impact protection (IK). See page A-2.

The overload protection is calibrated at 40 °C in the lab. This means that when the ambient temperature is less than or greater than 40 °C, the Ir protection pick-up is slightly modified.

To obtain the tripping time for a given temperature:

- see the tripping curves for 40 °C (see pages D-1 and D-2)
- determine tripping times corresponding to the Ir value (thermal setting on the device), corrected for the ambient temperature as indicated in the tables below.

## Settings of CVS100 to 630 equipped with TM-D trip units as a function of the temperature

The table indicates the real Ir (A) value for a given rating and temperature.

Rat. (A)	Rat. Temperature (°C)												
	10	15	20	25	30	35	40	45	50	55	60	65	70
16	18.4	18	18	18	17	16.6	16	15.6	15.2	14.8	14.5	14	13.8
25	28.8	28	27.5	27	26.3	25.6	25	24.5	24	23.5	23	22	21
32	36.8	36	35.2	34.4	33.6	32.8	32	31.3	30.5	30	29.5	29	28.5
40	46	45	44	43	42	41	40	39	38	37	36	35	33.5
50	57.5	56	55	54	53	51	50	49	47	46	44	43	41
63	73	72	70	68	67	65	63	61	59	57	55	53	50
80	92	90	88	86	84	82	80	78	75.5	73	70.7	68	65
100	114	112	110	107	105	102.5	100	97	95	92.0	89	86	83
125	144	141	138	134	131	128	125	122	119	116	113	109	106
160	184	180	176	172	168	164	160	156	152	148	144	140	136
200	230	225	220	215	210	205	200	195	190	185	180	175	170
250	288	281	277	269	263	256	250	244	238	231	225	219	213
320	365	358	350.5	343	335.6	328	320	312	303.6	295	286	277	267.7
400	456.6	447.7	438.6	429	419.7	410	400	390	379.3	368.5	357.3	345.8	334
500	558.6	549	539.7	530	520.3	510.2	500	489.6	479	468	457	445.4	433.6
600	672	660.5	649	637	625	612.6	600	587	574	560.6	547	532.7	518

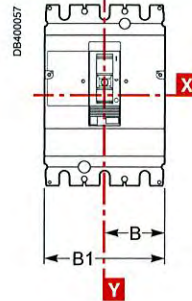
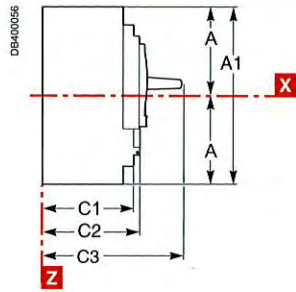
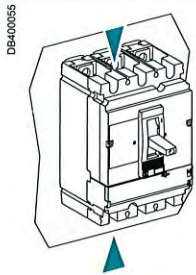
# Dimensions and connection

# Dimensions and mounting

## EasyPact CVS100 to 630

### Dimensions

### 3P



### Mounting

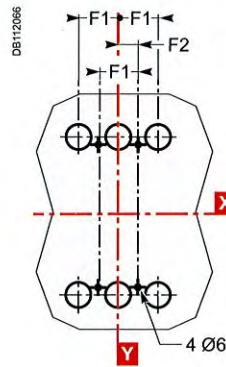
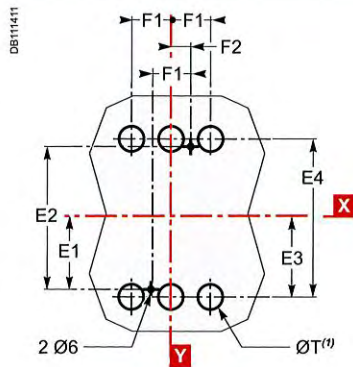
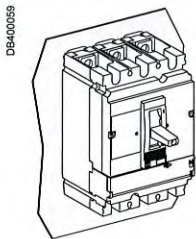
### CVS100 to 250

### CVS400/630

### On backplate

### 3P

### 3P



(1) The ØT holes are required for rear connection only.

Type	A	A1	B	B1	B2	C1	C2	C3	E1	E2	E3	E4	F1	F2	F3
CVS100/160/250	80.5	161	52.5	105	140	81	86	126	62.5	125	70	140	35	17.5	70
CVS400/630	127.5	255	70	140	185	95.5	110	168	100	200	113.5	227	45	22.5	90



# Front-panel cutouts

## EasyPact CVS100 to 630

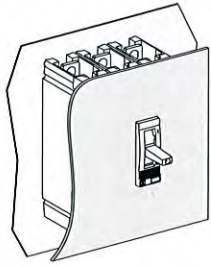
### Bare sheet metal

### CVS100 to 250

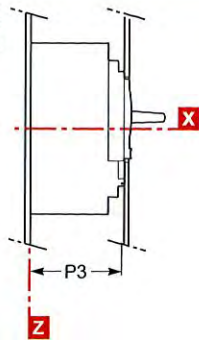
### CVS400/630

#### For toggle

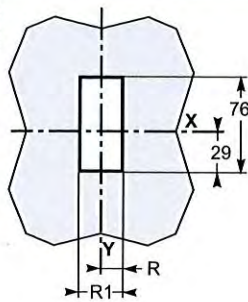
DB400034



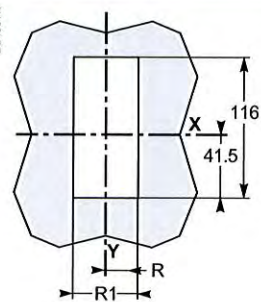
DB400115



DB400116

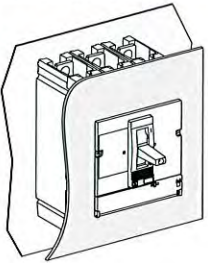


DB400117

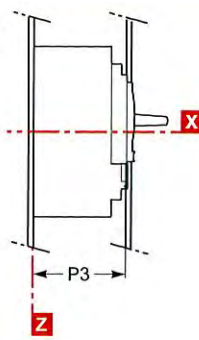


#### For toggle with access to trip unit

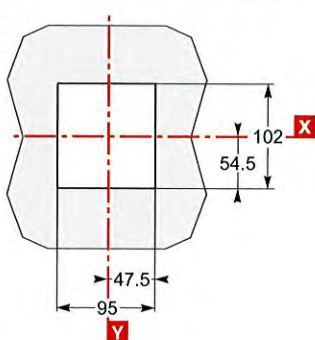
DB400118



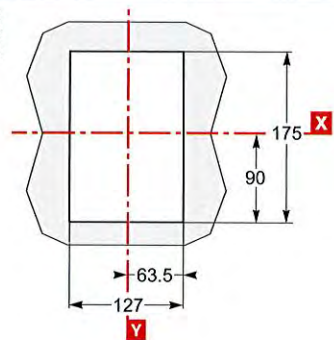
DB400119



DB400120



DB400121



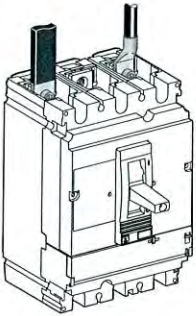
Type	P3	R	R1
CVS100/160/250	88	14.5	29
CVS400/630	112	31.5	63

## Dimensions and connection

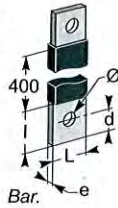
## Power connections

Connection of insulated bars or cables with lugs to EasyPact CVS100 to 630

DB400013

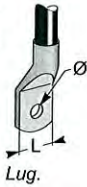


DB115653



Bar.

DB115654



Lug.

### Direct connection to CVS100 to 630

Dimensions		CVS100	CVS160/250	CVS400/630
<b>Bars</b>	L (mm)	< 25	< 25	< 32
	l (mm)	d + 10	d + 10	d + 15
	d (mm)	< 10	< 10	< 15
	e (mm)	< 6	< 6	3 < e < 10
	Ø (mm)	6.5	8.5	10.5
<b>Lugs</b>	L (mm)	< 25	< 25	< 32
	Ø (mm)	6.5	8.5	10.5
<b>Torque (Nm) <sup>(1)</sup></b>		10	15	50
<b>Torque (Nm) <sup>(2)</sup></b>		5/5	5/5	20/11

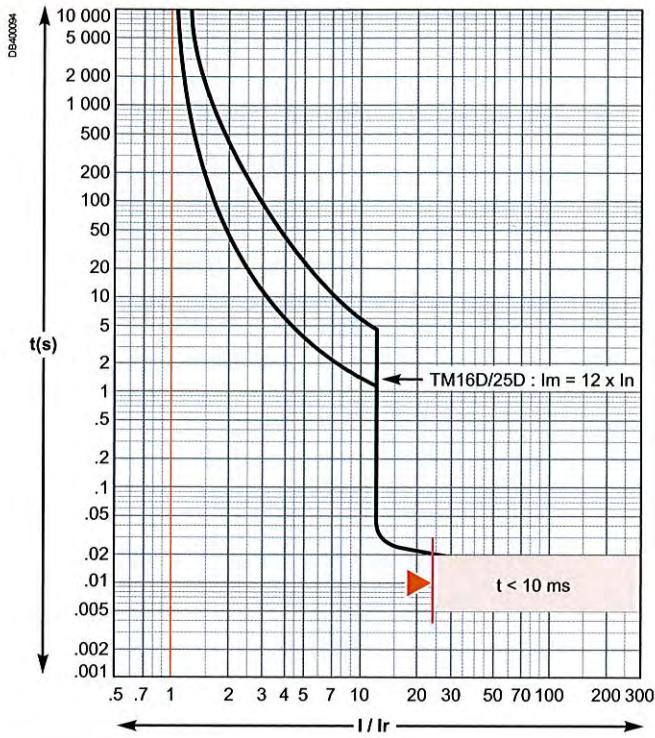
(1) Tightening torque on the circuit breaker for lugs or bars.

(2) Tightening torque on fixed devices for rear connectors.



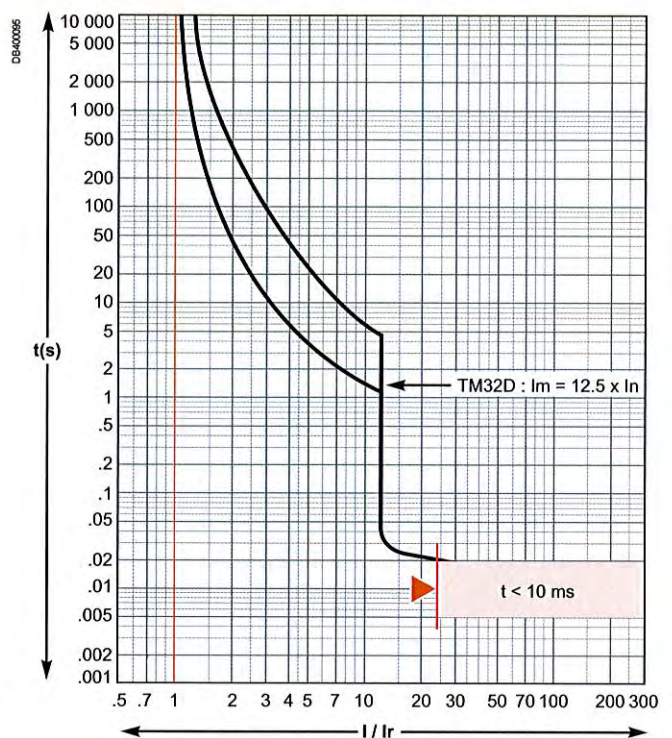
## TM magnetic trip units

TM16D/25D



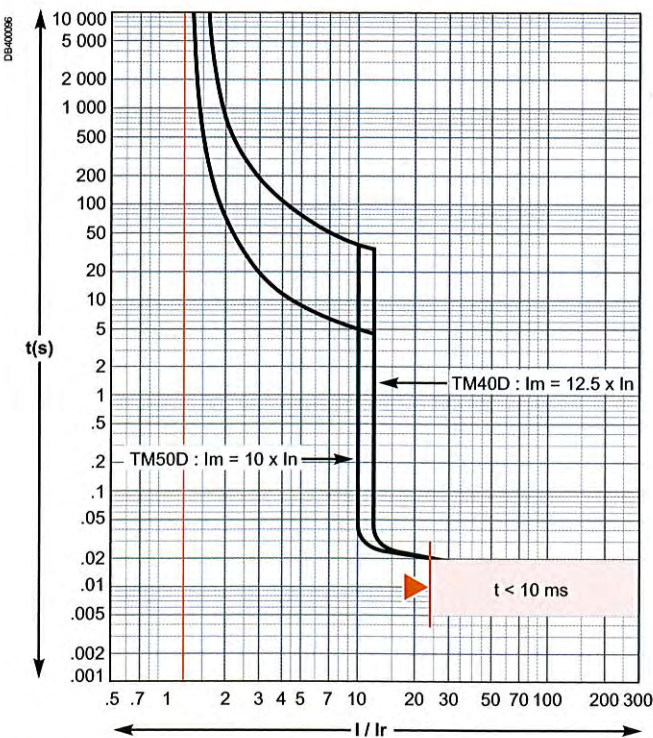
Reflex tripping.

TM32D



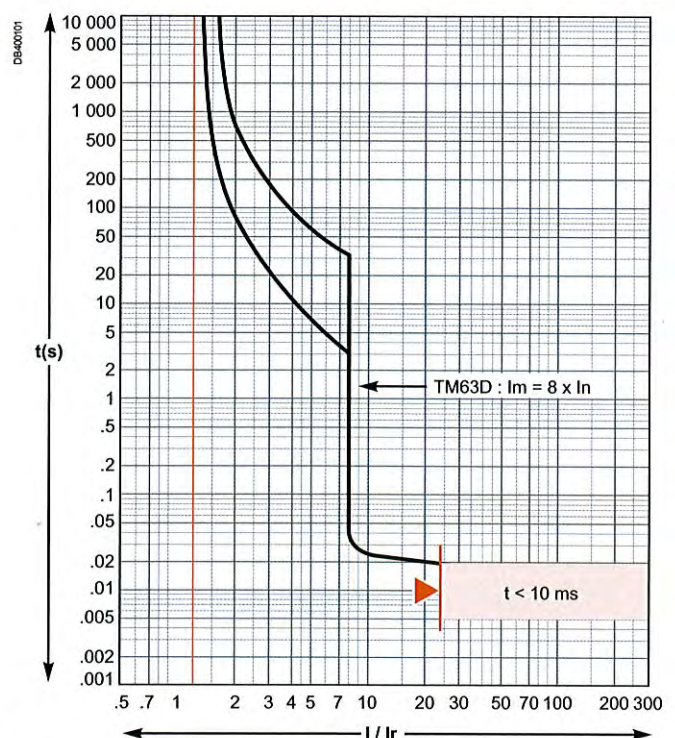
Reflex tripping.

TM40D/50D



Reflex tripping.

TM63D



Reflex tripping.



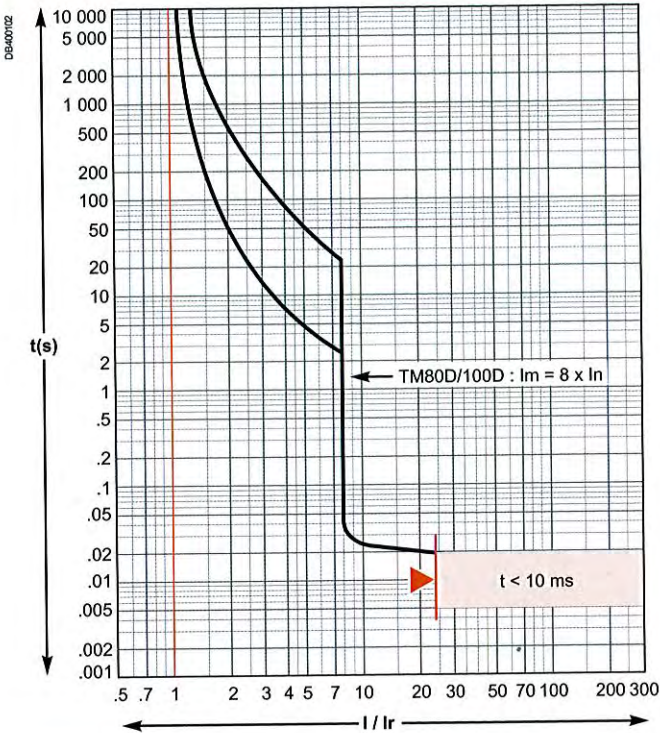
# Tripping curves

## EasyPact CVS100 to 630

### Protection of distribution systems

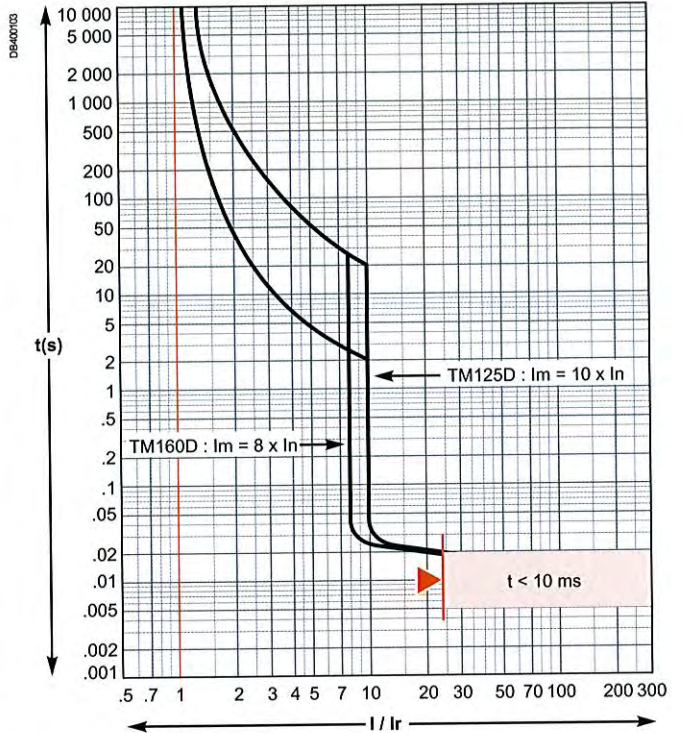
#### TM magnetic trip units (cont.)

TM80D/100D



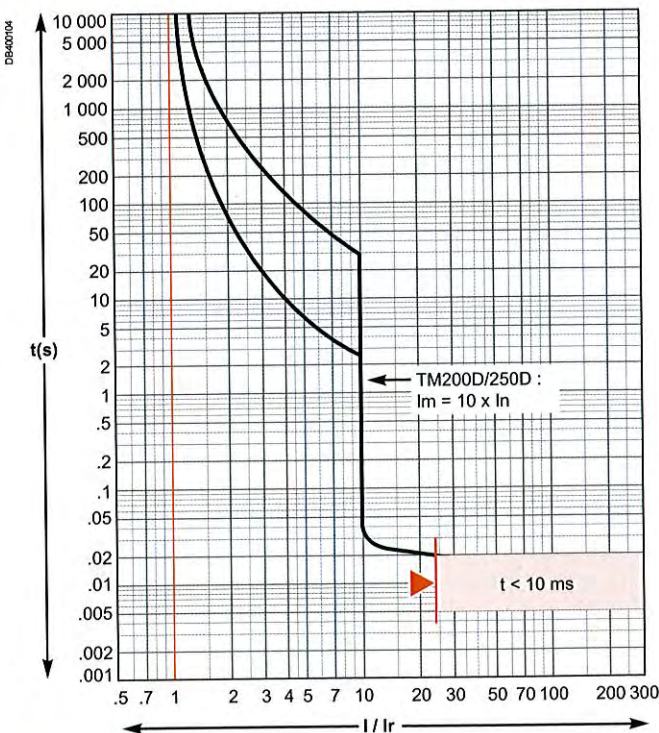
Reflex tripping.

TM125D/160D



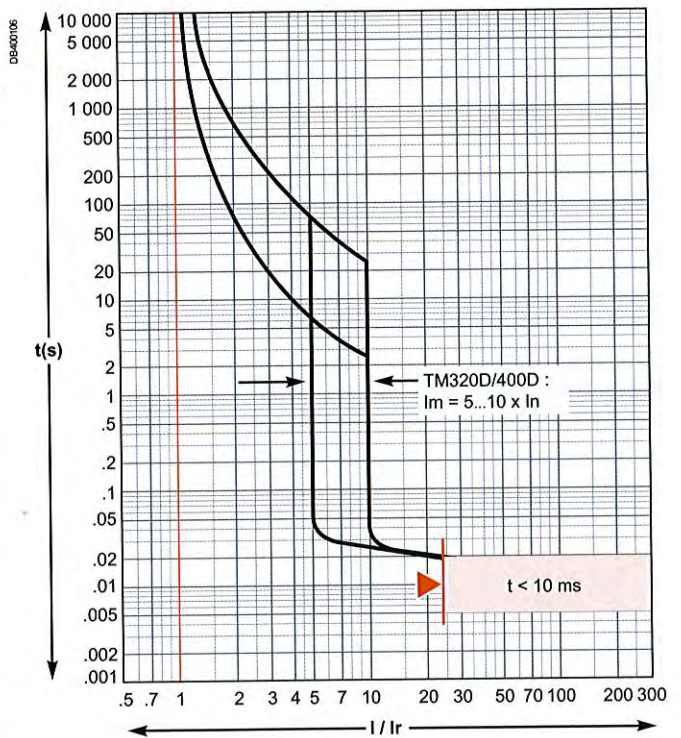
Reflex tripping.

TM200D/250D



Reflex tripping.

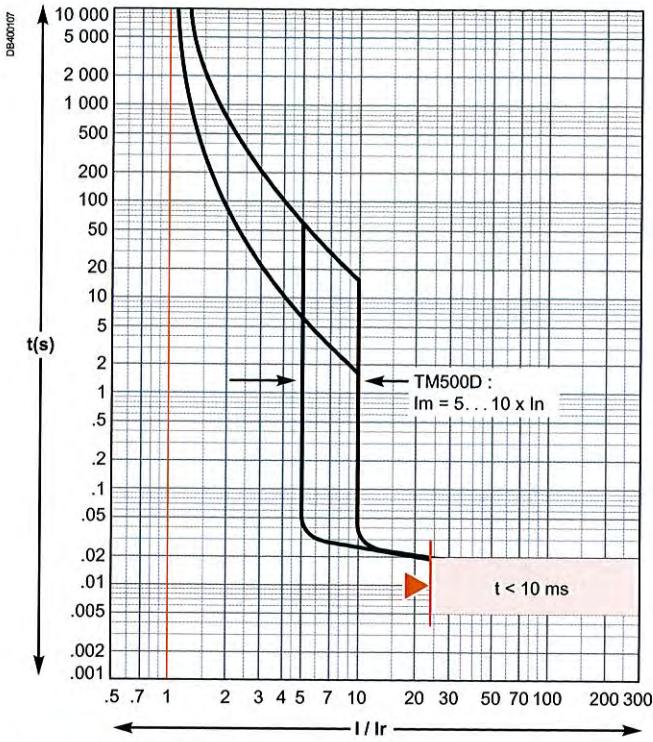
TM320D/400D



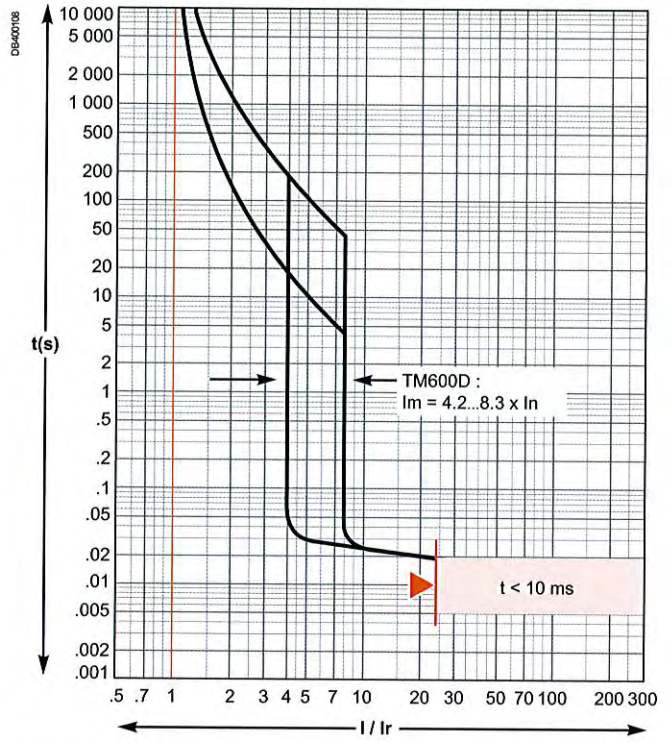
Reflex tripping.



TM500D



TM600D

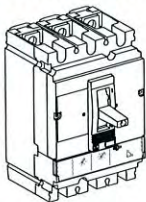


# CVS100/160/250F/400/630: complete fixed/device (36 kA 380/415 V)

## EasyPact CVS100/160/250F

With TM-D thermal-magnetic trip unit

DB400150



**EasyPact CVS100F (36 kA at 380/415 V)**

Rating	3P 3d
TM16D	LV510330
TM25D	LV510331
TM32D	LV510332
TM40D	LV510333
TM50D	LV510334
TM63D	LV510335
TM80D	LV510336
TM100D	LV510337

**EasyPact CVS160F (36 kA at 380/415 V)**

Rating	3P 3d
TM100D	LV516331
TM125D	LV516332
TM160D	LV516333

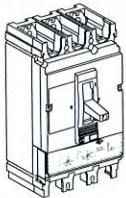
**EasyPact CVS250F (36 kA at 380/415 V)**

Rating	3P 3d
TM160D	LV525331
TM200D	LV525332
TM250D	LV525333

## EasyPact CVS400/630F

With TM-D thermal-magnetic trip unit

DB400038



**EasyPact CVS400F (36 kA at 380/415 V)**

Rating	3P 3d
TM320D	LV540305
TM400D	LV540306

**EasyPact CVS630N (36 kA at 380/415 V)**

Rating	3P 3d
TM500D	LV563305
TM600D	LV563306



# Accessories

## CVS100/160/250/400/630

### Electrical auxiliaries CVS100/160/250/400/630

#### Auxiliary contacts (changeover)

DB11254



OF or SD or SDE or SDV

29450

#### Voltage releases

DB11454

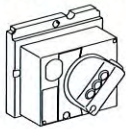


	Voltage	MX	MN
AC	220-240 V 50/60 Hz and 208-277 V 60 Hz	LV429387	LV429407
	380-415 V 50 Hz and 440-480 V 60 Hz	LV429388	LV429408
DC	30 V	LV429391	LV429411

### Rotary handle CVS100/160/250

#### Direct rotary handle

DB11259

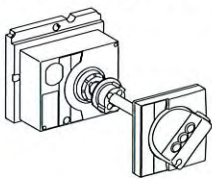


With black handle

LV429337

#### Extended rotary handle

DB11260



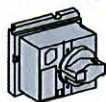
With black handle

LV429338

### Rotary handle CVS400/630

#### Direct rotary handle

E18651

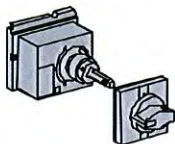


Standard black handle

LV432597

#### Extended rotary handle

E18612



Standard extended rotary handle

LV432598

**Schneider Electric (HK) Ltd.**

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