

Technical Data for Designers

Contents

Characteristics..... B3/18 to B3/21

Mini-Vario:

> Dimensions B3/22 to B3/23

> Schemes B3/23

Vario:

> Dimensions B3/24 to B3/25

> Schemes B3/25

TeSys

TeSys Mini-Vario, Vario Switch-disconnectors

Characteristics

Switch-disconnectors

Ref.



Characteristics											
Environment											
Switch type (bare type)	VN12 VZN12	V02 VZ02	VN20 VZN20	V01 VZ01	V0	VZ0	VVD0 VVE0	V1	VZ1	VVD1 VVE1	
Conforming to standards	IEC/EN 60947-3 and UL/CSA 60947-4-1										
Product certifications	UL, CSA	UL, CSA, DNV-GL, CCC, IEC	UL, CSA	UL, CSA, DNV-GL, IEC, EAC, CCC ⁽¹⁾							
Degree of protection with protection shroud	IP 20 conforming to IEC 60529										
Ambient air temperature	° C -20...+50										
Flame resistance	° C 960 conforming to IEC 60695-2-11										
Shock resistance 1/2 sine wave = 11ms conforming to IEC60068-2-27	gn	15	30	15	30						
Vibration resistance 10...150 Hz conforming to IEC 60068-2-6	gn	5		1							
Electrical characteristics, a.c. operation											
Switch type (bare type)	VN12 VZN12	V02 VZ02	VN20 VZN20	V01 VZ01	V0	VZ0	VVD0 VVE0	V1	VZ1	VVD1 VVE1	
Rated operational voltage (Ue)	V	690									
Rated impulse withstand voltage (Uimp)	kV	6	8	6	8						
Conventional thermal currents in free air (Ith) and rated uninterrupted (Iu)	A	12		20		25		32			
Conventional thermal current in enclosure (Ithe)	A	10		16		20		25			
Power dissipation per pole for the above operational currents	AC-23A	W				-		1.25		2	
	AC-21A	W				-		3.2		5	
Rated operational power and current	AC-21A/22A	230...690 V	A	12		20		25		32	
	AC-23A	230 V	A/kW	10.6/3		14/4		19.7/5.5			
		240 V	A/kW	10.6/3		14/4		19.9/5.5		18.9/5.5	
		400 V	A/kW	8.1/4		11/5.5		14.5/7.5		21.8/11	
		415 V	A/kW	8.1/4		11/5.5		14/7.5		21/11	
		500 V	A/kW	8.9/5.5		11.9/7.5		16.7/11			
Rated operational power	AC -3	230/240 V	kW	1.5		3		4			
		400/415 V	kW	3		4		5.5		7.5	
		500 V	kW	4		5.5		7.5			
		690 V	kW	4	5.5		7.5		11		
Intermittent duty class	30										
Characteristics in normal operating conditions	Rated making capacity AC-21A/22A/23A (I rms)	A/ 400 V	120		200		250		320		
	Rated breaking capacity AC-21A/22A/23A (I rms)	A/ 400 V	120		200				250		
Short-circuit characteristics	Permissible rms short time rating (Icw)	A/ 400V/1s	140	300	140	300		384			
	Rated making capacity under short-circuit conditions (Icm) I peak	kA/ 400 V	0.5	1	0.5	1					
	Rated conditional short-circuit current (I rms) with aM/gG fuses	kA/ 400 V	6	10	6	10					
A		12		20		25		35			

(1) CCC: except for VVD, VVE switches.

V2 VZ2	VVD2 VVE2	V3 VZ3	VVD3 VVE3	V4 VZ4	VVD4 VVE4	V5	V6	VZ7 VZ20	VZN05 VZN06
IEC/EN 60947-3 and UL/CSA 60947-4-1								IEC/EN 60947-5-1, UL/CSA 60947-5-1	

UL, CSA, DNV-GL, IEC, EAC, CCC ⁽¹⁾

IP 20 conforming to IEC 60529

-20...+50

960 conforming to IEC 60695-2-11

30

-

1

-

V2 VZ2	VVD2 VVE2	V3 VZ3	VVD3 VVE3	V4 VZ4	VVD4 VVE4	V5	V6	VZ7 VZ20	VZN05 VZN06
690									

8

6

40	63	80	125	175	12	12			
32	50	63	100	140	10	10			
2.4	4.2	5.1	7.5	11	-				
5.4	6.4	12.5	15	25	-				
40	63	80	125	160	le/AC-15				
25.8/7.5	50.3/15	61.2/18.5	71.9/22	96.6/30	6 A				
24.8/7.5	48.2/15	58.5/18.5	68/22	92.7/30	6 A				
29/15	41.5/22	57/30	68.5/37	83/45	4 A				
28/15	40/22	55/30	66/37	80/45	4 A				
28.5/18.5	44/30	54/37	64.5/45	79/55	2 A				
17.5/15	25/22	33/30	42/37	49/45	1 A				
5.5	11	15	22	30	-				
11	18.5	22	30	37	-				
15	22	30	37	45	-				
11	18.5		30	37	-				
30					-				
400	630	800	1250	1750	-				
320	500	640	1000	1400	-				
480	756	960	1500	2100	-				
1	2.1		2.8		-				
10					1				
50	63	80	125	200	16	16			

⁽¹⁾ CCC: except for VVD, VVE switches.

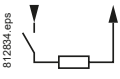
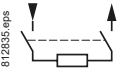
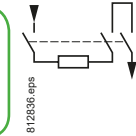


References:
page B3/3

Dimensions:
page B3/22

Schemes:
page B3/23

Characteristics

Electrical characteristics, d.c. operation

Switch type (bare type)				VN12 VZN12	V02 VZ02	VN20 VZN20	V01 VZ01	V0 VZ0	VVD0 VVE0	V1 VZ1	VVD1 VVE1
Rated operational current DC-1 (L/R = 1ms)	24 V	1 contact	A	12		20		25		32	
		2 contacts	A	12		20		25		32	
		3 contacts	A	12		20		25		32	
	48 V	1 contact	A	12		20		25		32	
		2 contacts	A	12		20		25		32	
		3 contacts	A	12		20		25		32	
	60 V	1 contact	A	12		20		25		32	
		2 contacts	A	12		20		25		32	
		3 contacts	A	12		20		25		32	
	110 V	1 contact	A	1.5		2		9		10	
		2 contacts	A	8		10		12		16	
		3 contacts	A	12		20		25		32	
	220 V	1 contact	A	1.5		2		2.5		3	
		2 contacts	A	7		8		10		12	
		3 contacts	A	10		14		16		20	
	250 V	1 contact	A	0.6		0.7		0.8		1	
		2 contacts	A	3		4		6		8	
		3 contacts	A	8		10		12		16	
Ref.	24 V	1 contact	A	12		20		25		32	
		2 contacts	A	12		20		25		32	
		3 contacts	A	12		20		25		32	
	48 V	1 contact	A	12		20		25		32	
		2 contacts	A	12		20		25		32	
		3 contacts	A	12		20		25		32	
	60 V	1 contact	A	10		14		16		20	
		2 contacts	A	12		20		25		32	
		3 contacts	A	12		20		25		32	
	110 V	1 contact	A	1.5		2		2.5		3	
		2 contacts	A	3		4		5		6	
		3 contacts	A	12		20		25		32	
	220 V	1 contact	A	0.4		0.5		0.5		0.8	
		2 contacts	A	1.4		1.5		1.5		2	
		3 contacts	A	1		2		3		4	
	250 V	1 contact	A	0.3		0.4		0.5		0.8	
		2 contacts	A	0.4		0.6		0.8		1	
		3 contacts	A	1.2		2.4		1.6		2	

Other characteristics

Switch type (bare type)				VN12 VZN12	V02 VZ02	VN20 VZN20	V01 VZ01	V0 VZ0	VVD0 VVE0	V1 VZ1	VVD1 VVE1
Mechanical durability (millions of operating cycles)				0.05	0.1	0.05	0.1				
Electrical durability in cat. AC-21 (millions of operating cycles)				0.05	0.1	0.05	0.1				
Electrical durability in cat. DC-1 to 5 (operating cycles)				30000							
Suitable for isolation				Yes							
Cabling	Flexible cable + cable end	mm ²	4	6	4	6					
	Solid cable	mm ²	4	10	4	10					
Tightening torque			N.m	0.7	2.1	0.7	2.1				

V2 VZ2	VVD2 VVE2	V3 VZ3	VVD3 VVE3	V4 VZ4	VVD4 VVE4	V5	V6	VZ7 VZ20	VZN05 VZN06
40		63		80		125	175	8 (le/DC-1)	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	8 (le/DC-1)	
40		63		80		125	175	–	
40		63		80		125	175	–	
35		40		50		60	70	4 (le/DC-1)	
40		63		80		125	175	–	
40		63		80		125	175	–	
12		20		25		30	37	2 (le/DC-1)	
20		63		80		125	175	–	
40		63		80		125	175	–	
4		6		8		12	15	1 (le/DC-1)	
14		25		30		40	50	–	
25		30		40		80	100	–	
2		4		5		3	10	0.8 (le/DC-1)	
12		20		25		30	40	–	
20		30		40		50	61	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
25		40		50		60	70	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
5		6		8		10	12	–	
8		10		20		22	24	–	
40		50		63		70	80	–	
1		1.5		2		2.2	2.4	–	
3		4		6		7	8	–	
7		10		15		16	13	–	
1		1.2		1.5		1.6	1.8	–	
2		3		6		7	8	–	
6		8		10		12	14	–	
V2 VZ2	VVD2 VVE2	V3 VZ3	VVD3 VVE3	V4 VZ4	VVD4 VVE4	V5	V6	VZ7 VZ20	VZN05 VZN06
0.1		0.03						0.1	0.05
0.1		0.03						0.1 (AC-15)	0.05
30000								30000 (DC-1)	
Yes								–	
6		16				70		2 x 0.75...1.5	
10		25				95		2 x 1...2.5	
2.1		4				22.6		0.7	

Switch-
disconnectors

Ref.



TeSys

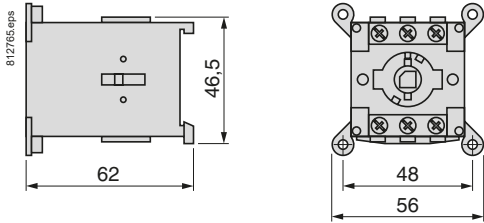
TeSys Mini-Vario Switch-disconnectors

Dimensions, mounting

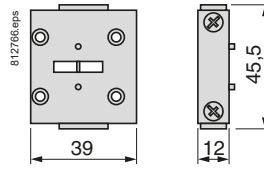
Dimensions

Switch-disconnectors

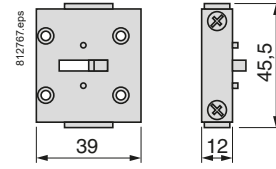
Switch bodies VN12, VN20



Add-on modules VZN12, VZN20



Add-on modules VZN11, VZN14 VZN05 and VZN06



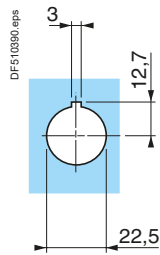
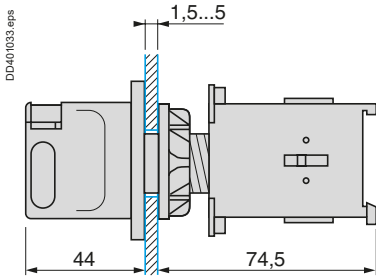
Switch-disconnectors

Mounting

Switch-disconnector mounted on enclosure door

VCDN12, VCDN20, VBDN12, VBDN20

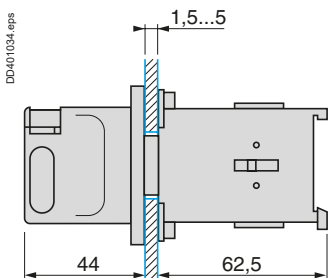
Single hole fixing



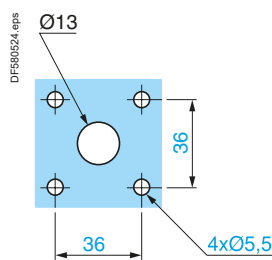
Ref.



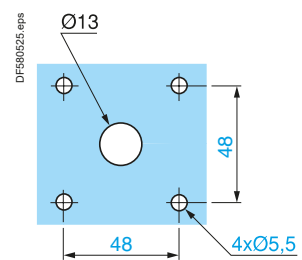
VN12, VN20
4 screw fixing



45 x 45 front plate



60 x 60 front plate



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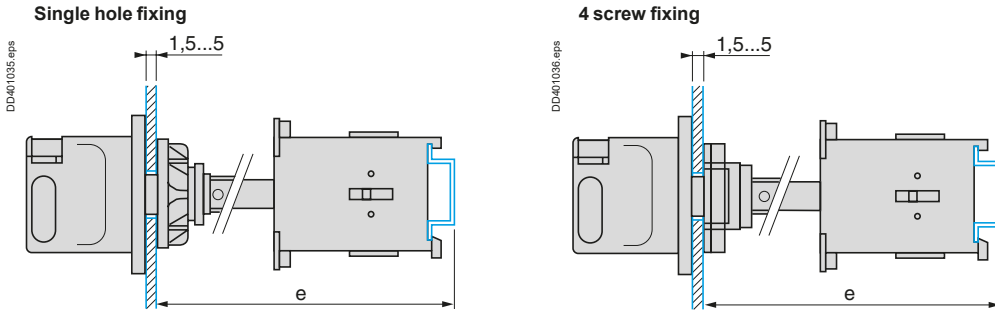
TeSys Mini-Vario Switch-disconnectors

Mounting, schemes

Mounting (continued)

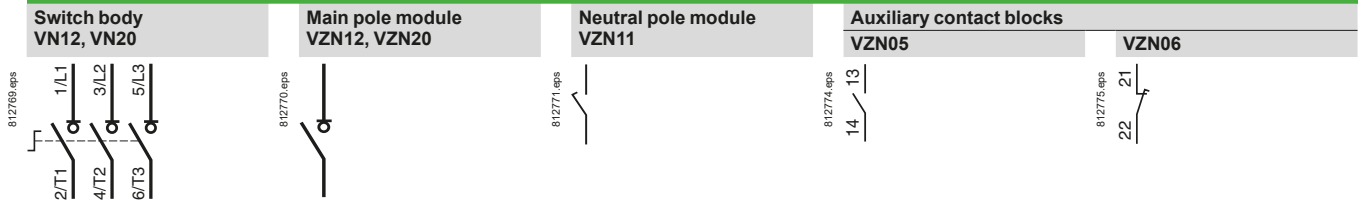
Switch-disconnector mounted at back of enclosure with shaft extension VZN17 or VZN30 (clip-on mounting on L rail)

VN12, VN20



	Shaft extension	Distance (e) enclosure back/door mm
VN12, VN20	VZN17	300...330
	VZN30	400...430

Schemes



Switch-disconnectors

Ref.



TeSys

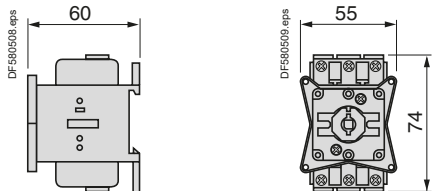
TeSys Vario Switch-disconnectors

Dimensions, mounting

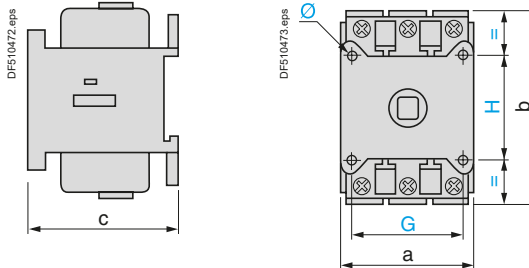
Dimensions

Switch-disconnectors

Switch bodies V0 \bullet , V0 to V2

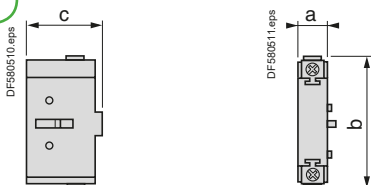


Switch bodies V3 to V6

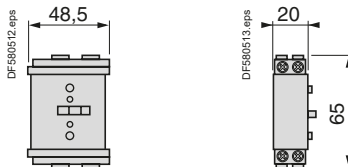


	a	b	c	G	H	Ø
V3, V4	60	83	65	48	48	5.5
V5, V6	90	125	90	68	68	5.5

Add-on modules VZ02 to VZ4 and VZ11 to VZ16



Add-on modules VZ7, VZ20



Switch-disconnectors

Ref.

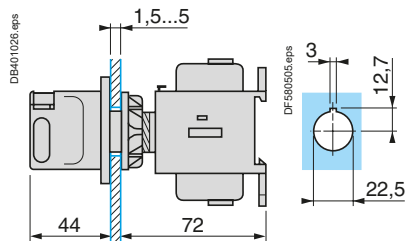


	a	b	c
VZ02 and VZ01, VZ0 to VZ2, VZ11, VZ14	16	74	35
VZ3, VZ4, VZ12, VZ15	20	83	46
VZ13, VZ16	30	125	63

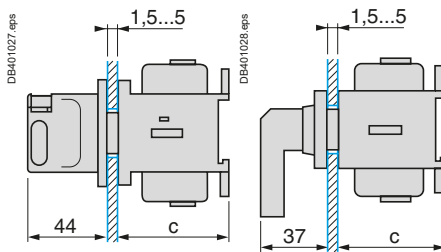
Mounting

Switch-disconnector mounted on enclosure door

Single hole fixing V0 \bullet , V0 to V2

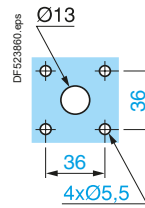


4 screw fixing V0 \bullet , V0 to V4

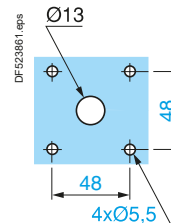


	c
V0 \bullet , V0 to V2	60
V3, V4	65

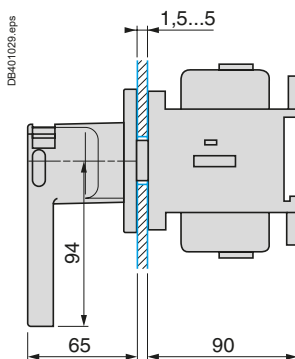
4 screw fixing 45 x 45 front plate V0 \bullet , V0 to V2



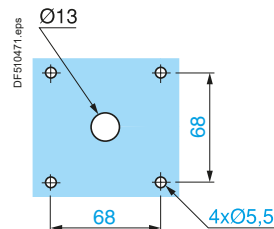
4 screw fixing 60 x 60 front plate V0 \bullet , V0 to V4



V5 and V6. 4 screw fixing



90 x 90 front plate



TeSys

TeSys Vario Switch-disconnectors

Mounting, schemes

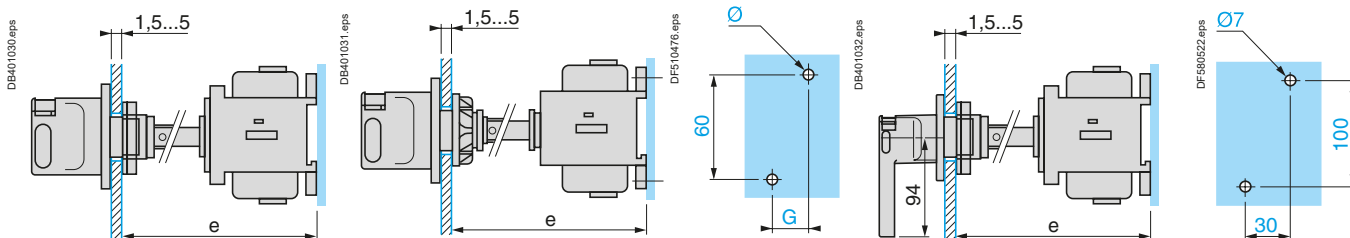
Mounting (continued)

Switch-disconnector mounted at back of enclosure

4 screw fixing
V0 \bullet , V0 to V2 with shaft extension VZ17 or VZ30 (clip-on mounting on \perp rail possible for V0 \bullet to V2)

Single hole fixing
V3 to V4 with shaft extension VZ18 or VZ31

V5 and V6 with shaft extension VZ18 or VZ31



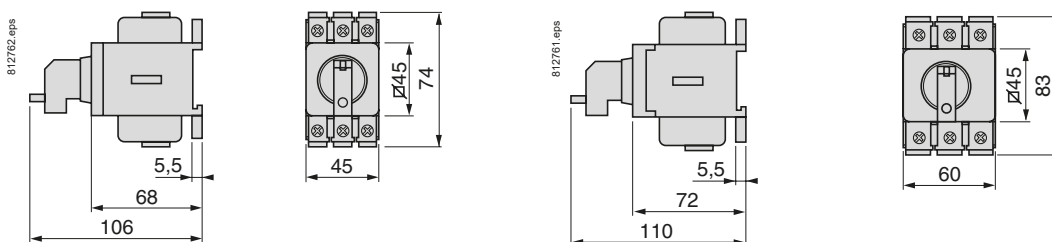
	Shaft extension	Distance (e) enc.back/door mm	Ø	G
V02 and V01 V0 to V2	VZ17	300...330	2 x 4.2	15
	VZ30	400...430	2 x 4.2	15
V3 and V4	VZ18	300...320	2 x 5	20
	VZ31	400...420	2 x 5	20

	Shaft extension	Distance (e) enc.back/door mm
V5 and V6	VZ18	300...350
	VZ31	430...450

Switch-disconnectors for modular distribution boards

VV \bullet 0 to VV \bullet 2

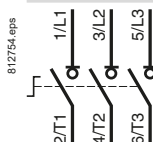
VV \bullet 3 to VV \bullet 4



Schemes

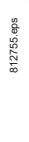
Switch body

V02 and V01
V0 to V6



Main pole module

VZ02 and VZ01
VZ0 to VZ4



Neutral pole module

VZ11 to VZ13



Auxiliary contact blocks

VZ7



VZ20



