

Technical Data for Designers

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Vario:

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> Schemes B3/25

Characteristics

Environment

Switch type (bare type)		VN 12 VZN 12	V02 VZ 02	VN 20 VZN 20	V01 VZ 01	V0 VZ 0	VVD 0 VVE 0	V1 VZ 1	VVD 1 VVE 1	
Conforming to standards		IEC 60947-3								
Product certifications		UL, CSA, GL								
Protective treatment		"TC"								
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 60695-2-1								
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)				VN 12 VZN 12	V02 VZ 02	VN 20 VZN 20	V01 VZ 01	V0 VZ 0	VVD 0 VVE 0	V1 VZ 1	VVD 1 VVE 1	
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 AC-23A pole for the above operational currents			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				
		690 V	A/kW	8.6/7.5		12.3/11		17.5/15				
	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				

V2 VZ 2	VVD 2 VVE 2	V3 VZ 3	VVD 3 VVE 3	V4 VZ 4	VVD 4 VVE 4	V5	V6	VZ7 VZ2 0	VZN 05 VZN 06
IEC 60947-3								IEC 60947-5	
UL, CSA, GL									
“TC”									
IP 20 conforming to IEC 60529									
-20...+50									
960 conforming to IEC 60695-2-1									
30								—	
1								—	
V2 VZ 2	VVD 2 VVE 2	V3 VZ 3	VVD 3 VVE 3	V4 VZ 4	VVD 4 VVE 4	V5	V6	VZ7 VZ2 0	VZN 05 VZN 06
690									
8									6
40	63		80		125		175	12	6
32	50		63		100		140	10	4
2.4	4.2		5.1		7.5		11	—	
5.4	6.4		12.5		15		25	—	
40	63		80		125		160	Ie/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	1.6

Switch-
disconnectors

Characteristics

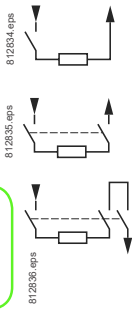
Safety control and protection solutions

Mini-VARIO and VARIO switch-disconnectors

Characteristics

Electrical characteristics, d.c. operation

Switch type (bare type)

				VN 12 VZN 12	V02 VZ 02	VN 20 VZN 20	V01 VZ 01	V0 VZ 0	VVD 0 VVE 0	V1 VZ 1	VVD 1 VVE 1
 Switch-disconnectors	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	
Rated operational current DC-2 to DC-5 (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	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)

			VN 12 VZN 12	V02 VZ 02	VN 20 VZN 20	V01 VZ 01	V0 VZ 0	VVD 0 VVE 0	V1 VZ 1	VVD 1 VVE 1
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				

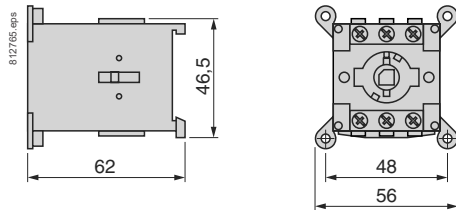
V2 VZ 2	VVD 2 VVE 2	V3 VZ 3	VVD 3 VVE 3	V4 VZ 4	VVD 4 VVE 4	V5	V6	VZ7 VZ2 0	VZN 05 VZN 06
40		63		80		125	175	8 (le/DC-1)	
40		63		80		125	175	—	
40		63		80		125	175	—	
40		63		80		125	175	8 (le/DC-1)	
40		63		80		125	175	—	
40		63		80		125	175	—	
35		40		50		60	70	4 (le/DC-1)	
40		63		80		125	175	—	
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 VZ 2	VVD 2 VVE 2	V3 VZ 3	VVD 3 VVE 3	V4 VZ 4	VVD 4 VVE 4	V5	V6	VZ7 VZ2 0	VZN 05 VZN 06
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

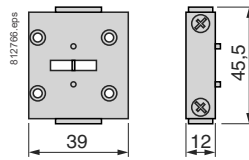
Dimensions

Switch-disconnectors

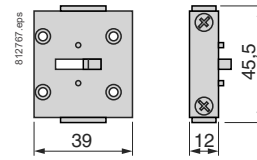
Switch bodies VN 12, VN 20



Add-on modules VZN 12, VZN 20



Add-on modules VZN 11, VZN 14 VZN 05 and VZN 06



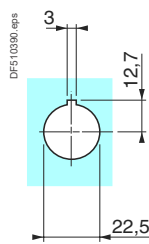
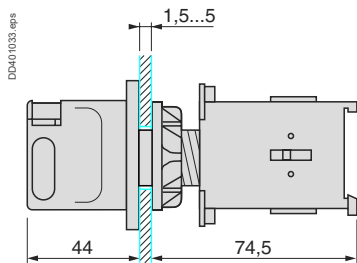
Switch-disconnectors

Mounting

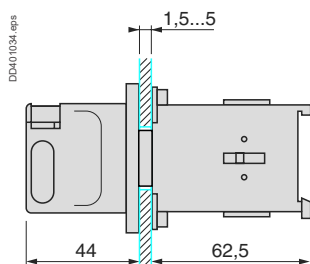
Switch-disconnector mounted on enclosure door

VN 12, VN 20

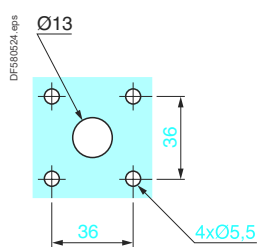
Single hole fixing



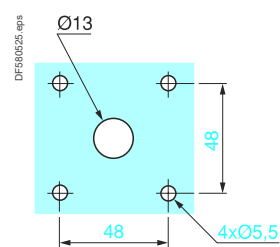
VN 12, VN 20
4 screw fixing



45 x 45 front plate



60 x 60 front plate



Mounting (continued), schemes

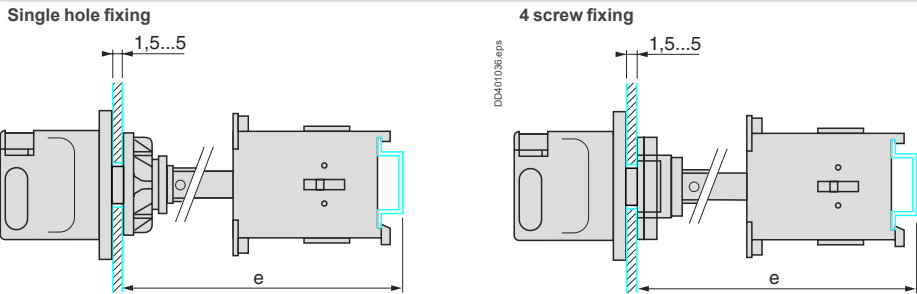
Safety control and protection solutions

Mini-VARIO switch-disconnectors, 12 and 20 A

Mounting (continued)

Switch-disconnector mounted at back of enclosure with shaft extension VZN 17 or VZN 30 (clip-on mounting on L rail)

VN 12, VN 20



	Shaft extension	Distance (e) enclosure back/door mm
VN 12, VN 20	VZN 17	300...330
	VZN 30	400...430

Schemes

Switch body VN 12, VN 20	Main pole module VZN 12, VZN 20	Neutral pole module VZN 11	Auxiliary contact blocks	
			VZN 05	VZN 06

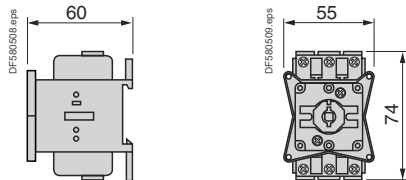


Switch-disconnectors

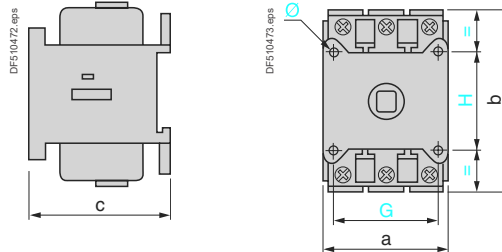
Dimensions

Switch-disconnectors

Switch bodies V0 $\bullet$, V0 to V2

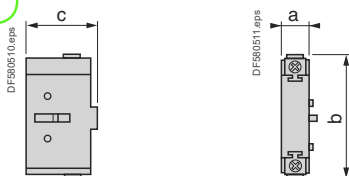


Switch bodies V3 to V6



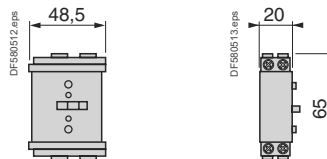
	a	b	c	G	H	Ø
V3, V4	60	83	65	48	48	5.5
V5, V6	90	125	90	68	68	5.5

Add-on modules VZ 02 to VZ 4 and VZ 11 to VZ 16



	a	b	c
VZ 02 and VZ 01, VZ 0 to VZ 2, VZ 11, VZ 14	16	74	35
VZ 3, VZ 4, VZ 12, VZ 15	20	83	46
VZ 13, VZ 16	30	125	63

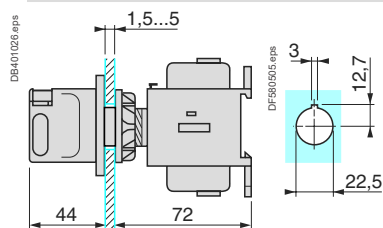
Add-on modules VZ 7, VZ 20



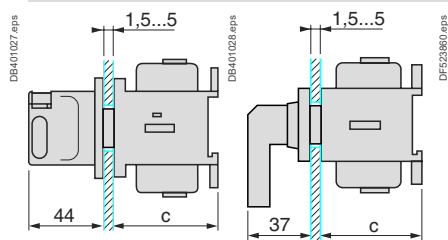
Mounting

Switch-disconnector mounted on enclosure door

Single hole fixing V0 $\bullet$, V0 to V2

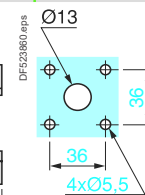


4 screw fixing V0 $\bullet$, V0 to V4

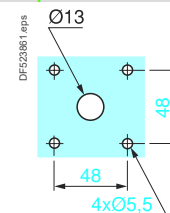


	c
V0 $\bullet$, V0 to V2	60
V3, V4	65

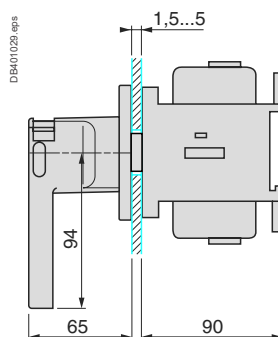
4 screw fixing 45 x 45 front plate V0 $\bullet$, V0 to V2



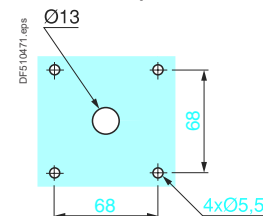
4 screw fixing 60 x 60 front plate V0 $\bullet$, V0 to V4



V5 and V6. 4 screw fixing



90 x 90 front plate



Safety control and protection solutions

VARIO switch-disconnectors, 12 to 175 A

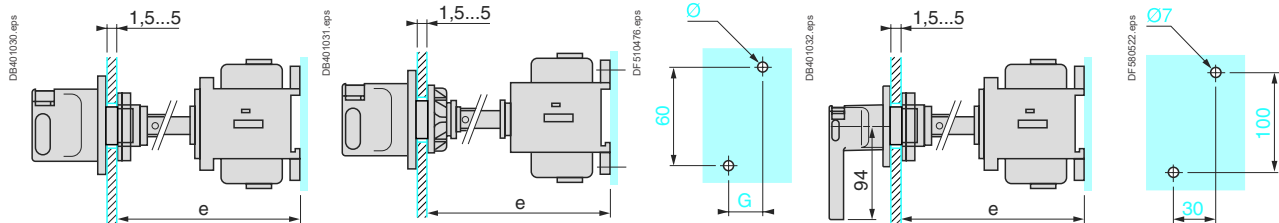
Mounting (continued)

Switch-disconnector mounted at back of enclosure

4 screw fixing
V0●, V0 to V2 with shaft extension VZ 17 or VZ 30 (clip-on mounting on  rail possible for V0● to V2)

Single hole fixing
V3 to V4 with shaft extension VZ 18 or VZ 31

V5 and V6 with shaft extension VZ 18 or VZ 31



	Shaft extension	Distance (e) enc.back/door mm	Ø	G
V02 and V01	VZ 17	300...330	2 x 4.2	15
V0 to V2	VZ 30	400...430	2 x 4.2	15
V3 and V4	VZ 18	300...320	2 x 5	20
	VZ 31	400...420	2 x 5	20

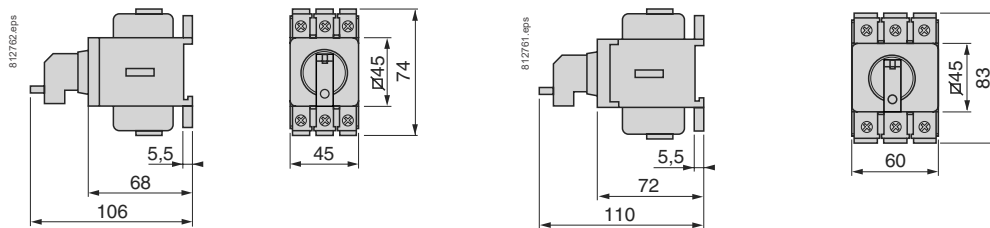
	Shaft extension	Distance (e) enc.back/door mm
V5 and V6	VZ 18	300...350
	VZ 31	430...450

Switch-disconnectors

Switch-disconnectors for modular distribution boards

VV● 0 to VV● 2

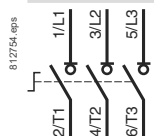
VV● 3 to VV● 4



Schemes

Switch body

V02 and V01
V0 to V6



Main pole module

VZ 02 and VZ 01
VZ 0 to VZ 4



Neutral pole module

VZ 11 to VZ 13



Auxiliary contact blocks

VZ 7



VZ 20

