Section 8

ERATING MECHANISMS AND DISCONNECT SWITCHES

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UL508 Motor Disconnect Switch



UL508 VLS Switch



UL98 Style Flange Handle **Disconnect Switch**



9422 Type R Circuit Breaker Mechanism





9422 Type C Circuit Breaker Cable Operator

9423 Door Closing Mechanisms

UL98 Fusible Switch



UL98 VLS Switch



Mechanism





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Operating Mechanisms and Disconnect Switches

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OPERATING MECHANISMS AND DISCONNECT SWITCHES

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Selection Guide



Class	MD	Vario	Enclosed Vario	LK4	VL	_S
Туре	Motor disconnect switches	Manual motor control switches	Motor disconnect switch	Nonfusible IEC style disconnect switches	Disconnect switches	Disconnect switches
UL Rating	UL 508	UL 508	UL508	UL 98	UL 508	UL 98
Handle Type	Rotary	Rotary	Rotary	Rotary	Rotary	Rotary
Mounting		Door or panel	_		DIN Rail (Rear Mounting) Door Mounting	DIN Rail (Rear Mounting) Door Mounting
Voltage (max.)	600 Vac	600 Vac	600 Vac	600 Vac	690 Vac	690 Vac
Current Ratings	30–60	10–115	UL-20-115A , IEC 32 - 175	30–1200	16–63 A	63–125 A
Horsepower Ratings (max.)	7.5–40	2–60	2–60	7.5–500	1–30	3–60
Enclosure Type	Non-Metallic NEMA 1, 3, 3R, 4, 4X, and 12	Metallic: NEMA 1, 12, 4, 4X Plastic: IP55, NEMA Type 4X	NEMA 1, 12, 3R 4, 4X	Handle ratings: NEMA 1, 3R, 4, 4X, 12	NEMA 1, 12, 3R, 4, and 4X; IEC IP65, IP66	NEMA 1, 12, 3R, 4, and 4X; IEC IP65, IP66
Accessories	Power poles and auxiliary contacts	Power poles and auxiliary contacts	Power poles and auxiliary contacts	Auxiliary contacts and power lugs	Power poles and auxiliary contacts	Power poles and auxiliary contacts
Approvals	UL File E164864 IEC standard 60947-3	UL File E164864 NLRV CSA File LR 81630 Class 3211 05	UL	UL File E191098 WP2X / WP2X7 CSA 703149 Class 4652 04	UL File E487906 UL60947-4-1 / CSA 22.2 n° 60947-4-1-14	UL File E487907 UL98/CSA 22.2 n° 4
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Class	GS2	9422	9421	9422	9423
Туре	Fusible IEC style disconnect switches	NEMA style fused or non- fusible disconnect switches	Circuit breaker operating mechanisms	Circuit breaker operating mechanisms	Door closing mechanisms
UL Rating	UL 98	UL98	—	_	—
Handle Type	Rotary	Flange Adjustable rod or cable mechanism	Rotary	Flange Adjustable rod or cable mechanism	Rotary, works in conjunction with 9422 handle mechanisms
Mounting	Flange with cable mechanism panel	Panel or bracket mount	Panel	Panel	-
Load Voltage (max.)	600 Vac	600 Vac	600 Vac	600 Vac	—
Current Ratings	30–800	30–400	Circuit breaker frame sizes 100–1200	Circuit breaker frame sizes 100–1200	_
Horsepower Ratings (max.)	7.5–500	7.5–350	—	_	—
Enclosure Type	Handle ratings: NEMA 1, 3R, 4, 4X, 12	Handle ratings: NEMA 1, 3R, 4, 4X, 12	Handle ratings: NEMA 1, 3R, 4, 4X, 12	Handle ratings: NEMA 1, 3R, 4, 4X, 12	Handle ratings: NEMA 4 and 12 sheet steel or stainless
Accessories	Auxiliary contacts and power lugs	Auxiliary contacts	Auxiliary contacts	Auxiliary contacts	Right or left-hand operation
Approvals	UL File E191098 WP2X / WP2X7 CSA 703149 Class 4652 04	UL File E52639 WHTY2 CSA LR44199 Class 4652-04	UL File E62922 DIHS2 CSA LR44199 Class 3211 07	UL File E62922 DIHS2 CSA LR44199 Class 3211 07	_
Page	page 8-26	page 8-33	page 8-39	page 8-41	Refer to Supplemental Digest Section 15

Identification System

Mini-Vario and Vario rotary manual motor-control switches from 12-175 A are suitable for on-load making and breaking of resistive or mixed resistive inductive circuits where frequent operation is required. They can also be used for direct switching of motors in utilization categories AC-3 and DC-3 specific to motors. Vario manual motor-control switches are suitable for isolator applications with fully visible indication (since the handle cannot be in the open position unless all the contacts are actually open and separated by the appropriate isolating distance), and the handles are padlockable.

The Mini-Vario and Vario catalog numbers are described in Table 8.1.

Table 8.1: Identification System



G30, A30, W30 Type 1/12/4/4X Metallic (Class 9421)

GU Vario IP55 Non-Metallic

Mini-Vario

GE

Table 8.2: Assembled Switches—Degree of Protection IP65, Type 1 and 12

Rating (A)		Complete Switches (3-Pac	for Door Mounting llock)	Complete Switches for Rear Mounting, Includes Extension Shaf (3-Padlock)		
		Red/Yellow (Single Hole)	Black/Gray (Single Hole)	Red/Yellow (Single Hole)		
UL IEC Catal		Catalog No.	Catalog No.	Catalog No.		
10	12 VCDN12 VBDN12		VBDN12	VCCDN12		
16	20	VCDN20	VBDN20	VCCDN20		

Table 8.3: Mini-Vario Enclosed Switches

Cotolog No	Complete Switches Mounted in IP55 Non-Metallic Enclosure
Galalog NO.	Description
VCFN12GE	Red/Yellow Mounted In Sealable Enclosure,
VCFN20GE	Non-UL Listed, Non-NEMA Rated

Table 8.4: Component Parts

Mini-Vario IP55

Non-Metallic

Catalog No.	Description
VN12 [1]	10/12 A switch only
VN20 [1]	16/20 A switch only
VZN12 [1]	Add on power pole for 10/12 A switch
VZN20 [1]	Add on power pole for 16/20 A switch
VZN11	Neutral Pole with early make, late break for VN12 or VN20 switch
VZN14	Grounding module for VN12 or VN20
VZN05	N.O. late make auxiliary contact [2]
VZN06	N.C. early break auxiliary contact [2]
VZN26	Single-pole shroud for auxiliary contacts
VZN08	Three-pole shroud for VN12 or VN20



Catalog No.	Description
KCC1YZ	45 x 45 mm Red & Yellow operator
KCD1PZ	60 x 60 mm Red & Yellow operator
KAD1PZ	60 x 60 mm Black & Gray operator
VZN17	300–340 mm shaft extension
VZN30	400–430 mm shaft extension
KZ32	Door interlocking plate for 45 or 60 mm operator
KZ83	Door mounting plate for 45 or 60 mm operator

VCFN12GF



BDN12



VN12/KCC1YZ



VCDN12



Switches/contacts are dual rated (UL/IEC). [1]

[2] Auxiliary contacts are dual rated (UL/IEC 10/12 A).

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Mini-Vario and Vario[™] Assembled and Enclosed Switches



Refer to Catalog 9421CT0301

Vario

Table 8.6: NEMA Type 1 and 12 Assembled Switches for Door Mounting

Rating (A)		Complete Switches (Switch and Handle) for Door Mounting (3-padlock)						
		Red/Yellow Black/Gray Red/Yellow (Four Hole) (Four Hole) (Single Hole)		Red/Yellow (Single Hole)	Black/Gray (Single Hole)			
UL IEC		Catalog No.	Catalog No.	Catalog No.	Catalog No.			
10	12	VCF02	VBF02	VCD02	VBD02			
16	20	VCF01	VBF01	VCD01	VBD01			
20	25	VCF0	VBF0	VCD0	VBD0			
20	32	VCF1	VBF1	VCD1	VBD1			
25	40	VCF2	VBF2	VCD2	VBD2			
45	63	VCF3	VBF3	_	_			
63	80	VCF4	VBF4	_	_			
100	125	VCF5	VBF5	—	—			
115	175	VCF6	VBF6	_	_			

Table 8.7: NEMA Type 1 and 12 Assembled Switches for Rear Mounting

				•		
Rating (A)		Complete Switche with Extension S	s for Rear Mounting haft (3-Padlock)[3]	Switches with Handles Installed on Unit, DIN Rail Mount Only		
		Red/Yellow Red/Yellow (Four Hole) (Single Hole)		Red/Yellow (1-Padlock)	Black/Gray (No-Padlock)	
UL	IEC	Catalog No.	Catalog No.	Catalog No.	Catalog No.	
10	12	VCCF02	VCCD02	_	_	
16	20	VCCF01	VCCD01	-	_	
20	25	VCCF0	VCCD0	VVE0	VVD0	
20	32	VCCF1	VCCD1	VVE1	VVD1	
25	40	VCCF2	VCCD2	VVE2	VVD2	
45	63	VCCF3	_	VVE3	VVD3	
63	80	VCCF4	_	VVE4	VVD4	
100	125	VCCF5	_	_	_	
115	175	VCCF6	_	_	_	

Vario Non-Metallic Enclosed Switches

The Vario Motor Disconnect Switch is also offered as an enclosed switch. The three-pole version makes the Vario switch ideal for manual motor control applications. They are compact, easy to wire and connect, and come undrilled to allow cable entry positions.

NOTE: VC•GUN enclosures are UL approved.

Table 8.8: Non-Metallic Enclosed Switch [4] [5]

Ampere Size	IP55-PVC 3-Pole,	NEMA 4X	Hp Ratings			Catalog No
ÚL/IEC	NEMA Type 1 & 12	indoor	240 V	480 V	600 V	Catalog No.
20/32	Х	_	5	10	10-15	VC1GUN
25/40	Х	_	5–10	10-20	15-30	VC2GUN
45/63	Х		10–15	20-30	30-40	VC3GUN
63/80	Х	_	15	30	40	VC4GUN
100/125	Х	Х	25	50	50	VC5GUN
115/175	X	X	30	50	60	VC6GUN

Table 8.9: Dimensions

Туре	No. of Poles	а	b	с	d	е	f
VC1GUN							
VC2GUN	3	6.5 (164)	4.8 (121)	3.4 (87)	5.6 (141)	3.9 (98)	5.2 (132)
VC2GUN							
VC3GUN	2	7.6 (193)	6 5 (164)	3 4 (87)	67(170)	56(141)	5 2 (132)
VC4GUN	3	1.0 (133)	0.5 (104)	3.4 (07)	0.7 (170)	5.0 (141)	5.2 (152)
VC5GUN	2	11 5 (201)	0.5 (241)	5.0 (128)	10.6 (260)	86(210)	7 5 (101)
VC6GUN	3	11.5 (291)	9.5 (241)	3.0 (120)	10.0 (209)	0.0 (213)	7.5(191)



VC•GUN



- [3] Complete switch includes handle operator, shaft, door interlock plate, and line terminal shroud.
- [4] Assembled, includes witches mounted in enclosure with hade.
 [5] Refer to Table 8.11 and Table 8.12 for horsepower ratings.

8-4

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Mini-Vario and Vario[™] Assembled and Enclosed Switches Refer to Catalog 9421CT0301

Vario Metallic Enclosed Switches

Vario switches meet UL508 requirements as both enclosed and open manual motor controllers. They are also marked "Suitable as Motor Disconnect" allowing installation on the load side of the motor branch circuit short-circuit and ground-fault protection. If motor branch circuit short-circuit and ground-fault protection is needed, use a GS1 or 9422 fusible switch or circuit breaker meeting NEC 430.52 requirements.

Table 8.10: Metallic Enclosed Switches [6] [7]

Ratir	ig (A)	Horsepower Ratings		NEMA Type 1	NEMA Type 12	NEMA Type 4/4X [7]	
UL	IEC	240 V	480 V	600 V	Catalog No.	Catalog No.	Catalog No.
20	32	5	10	10	9421V1G30	9421V1A30	9421V1W30
25	40	5	10	15	9421V2G30	9421V2A30	9421V2W30



Class 9421 NEMA Type 1 V1G30, V2G30

Class 9421 NEMA Type 4, 4X, 12 V1W30. V2W30. V1A30. V2A30

Vario Manual Motor Control Switches

The V1 and V2 come in metallic enclosures (NEMA Type 1, 4, 4X, and 12). The NEMA 1 enclosure comes with conduit knockouts top and bottom. To factory install a VZ7 auxiliary contact in these metallic enclosures, add Form X11 to the end of the catalog number (for example, 9421V1G30X11). To factory install a VZ20 auxiliary contact in these enclosures, add Form X20 to the end of the catalog number (for example, 9421V1W30X20).

Table 8.11: Vario Manual Motor Control Switches, IEC

Rating (A)	kW Rating—3-Pole Switch Body								
IEČ	230 V	240 V	400 V	415 V	500 V	690 V			
12	3	3	4	4	5.5	7.5			
20	4	4	5.5	5.5	7.5	11			
25	5.5	5.5	7.5	7.5	11	15			
32	5.5	5.5	11	11	11	15			
40	7.5	7.5	15	15	18.5	15			
63	15	15	22	22	30	22			
80	18.5	18.5	30	30	37	30			
125	22	22	37	37	45	37			
175	30	30	45	45	55	45			

Table 8.12: Vario Manual Motor Control Switches

Rating (A)	H	orsepower Rating		Shaft Size	3-Pole Switch Body
UL	240 V	480 V	600 V	mm	Туре
10	2	5	5	6	V02
16	3	7.5	7.5	6	V01
20	5	10	10	6	VO
20	5	10	10	6	V1
25	5	10	15	6	V2
45	10	20	30	8	V3
63	15	30	40	8	V4
100	25	50	50	8	V5
115	30	50	60	8	V6

Table 8.13: Switch Body

Ratir	ום (A)	Shaft Size	3-Pole Switch Body
UL	IEC	mm	Туре
10	12	6	V02
16	20	6	V01
20	25	6	VO
20	32	6	V1
25	40	6	V2
45	63	8	V3
63	80	8	V4
100	125	8	V5
115	175	8	1/6

NOTE: Refer to Table 8.10 and Table 8.12 for horsepower ratings.

[6] Assembled, includes switches mounted in enclosure with handle.

[7] For indoor use only. The NEMA Type 4/4X enclosure is made of #304 stainless steel with 3/4 in. T&B stainless steel hubs on the top and bottom.

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Manual Motor Control Switch



Single-Hole Operator



Four-Hole Operator KDF3PZ and KBF3PZ



KZ67



Four-Hole Operator (All except KDF3PZ and KBF3PZ)



Low-Profile Handle KCD1YZ

Mini-Vario and Vario[™] Assembled and **Enclosed Switches** Refer to Catalog 9421CT0301



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Table 8.14: NEMA Type 1 and 12 Handle Operators: V02-V2 (6 mm Shaft), V3-V6 (8 mm Shaft) [8]

Operator Type		Red/Yellow Single Hole 45 x 45 mm	Red/Yellow Four Hole 45 x 45 mm	Black/Gray Single Hole 45 x 45 mm	Black/Gray Four Hole 45 x 45 mm
Switches No. of Padlocks		Catalog No.	Catalog No.	Catalog No.	Catalog No.
V02–V2	0	KCC1LZ	KCE1LZ	KAC1BZ	KAE1BZ
V02–V2	1	KCC1YZ	KCE1YZ	_	_
Operator Type		Red/Yellow Single Hole 60 x 60 mm	Red/Yellow Four Hole 60 x 60 mm	Black/Gray Single Hole 60 x 60 mm	Black/Gray Four Hole 60 x 60 mm
V02–V2	0	KDD1PZ	KDF1PZ	KBD1PZ	KBF1PZ
V3–V4	0	_	KDF2PZ	_	KBF2PZ
V02–V2	3	KCD1PZ	KCF1PZ	KAD1PZ	KAF1PZ
V3–V4	3	_	KCF2PZ	-	KAF2PZ
Operator Type		Red/Yellow Four Hole 90 x 90 mm	Black/Gray Four Hole 90 x 90 mm		
V5-V6	0	KDF3PZ	KBF3PZ		
1/5 1/0	0	KOE9D7	I/A FORT		

Table 8.15: Low Profile Handle Operators [8]

Operator Type		Red/Yellow Single Hole 60 x 60 mm	Red/Yellow Four Hole 60 x 60 mm	Black/Gray Single Hole 60 x 60	Black/Gray Four Hole 60 x 60 mm
Switches	No. of Padlocks	Catalog No.	Catalog No.	Catalog No.	Catalog No.
V02–V2	3	KCD1YZ	KCF1YZ	KADIXZ	KAF1XZ
V3–V4	3	_	KCF2YZ	-	KAF2XZ
Operator Type		Red/Yellow Four Hole 90 x 90 mm	Black/Gray Four Hole 90 x 90 mm		
V5–V6	3	KCG2YZ	KAG2XZ		

Table 8.16: Gasket Kits

Catalog No.	Description
KZ65	45 x 45 mm gasket for V02-V2 for 4-hole type handles (order in quantities of 5)—IP65
KZ66	60 x 60 mm gasket for V02-V2 for 4-hole type handles (order in quantities of 5)—IP65
KZ62	60 x 60 mm gasket for V3-V4 for 4-hole type handles (order in quantities of 5)—IP65
KZ67	90 x 90 mm gasket for V5-V6 for 4-hole type handles (order in quantities of 5)—IP65







Table 8.17: Rear/Panel Mounting Switch Body Dimensions

	0 1 <i>1</i> 1	Dimensions								
Туре	Shaft	а		b		с		d		
	Extension	in.	mm	in.	mm	in.	mm	in.	mm	
V02 to V2	VZ17 VZ30	5.5–13.0 5.5–16.9	140–330 140–430	0.60	15	2.4	60	0.17	4.2	
V3 to V4	VZ18 VZ31	5.5–12.6 5.5–16.5	140–320 140–420	0.79	20	2.4	60	0.20	5.2	
V5 to V6	VZ18 VZ31	6.5–13.8 6.5–17.7	165–350 165–450	1.20	30	3.9	100	0.28	7.0	



- [9] The door interlock plate included with VCC Kits has the same drilling as the handle operators.
- 8-6

[8]







Switch Type	а		b		(Approx lbs	
	in.	mm	in.	mm	in.	mm	Approx. ibs.
V02 to V2 [10]	2.83	72	2.17	55	2.91	74	0.44
V02 to V2	2.36	60	2.17	55	2.91	74	0.44
V3 to V4	2.56	65	2.36	60	3.27	83	1.10
V5 to V6	3.54	90	3.54	90	4.92	125	2.00

Dimension

Table 8.19: Shaft Extension and Door Interlock

Mini-Vario and Vario[™] Accessories Table 8.18: Door Mounting Switch Body Dimensions

Switch Type	Maxi Panel	mum Depth	Shaft Extension	Door Interlock	Door Mounting	
	in.	mm	Kit	Plate	Plate	
V02 to V2	13.0	330	VZ17	KZ 32	KZ83	
V3, V4	12.6	320	VZ18	KZ 74	KZ81	
V5, V6	13.8	351	VZ18	KZ 74	KZ81	
V02 to V2	16.9	429	VZ30	KZ 32	KZ83	
V3, V4	16.5	419	VZ31	KZ 74	KZ81	
V5, V6	17.7	450	VZ31	KZ 74	KZ81	

Table 8.20: Accessories

Switch Type	Line Side Terminal Shroud For Main Switch	Terminal Shroud for Add-on Power Pole	Terminal Shroud for Auxiliary Contact
V02 to V2	VZ8	VZ26	VZ29
V3, V4	VZ9	VZ27	VZ29
V5, V6	VZ10	VZ28	VZ29

Table 8.21: Add-On Contact Modules

Switch Type	Main Pole	Main	Ampere Rating	Auxiliary Contacts Rated UL/IEC 10/12 A		
	Module	Pole	UL/IEČ	1 N.O., 1 N.C.	2 N.O.	
V02	VZ02	VZ02	10/12		VZ20	
V01	VZ01	VZ01	16/20			
V0	VZ0	VZ0	20/25			
V1	VZ1	VZ1	20/32	VZ7		
V2	VZ2	VZ2	25/40	Early Break,		
V3	VZ3	VZ3	45/63	Late Make		
V4	VZ4	VZ4	63/80			
V5	_	_	_			
V6	_	_	_	1		

Table 8.22: Add-On Contact Modules

Switch Type	Neutral Modules Early Make/Late Break	Grounding Module	Auxiliary Contacts					
	Catalog No.	Catalog No.	Catalog No.	Description				
V02–V2	VZ11	VZ14	VZ7	1 Late Make, N.O. & 1 Early Break, N.C.				
V3–V4	VZ12	VZ15	VZ20	2 N.O. Contacts				
V5-V6	VZ13	VZ16	_	_				

Table 8.23: Labeling Accessories

Nameplate Hold	ler with Nameplate	Nameplate Holder Only	ate Only		
Size	Catalog No.	Catalog No.	Use With	Catalog No.	
45 x 45 mm	KZ13	KZ14	KZ14	KZ76	
60 x 60 mm	KZ15	KZ16	KZ16	KZ77	
90 x 90 mm	KZ103	KZ101	KZ1010	KZ100	

Table 8.24: Shrouds

Switch Tuno	3-Pole Shroud	Single-Pole Shroud	
Switch Type	Catalog No.	For Add-On Power Pole	Catalog No.
V02–V2	VZ8	VZ02–VZ2, VZ11, & VZ14	VZ26
V3–V4	VZ9	VZ23, VZ4, VZ12, & VZ15	VZ27
V5–V6	VZ10	VZ13 & VZ16	VZ28
_	_	For 2-Pole Aux. Contact	VZ29

Table 8.25: Main Pole Module Dimensions

		Woight					
Switch Type	vpe a b)	, in the second s	;	Approx lbs	
	in.	mm	in.	mm	in.	mm	Approx. ibs.
V 02 to V Z2	0.63	16	2.9	74	1.38	35	0.10
V Z3 to V Z4	0.79	20	3.3	83	1.80	46	0.22

Shaft Extension Kit



Add-On Contact Module



Terminal Shroud for Main Switch VZ8





Terminal Shroud for Auxiliary Contact VZ29

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MD Motor Disconnect Switch

MD Motor Disconnect Switches

The MD motor disconnect switch is listed UL 508 Suitable for Motor Control (UL File E164864) and conforms to IEC standard 60947-3. It is in a compact NEMA 4X enclosure suitable for use in NEMA 1, 3, 3R, 4, 4X, and 12 applications. The MD's key benefits are an extremely small footprint, a more economically efficient NEMA 4X solution, and a handle interlock preventing cover removal when the switch is in the ON position.

Switch features:

- Suitable for NEMA 1, 3R, 4, 4X, and 12 enclosure applications.
- Complies with OSHA lockout/tagout requirements—accepts up to three 8 mm padlocks.
- For accessories, see Table 8.20.

Table 8.26: MD Motor Disconnect Switch—Non-Metallic NEMA 1, 3, 3R, 4, 4X, and 12 Enclosure

		Maximu	Im Horsepower	Heimht	10/Caldia	Donth	
Amperes	Cat. No.	-	Three-Phase Vac	(in)	(in.)	(in)	
		220-240	440-480	600	()	()	()
30	MD3304X	7.5	20	25	6.38	3.9	4.37
60	MD3604X	20	40	40	8.27	4.94	4.37

Table 8.27: MD Motor Disconnect Accessories

Cat. No.	Description
MDSAN20	2 N.O. auxiliary contact module
MDSAN11	1 N.O. and 1 N.C. auxiliary contact module
MDS30P	30 A add on power pole

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Refer to Catalog 9400CT1601

Disconnect Switches, 16–125 A New!)

Style	DIN R	ail, Rea	ar Mour	nting						Door	Mounti	ng					
Width	36 mr	n (1.42	in.)			70 mm	ı (2.75 ir	ı.)		36 mn	n (1.42	in.)		70 mr	n (2.75 i	n.)	
 Versions: DIN rail mounting, door mounting, and rear mounting 		תת								1	Nin. I				16. 16.		
Wide range of accessories	3	0 0 0	21					0		b	-					-	
Changeover switches	. *	10				Segurit	In			1.1		. S		1. 10			
 Conforming to UL 60947-4-1 (16–63 A) or UL 98 (63–125 A) specifications 	1 × 01					C								1-	(3	
Ampere rating	16	25	32	40	63	63	80	100	125	16	25	32	40	63	80	100	125
Three pole	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
4th pole—simultaneous closing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
4th pole—early-make closing	•	•	•	•	٠	•	•	•	•	•	•	•	•	•	•	•	•
Fuse holder	•	•	•														
Mechanical 6-8 pole coupling system	•	•	•	•	•	•	•	•	•								
Mechanical interlock for line switching	٠	•	٠	•	•	•	•	•	•								

Interpreting the Catalog Number

Some combinations are not available. Use this table only for interpreting the catalog number.

Table 8.28: Interpreting the Catalog Number

Example	VLS	3P	016		R	1			
Description	Disconnect switch	1P = 1 pole 3P = 3 poles	016 = 16 A 025 = 25 A 032 = 32 A 040 = 40 A	063 = 63 A 080 = 80 A 100 = 100 A 125 = 125 A	D = Door mounting R = DIN rail mounting	1 = Small size (16–63 A), UL 508 2 = Large size (63–125 A), UL 98			
	1								
Example	VLSH	2	S		5	R			
Description	Rotary handle	1 = Recessed, 65 x 65 mm 2 = Protruding, 65 x 65 mm 3 = Pistol grip, 75 mm dia. 4 = Protruding, 48 x 48 mm	H = Hole fixing S = Screw mounting		5 = 5 mm shaft opening 7 = 7 mm shaft opening	B = Black BC = Black, changeover BD = Black, defeatable R = Red RD = Red, defeatable			
Example	VLSS	150			5				
Description	Shafts	Length: 150–500 mm			Cross-section: 5 = 5 mm 7 = 7 mm				
Example	VLS	1P	040	R	1	S			
Description	Additional Poles	Number of Poles: 1P = 1 Pole	Current: 016 = 16 A to 125 = 125 A	Mounting: R = DIN rail mounted D = Door mounted	Body Size: 1 = Small size (16–63 A) 2 = Large size (63–125 A)	Closing: S = Simultaneous closing E = Early Make closing			
Example	VLS	1N		R		1			
Description	Ground and Neutral Terminals	1G = 1 Pole Ground terminal 1N = 1 Pole Neutral terminal		R = DIN rail mounted D = Door mounted		1 = Small size (16–63 A), UL 508 2 = Large size (63–125 A), UL 98			
Example	VLS	Α	11	R	1	S			
Description	Auxiliary contacts	A = Auxiliary contact	10 = 1 N.O. 11 = 1 N.O. + 1 N.C.	R = DIN rail mounted D = Door mounted	Blank = Size 1 and 2 1 = Size 1 2 = Size 2	S = Simultaneous closing E = Early make closing			

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Switches

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VLS3P016R1-VLS3P063R1



VLS3P063R2 VLS3P125R2





VLS3P016D1-VLS3P040D1 Strokes of VLS switch poles

VLS3P063D2-VLS3P125D2

	Travel $0 \rightarrow 1 0^{\circ}$	30	٥	60°	90°
VI S3P016R1_VI S3P063R	1			60°	
VLS3P016D1-VLS3P040D	1			60-	
	·2		55	5°	
VLS3P003R2-VLS3P123R	2				
VLS3P063D2-VLS3P125D	2		55	5°	
	Of	f			01

Table 8.31: UL / CSA Ratings

Catalog number	Horsepow	/er					General use	Short-circuit rating	Max. fuse rating	
	1 phase		3 phase				at 600 Vac	at 600 Vac	at 600 V	
	120 V	240 V	200–208 V	240 V	480 V	600 V	(~)		(?)	
UL 60947-4-1 and CSA 22.2 n° 60947-4-1-14 [1]										
VLS3P016 ···	1	2	5	5	10	10	16	5	30 (Type RK5)	
VLS3P025 ···	1.5	3	7.5	7.5	15	20	25	5	30 (Type RK5)	
VLS3P032	2	5	10	10	20	20	32	5	45 (Type RK5)	
VLS3P040 ···	2	5	10	15	20	25	40	5	45 (Type RK5)	
VLS3P063R1	2	7.5	10	15	30	30	60	5	45 (Type RK5)	
UL 98 and CSA C22.2 n	° 4 [2]									
VLS3P063	3	7.5	20 [3]	20	40	40	60	50	60	
VLS3P080	3	10	25 [3]	25	40	40	100	50	100	
VLS3P100 ···	5	10	30 [3]	30	50	50	100	50	100	
VLS3P125**	7.5	10	30 [3]	30	60	60	100	50	100	

[1] Ratings are valid for VLS3P ++ R+ and VLS3P ++ D+ types, according to UL 60947-4-1 and CSA 22.2 n° 60947-4-1-14. UL Listed for USA and Canada (cULus - File E487907) as Manual Motor Controllers, while the UL designation is "General Purpose Switch. Interrupteur Usage General" and "Suitable As Motor Disconnect."

Ratings are valid for VLS3P+++R+ and VLS3P+++D+ types, according to UL 98 and CSA C22.2 n° 4. UL Listed for USA and Canada (cULus - File E487907) as Open Type Switches - Open [2] type unfused switch, while UL designation is "General Purpose Switch. Interrupteur Usage General.

[3] Voltage value is not considered in UL98 / CSA 22.2 n° 4 standards, and so is not indicated in the UL product marking.

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Product Overview

Compact Size

The three-pole 16–63 A disconnect switches are made up of a single unit body, a mere 36 mm (1.4 in.) wide, while those rated 63-125 A are only 70 mm (2.8 in.) wide.

Accessory Flexibility

Mounting and removal of the fourth pole and add-on blocks are simple and quick operations with no need for tools.

TeSys[™] VLS Disconnect Switches

Certifications

All VLS disconnect switches are certified by cCSAus and are UL Listed for Canada and USA:

- 16-63 A types: certified according to UL 60947-4-1 / CSA 22.2 n° 60947-4-1-14 standards
- 63–125 A types: certified according to UL 98 / CSA 22.2 n° 4 standards

Three-Pole Disconnect Switches

Table 8.29: Certifications and Compliance (• = certification obtained)

	-	-	
Catalog number	cULus per UL 60947-4-1 / CSA C22.2 n° 60947-4-1-14 UL Listed (File E487906)	cULus per UL 98 / CSA C22.2 n° 4 UL Listed (File E487907)	IEC/EN 60947-1, IEC/EN 60947-3
VLS3P016R1- VLS3P040R1	•	_	
VLS3P063R1	•	_	
VLS3P016D1- VLS3P040D1	•	—	Compliant
VLS3P063R2- VLS3P125R2	_	•	
VLS3P063D2- VLS3P125D2	_	•	

Table 8.30: Selection—Three-Pole Disconnect Switches

Catalog number	IEC conventional free air thermal current (Ith), AC21A (≤690 V) (A)	IEC rated operational current (le) AC22A (≤690 V), AC23A (≤415 V) (A)	UL general use at 600 Vac (A)
DIN rail mounting and shaft extens	g version, complete with black hand ion. Refer to page 8-16 and page 8-	le. For rear-mounting version, separately 18.	purchase the handle
VLS3P016R1	16	16	16
VLS3P025R1	25	25	25
VLS3P032R1	32	32	32
VLS3P040R1	40	40	40
VLS3P063R1	63	45	60
VLS3P063R2	63	63	60
VLS3P080R2	80	80	100
VLS3P100R2	100	100	100
VLS3P125R2	125	125	100
Door-mounting v	ersion (no shaft required). Separate	ely purchase the handle. Refer to page pa	age 8-16.
VLS3P016D1	16	16	16
VLS3P025D1	25	25	25
VLS3P032D1	32	32	32
VLS3P040D1	40	40	40
VLS3P063D2	63	63	60
VLS3P080D2	80	80	100
VLS3P100D2	100	100	100
VLS3P125D2	125	125	100





UL 60947-4-1 and UL 98 Disconnect **Switches**

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Refer to Catalog 9400CT1601





Strokes of VLS poles (switch and add-on pole)

	Travel 0→1 0	° 3	0°	60°	90
VLS3P016R1/D1-VLS3P040R1/D1, VLS	3P063R1			60°	
				600	
Simultaneous fourth-pole add on				00	
VLS1P040R1E/D1E, VLS1P063R1E			. 5	5°	
Early-make fourth-pole add on					
VLS3P063R2/D2-VLS3P125R2/D2			5	i5°	
Main poles					
VLS1P063R2S/D2S-VLS1P125R2S/D2S			5	i5°	
Simultaneous fourth-pole add on					
VLS1P125R2E/D2E		48°			
Early-make fourth-pole add on					
	01	f			On

Catalog number	IEC conventional free air thermal current lth AC21A (≤690V) (A)	IEC rated operational current le AC22A (≤690V), AC23A (≤415V) (A)
Simultaneous closing	operation with respect to switch poles	
DIN Rail Mounting (V	LS3P•••R•)	
VLS1P040R1S [4]	40	40
VLS1P063R1S [5]	63	45
VLS1P063R2S	63	63
VLS1P080R2S	80	80
VLS1P100R2S	100	100
VLS1P125R2S	125	125
Door Mounting (VLS3	\$P•••D•)	
VLS1P040D1S [6]	40	40
VLS1P063D2S	63	63
VLS1P080D2S	80	80
VLS1P100D2S	100	100
VLS1P125D2S	125	125
Early-make closing o	peration with respect to switch poles	
DIN Rail Mounting (V	LS3P•••R•)	
VLS1P040R1E [4]	40	40
VLS1P063R1E [6]	63	45
VLS1P125R2E [7]	125	125
Door Mounting (VLS3	\$P••••D•)	
VLS1P040D1E [6]	40	40
VLS1P125D2E [8]	125	125

NOTE: For Fourth Pole UL / CSA ratings, see page 8-10 — they are the same as the ratings for the corresponding single-phase contact switch.

Table 8.34: Certifications and Compliance for Fourth Pole Add-on Blocks (• = certification obtained)

	Certification Standard						
Catalog number	cULus per UL 60947-4-1 / CSA C22.2 n° 60947-4-1-14 / UL Listed (File E487906)	cULus per UL 98 / CSA C22.2 n° 4 / UL Listed (File E487907)	IEC/EN 60947-1, IEC/EN 60947-3				
VLS1P040R1E, VLS1P040R1S	•	—					
VLS1P063R1E, VLS1P063R1S	•	—					
VLS1P040D1E, VLS1P040D1S	•	—	Compliant				
VLS1P125R2E, VLS1P125D2E	-	•	Compliant				
VLS1P063R2S-VLS1P125R2S	_	•					
VLS1P063D2S-VLS1P125D2S	_	•					

Fourth Pole Add-on

IEC ampere ratings

Available versions

Size

Table 8.32: General Specifications—Fourth Pole Add-on

Compact and modular

DIN rail mounting Door mounting Simultaneous closing with switch poles Early-make closing with respect to switch poles

16–125 A

- For VLS3P063R2-125R2 only. [7]
- [8] For VLS3P063D2-125D2 only.

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UL 60947-4-1 and UL 98 Disconnect **Switches**

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Add-on Blocks

Table 8.35: Operational Specifications

Auxiliary contacts				
IEC conventional fre	e air thermal current (Ith)	10 A		
UL/CSA and IEC/EN	1 60947-5-1 designation	A600-Q600		
Tightening torque		0.8 N•m (7.1 lb-in.)		
Other devices				
Tightening torque	VLS1NR1/D1, VLS1GR1/D1 terminals	1.8–2 N•m (16–18 lb-in)		
	VLS1NR2/D2, VLS1GR2/D2 terminals	5–6 N•m (45–54 lb-in)		
	VLS8C1/C2, VLS8M1/M2	mounting: 0.5 N•m (4.4 lb-in) extension with handle: 0.8 N•m (7.1 lb-in)		

Table 8.36: Selection—Add-on Blocks

Catalog number	Specifications						
Auxiliary contacts, si	Auxiliary contacts, simultaneous operation with respect to switch poles						
VLSA11RS	1NO+1NC for VLS3P····R· and VLS3P063R1						
VLSA11DS	1NO+1NC for VLS3P•••D•						
Auxiliary contacts, e	arly-break operation with respect to switch poles						
VLSA10R1E	1EB (NO) for VLS3P016R1–VLS3P040R1, VLS3P063R1						
VLSA10R2E	1EB (NO) for VLS3P063R2–VLS3P125R2						
Neutral terminal							
VLS1NR1	For VLS3P016R1–VLS3P040R1, VLS3P063R1						
VLS1NR2	For VLS3P063R2–VLS3P125R2						
VLS1ND1	For VLS3P016D1–VLS3P040D1						
VLS1ND2	For VLS3P063D2–VLS3P125D2						
Earth/Ground termin	al						
VLS1GR1	For VLS3P016R1–VLS3P040R1, VLS3P063R1						
VLS1GR2	For VLS3P063R2–VLS3P125R2						
VLS1GD1	For VLS3P016D1–VLS3P040D1						
VLS1GD2	For VLS3P063D2–VLS3P125D2						
Mechanical interlock	Mechanical interlock for line changeover (I-0-II)						
VLS8C1	For VLS3P016R1–VLS3P040R1, VLS3P063R1, and VLSH2S5BC: 5 mm (0.2 in.) [9]						
VLS8C2	For VLS3P063R2–VLS3P125R2 and VLSH2S5BC: 5 mm (0.2 in.) [9]						
Mechanical coupling	Mechanical coupling system for 6-8 pole disconnect switches						
VLS8M1	For VLS3P016R1–VLS3P040R1 and VLS3P063R1: 5 mm (0.2 in.) [9]						
VLS8M2	For VLS3P063R2–VLS3P125R2: 7 mm (0.3 in.) [10]						

Strokes of VLS poles (switch with auxiliary contact blocks)

	Travel 0→1 0	° 3	0°	60°	90'
VLS3P016R1/D1, VLS3P040R1/D1 Main poles	, VLS3P063R1			60°	
VLSA11RS/DS				60°	
Auxiliary contacts (1 NO + 1 NC)	NO				
	NC		400		
10040045		Ŧ	40°	000	
VLSATURTE		Irave	$10 \rightarrow 1$	60°	
Auxiliary contact		_			
(1EB – NO early break)		Trave	$ 1 \rightarrow 0$	70	lo I
VLS3P063R2/D2VLS3P125R2/D)2		ł	55°	
			450		
Auxilian/ contacts (1 NO ± 1 NC)	NO				
Auxiliary contacts (1 NO + 1 NO)	NU			-	
	NC	25°			
VI SA10B2E		Travel 0)→1 {	55°	
Auxiliary contact				T	
(1EB – NO early break)		Travel 1	→ 0	65°	,
	0	ft .			0.5

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VLSA11DS

VLSA10R1E VLSA10R2E

VLS1NR• VLS1GR•



Use VLSS shaft extensions.

[9] Use VLSS shaft extensions.[10] Use VLSH3S7RD handles and VLSS•••7 extensions for a rear-mounting version.

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TeSys™ VLS Accessories

Refer to Catalog 9400CT1601

UL 60947-4-1 and UL 98 Disconnect Switches

Sequence and Maximum Combination of Add-on Blocks DIN Rail Mounting Disconnect Switches

Table 8.37: VLS3P016R1–VLS3P040R1 (DIN Rail Mounting) VLS1NR1 VLS1GR1 VLSA11RS VLSA10R1E VLS1P040R1E VLS1P040R1S VLS3P016R1 VLS3P025R1 VLS1P040R1E VLS1P040R1S VLSA10R1E VLSA11RS VLS1GR1 VLS1NR1 VLS3P032R1 VLS3P040R1

Table 8.38: VLS3P063R1 (DIN Rail Mounting)

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Table 8.39: VLS3P063R2–VLS3P125R2 (DIN Rail Mounting)



UL 60947-4-1 and UL 98 Disconnect **Switches**

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Door Mounting Disconnect Switches





Table 8.41: VLS3P063D2–VLS3P125D2 (Door Mounting)





0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	► • •		A dro				And the se		10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	A O OP
VLS1NR1	VLS1GR1	VLSA11RS	VLSA10R1E	VLS1P040R1E VLS1P040R1S	VLS8C1-VLS8M1	VLS1P040R1E VLS1P040R1S	VLSA10R1E	VLSA11RS	VLS1GR1	VLS1NR1
1	1	1		1	VLS3P016R1 +	1	_	1	1	1
1	1	1	_	1	VLS3P016R1	-	—	2	1	1
1	1	2	_	-	VLS3P025R1 +	1	—	1	1	1
1	1	1	_	1	VLS3P025R1 VLS3P032R1+	_	1	1	1	1
1	1	1	1	—	VLS3P032R1	1	—	1	1	1
1	1	1	1	_	VLS3P040R1 +	_	_	2	1	1
1	1	2	_	_	VLS3P040R1	_	1	1	1	1
4								-		

Table 8.43: VLS3P063R1 + VLS8C1–VLS8M1 (Rear Mounting)

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VLS1NR1	VLS1GR1	VLSA11RS	VLSA10R1E	VLS1P063R1E VLS1P063R1S	VLS8C1- VLS8M1	VLS1P063R1E VLS1P063R1S	VLSA10R1E	VLSA11RS	VLS1GR1	VLS1NR1
1	1	1	_	1	VLS3P063R1 +	1	_	1	1	1
1	1	1	_	1	VLS3P063R1	_	_	2	1	1
1	1	2	_	-		1	-	1	1	1
1	1	1	—	1		_	1	1	1	1
1	1	1	1	_		1	—	1	1	1
1	1	1	1	_		_	—	2	1	1
1	1	2	—	_		_	1	1	1	1
1	1	2	_	-		_	_	2	1	1
1	1	_	_	1		1	_	_	1	1
1	1	_	_	_		_	_	_	1	1

Table 8.44: VLS3P063R2–VLS3P125R2 + VLS8C2–VLS8M2 (Rear Mounting)



VLS1NR2	VLS1GR2	VLSA11RS	VLSA10R2E	VLS1P125R2E VLS1P•••R•S	VLS8C2 - VLS8M2	VLS1P125R2E VLS1P•••R•S	VLSA10R2E	VLSA11RS	VLS1GR2	VLS1NR2
_	_	1	-	1	VLS3P063R2 +	1	-	1	_	_
_	_	1	-	1	VLS3P063R2	_		2	_	_
		2		_	VLS3P080R2 +	1		1		_
	1	1	_	1	VLS3P060R2	1	1	1	1	_
	-	1	1	-	VLS3P100R2	1	_	1	_	_
-		1	1	_	VLS3P125R2 +	-	_	2		_
-		2	_	_	VLS3P125R2	-	1	1		_
-		2	_	_		-	_	2		_
1	1	I	_	1		1	_	I	1	1
1	1	-	_	—		_	—	_	1	1

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UL 60947-4-1 and UL 98 Disconnect **Switches**



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Rotary Handles

Table 8.45: Selection-Rotary Handles (NEMA 1, 12, 3R, 4, and 4X. IEC IP65 unless otherwise specified)

Catalog	Specifications					
number Door Mounting of	nd Beer Mounting Handles, Bodleck readu////					
Dedividual and real moduluing handles, radioleready[/1]						
Keu/yellow, rota	$\frac{1}{100}$					
VLSH155R	For VLS3P••••R• and VLS3P•••D•. Screw mounting. Recessed selector. 5 mm (0.2 in.) [12].					
VLSH2S5R	For VLS3P•••R• and VLS3P•••D•. Screw mounting. Protruding selector. 5 mm (0.2 in.). [12]					
VLSH2H5R	For VLS3P•••R• and VLS3P016D1–VLS3P040D1. Ring mounting. Protruding selector. □ 5 mm (0.2 in.). [12] [13]					
VLSH2H5RD	For VLS3P•••R•. Ring mounting. Protruding selector with release, defeatable per UL60947-4-1; □ 5 mm (0.2 in.). [12]					
VLSH2H5RL	For VLS3P•••R•, VLS3P063R1, VLS3P016D1–VLS3P040D1. Ring mounting. Low-profile protruding selector, □ 5 mm (0.2 in.).					
VLSH3S7RD	For VLS3P063R2–VLS3P125R2, and VLS8M2. Screw mounting. Pistol grip with release, defeatable per 60947-4-1; □ 7 mm (0.3 in.). IEC IP66. [14]					
VLSH4S5R	For For VLS3P•••R• and VLS3P•••D•. Screw mounting. Protruding selector. 48 mm square. □ 5 mm (0.2 in.). [12]					
Black, rotating						
VLSH1S5B	For VLS3P····R• and VLS3P····D•. Screw mounting. Recessed selector. □ 5 mm (0.2 in.). [12]					
VLSH2S5B	For VLS3P•••R• and VLS3P•••D•. Screw mounting. Protruding selector. □ 5 mm (0.2 in.). [12]					
VLSH2H5B	For VLS3P•••R•, VLS3P063R1, VLS3P016D1–VLS3P040D1. Ring mounting. Protruding selector. □ 5 mm (0.2 in.). [12] [13]					
VLSH2H5BD	For VLS3P•••R•. Ring mounting. Protruding selector with release, defeatable per 60947-4-1.					
VLSH2H5BL	For VLS3P•••R•, VLS3P063R1, VLS3P016D1–VLS3P040D1. Ring mounting. Low profile protruding selector, □ 5 mm (0.2 in.).					
VLSH2H5BPO	For VLS3P•••R•, VLS3P063R1, VLS3P016D1–VLS3P040D1. Ring mounting. Lock On protruding selector, □ 5 mm (0.2 in.).					
VLSH3S7BD	For VLS3P063R2–VLS3P125R2, and VLS8M2. Screw mounting. Pistol grip with release, defeatable per UL60947-4-1; □ 7 mm (0.3 in.). [14]					
VLSH2S5BC	For VLS8C• mechanical interlock mechanism (I-O-II). 5 mm (0.2 in.). [12]					
VLSH4S5B	For For VLS3P R and VLS3P D. Screw mounting. Protruding selector. 5 mm (0.2 in.). [12]					
Accessories for I	Rear Mounting Control For VLSH3S7RD and VLSH3S7BD handles.					
VLSHA7	Adapter, 7 mm (0.3 in.) for VLS3P063R2VLS3P125R2.					





VLSH2S5BC (65 x 65 mm)



Table 8.46: Certifications and Compliance (• = certification obtained)

Catalog number	cULus per UL60947-4-1 / CSA C22.2 n° 60947-4-1-14 UL Listed (File E487906)	cULus per UL98 / CSA C22.2 n° 4 UL Listed (File E487907)				
VLSA11RS/DS	LIL Listed all us File F 470500	_				
VLSA10R1E	OL LISTED, COLUS FILE E478582	_				
VLSA10R2E	004 022.211 14-10	—				
VLS1NR1/D1	•	—				
VLS1NR2/D2	_	•				
VLS1GR1/D1	•	—				
VLS1GR2/D2		•				
VLS8C1/M1	•	—				
VLS8C2/M2	_	•				
VLSH1S5R/B	•	•				
VLSH2S5R/B	•	•				
VLSH2H5R/B	•	•				
VLSH2H5RL	•	•				
VLSH2H5BL	•	•				
VLSH2H5BPO	•	_				
VLSH4S5R/B	•	•				
VLSH2H5RD/BD	•	•				
VLSH3S7RD/BD	—	•				
VLSH2H5BC	•	•				
VLSHA7	—	•				
Compliant with standards: IE	C/EN 60947-1, IEC/EN 60947-3, IEC/EN 609	47-5-1, UL 60947-4-1, UL 98, CSA C22.2.				

Figure 8.1: Transformation of the DIN rail mounting version into the rear mounting version

VLSS...5

VLS3P...R1 +VI S8C 1/

+VLS8M...1

Catalog numbers ending in BD or RD are for rear mounting units only. [11]

- For VLS3P•••R• disconnect switches, separately purchase VLSS shaft extensions. [12]
- Snap-on mounting of VLS3P016–VLS3P040D1 disconnect switches with the handle [13]
- [14] Separately purchase the VLSS+++7 shaft extension and a VLSHA7 handle having a 7 mm (0.3 in.) square section—not required for VLS8M2.

LSH2H5BC

8-16

VLS3P...R2

+VLS8C. 2 +VLS8M

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OPERATING MECHANISMS AND DISCONNECT SWITCHES



VLSH2S5R (65 x 65 mm)



VLSH4S5R (48 x 48 mm)



VLSH4S5B (48 x 48 mm)



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TeSys[™] VLS Accessories

Refer to Catalog 9400CT1601

Table 8.47: Operating Specifications

Handle mounting		ring or screw
Mounting handle interaxis (compatible with the pre-existing drillings of the	VLSH1S5R/B VLSH2S5R/B VLSH2S5BC	36 x 36 mm (1.4 x 1.4 in.) or 48 x 48 mm (1.9 x 1.9 in.)
most common types in the marketplace)	VLSH3S7RD/BD	36 x 36 mm (1.4 x1.4 in.)
Padlocks		1–3 for all handles Ø4–8 mm (Ø0.2–0.3 in.)
	Mounting ring types	2.3 N•m (20.4 lb-in)
Tightoning torquo	VLS8M1	0.8 N•m (7 lb-in)
rightening torque	VLSH3S7RD/BD	1.5 N•m (13.3 lb-in)
	All others	1 N•m (9 lb-in)
Degree of protection		IEC / EN: IP65 for all except VLSH3S7RD/BD, which are IP66. UL / CSA: VLSH1S5R/B and VLSH3S7RD/BD are Type 1, 12, 3R, 4, and 4X outdoor use with all VLS switch models. VLSH2S5R/B, VLSH2H5R/B, VLSH2H5R/BD and VLSH2S5BC are Types 1, 12, 3R, 4, and 4X outdoor use with VLS3P016R1/D1-VLS3P040R1/D1 and VLS3P063R1 models, otherwise Type 1 only.



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Figure 8.2: Changing the DIN rail mounting version for rear mounting

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Refer to Catalog 9400CT1601

Shaft Extensions, Terminal Covers, Fuse Holders, and Fuse Blocks

Table 8.48: Selection—Shaft Extensions, Terminal Covers, Fuse Holders, and Fuse Blocks

Catalog number	Specifications	Qty per package	Weight, kg (lb)
Shaft extens interlocking of	ion for rear-mounting handles VLSH1S5R–VLSH2H5RD, VLSH1S5B–VLSH2H56 changeover type VLS8C1, VLS8C2; and mechanical disconnect switch system VL	BD, VLSH28 JS8M1	S5BC;
VLSS1505	150 mm long; □ 5 mm (0.2 in.)	1	0.032 (0.07)
VLSS3005	300 mm long; □ 5 mm (0.2 in.)	1	0.068 (0.15)
VLSS5005	500 mm long; □ 5 mm (0.2 in.)	1	0.090 (0.20)
Shaft extens	ion for rear-mounting handles VLSH3S7RD/BD, and mechanical coupling system	VLS8M2	
VLSS1507	150 mm long; 🗆 7 mm (0.3 in.)	1	0.090 (0.20)
VLSS3007	300 mm long; □ 7 mm (0.3 in.)	1	0.160 (0.35)
VLSS5007	500 mm long; □ 7 mm (0.3 in,)	1	0.250 (0.55)
VLSSS7	Support for □ 7 mm shaft	1	0.160 (0.35)
Set of 2 one-	pole terminal covers for fourth pole		
VLSC1P1	For VLS1P040R1S, VLS1P040D1S, VLS1P040R1E, VLS1P040D1E, VLS1P063R1E, VLS1P063R1S	1	0.009 (0.02)
VLSC1P2	For VLS1P063R2S–VLS1P125R2S, VLS1P063D2S–VLS1P125D2S, VLS1P125R2E, VLS1P125D2E	1	0.012 (0.03)
Set of 2 three	e-pole terminal covers		
VLSC3P1	For VLS3P016R1–VLS3P040R1, VLS3P063R1, VLS3P016D1–VLS3P040D1	1	0.018 (0.04)
VLSC3P2	For VLS3P063R2-VLS3P125R2, VLS3P063D2-VLS3P125D2	1	0.030 (0.07)
Fuse holder/	block for disconnect switches	_	_
VLSFH1UL	For VLS3P016R1–VLS3P032R1 (suitable for Class CC fuses)	1	0.135

Table 8.49: Operational Specifications of Fuse Holder

IEC rated insulation voltage, Ui	1000 V				
IEC rated impulse withstand voltage, Uimp	8 kV				
The fuse holder/block connects directly to the disconnect switches.					
 Access to fuses only when the discort 	nnect switches are in Off position.				



Table 8.50: Certifications and Compliance (• = certification obtained)

Catalog number	cULus per UL60947-4-1 / CSA C22.2 n° 60947-4-1-14 UL Listed (File E487906)	cULus per UL98 / CSA C22.2 n° 4 UL Listed (File E487907)
VLSS1505, VLSS3005, VLSS5005	•	—
VLSS1507, VLSS3007	•	—
VLSC1P1, VLSC3P1	-	-
VLSC1P2, VLSC3P2	-	-
VLSFH1UL	•	_
Compliant with standards: IEC/EN 60947-1, IEC/	EN 60947-3, UL60947-4-1, UL98, CSA C22.2.	

(a) (b) (a)

VLSC

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OPERATING MECHANISMS AND DISCONNECT SWITCHES



VLSFH1UL

Dimensions: 16–125 A Disconnect Switches



Refer to Catalog 9400CT1601

Table 8.51: DIN Rail Mounting Disconnect Switches

VLS3P016R1-VLS3P040R1, VLS3P063R1



Table 8.52: Door Mounting Disconnect Switches

VLS3P016D1-VLS3P040D1 36 (1.42) - 52.7 (2.07) -19.9 (0.78) E 78 (3.07)-5.1 пн 557 Г

Table 8.53: Add-on Blocks and Accessories For VLS3P016R1-VLS3P040R1, VLS3P063R1



For VLS3P063R2-VLS3P125R2



Mechanical interlock VLS8C1 and mechanical coupling system VLS8M1



VLS3P063R2-VLS3P125R2 -70 (2.75) 5 (0.20)· 70 (2.75) 43.9 (1.73) Γ. Ħ (3.94). (3.70) 8 2 đ 14.4 (0.57)

VLS3P063D2-VLS3P125D2



Dim. = mm(in.)

UL 60947-4-1 and UL 98 Disconnect

Dim. = mm(in.)

Fourth pole VLS1P040R1E/R1S, VLS1P063R1E/R1S VLS1NR1 neutral, VLS1GR1 ground terminals



VLS3P016R1, VLS3P025R1, VLS3P032R1, VLS3P040R1, VLS3P063R1, VLSA11RS

Fourth pole VLS1P125R2E, VLS1P063R2S–VLS1P125R2S VLS1NR2 neutral, VLS1GR2 ground terminals



VLS3P063R2, VLS3P080R2, VLS3P100R2, VLS3P125R2, VLS3P063R25, VLS3P080R25, VLS1P063R25, VLS1P100R25, VLS1P125R25, VLS1P125R2



Dim. = mm (in.)

Dim. = mm(in.)

Dim. = mm (in.)

VLS8C2 - VLS8M2

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Switches

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UL 60947-4-1 and UL 98 Disconnect **Switches**

Dimensions: 16–125 A Disconnect





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Dimensions: 16–125 A Disconnect Switches

Refer to Catalog 9400CT1601

Shaft extensions for rear-mounting handles (for Dimension A, see Table 8.55)

VLSS





Table 8.55: Dimension A for VLSS Shaft Extensions

Dimension A for VLSS Shaft Extensions (see below)									
Extension	Loweth	Maximum Dimension A, mm (in.) Type of handle							
	mm (in.)								
		VLSH1S5•	VLSH2S5•	VLSH2H5R	VLSH2H5RD	VLSH2S5BC			
VLSS1505	150 (5.90)	194 (7.64)	192 (7.56)	197 (7.75)	211 (8.31)	192 (7.56)			
VLSS3005	300 (11.81)	344 (13.54)	342 (13.46)	347 (13.66)	361 (14.21)	342 (13.46)			
VLSS5005	500 (19.68)	544 (21.42)	542 (21.34)	547 (21.53)	561 (22.09)	542 (21.34)			

VLSS used with VLS8C1, VLS8C2, and VLS8M1

VLSS ···· 7 used with VLSHA7 and VLSH3S7RD/BD





Dim. = mm (in.)

Table 8.56: Dimension A1 for VLSS used with VLS8C1, VLS8C2, and VLS8M1

Extension (5 mm)	Length	A1 maximum, mm (in.)							
		Used with VLS8M1	Used with VLS8C1/VLS8C2						
	mm (in.)	Type of handle							
		VLSH1S5•	VLSH2S5•	VLSH2H5R	VLSH2H5RD	VLSH2S5BC			
VLSS1505	150 (5.90)	211 (8.31)	209 (8.23)	214 (8.42)	228 (8.98)	209 (8.23)			
VLSS3005	300 (11.81)	361 (14.21)	359 (14.13)	364 (14.33)	378 (14.88)	359 (14.13)			
VLSS5005	500 (19.68)	561(22.09)	559 (22.01)	564 (22.20)	578 (22.75)	559 (22.01)			



LVLS3P063R2-125R2



VLSS•••7 used with VLS8M2 and VLSH3S7RD/BD handle



Dim. = mm (in.)

	Longth	B	B1				
Extension (7 mm)	Length	with VLSH3S7RD/BD handle					
	mm (in.)	mm (in.)	mm (in.)				
VLSS1507	176 (6.93)	118–229 (4.64–9.01)	119–205 (4.68–8.07)				
VLSS2007	226 (8.90)	118–279 (4.64–10.99)	119–255 (4.68–10.03)				
VLSS3007	326 (12.83)	118–379 (4.64–14.92)	119–355 (4.68–13.98)				

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UL 60947-4-1 and UL 98 Disconnect **Switches**

Wiring Diagrams



75.2 (2.96)

Fuse Holder Dimensions

80.1 (3.15)

VLSFH1UL

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52.5 (2.07)

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Refer to Catalog 9400CT1601



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Dim. = mm (in.)

Table 8.58: Wiring Diagrams-VLS Disconnect Switches (16-125 A)

Line 7 L4

7<u>7</u>8

τ. 7 L4

8 T4

Load

Three-pole disconnectors



Fourth pole add-on VLS1P ······S

23 -(0.90)



Add-on Blocks and Accessories Auxiliary contacts





58



Earth/Ground terminal VLS1GR1/D1-VLS1GR2/ D2 PE ÷ ₽Ε

Fuse holder VLSFH1



Table 8.57: Terminal Cover and Fuse Holder Dimensions 12-(0.47)

Schneider Electric

Technical Specifications, VLS Range, 16-

016

040

025

040

032

040

040

040

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Contact Specifications

Model

125 A Refer to Catalog 9400CT1601

3-pole: VLS3P... 4th pole: VLS1P

Normal

Admissible

Vertical

Screw or 35 mm DIN rail (IEC/EN 60715)

Any

100

100

080

080

063R1

063R1S

063R2

063R2S

OPERATING MECHANISMS AND DISCONNECT SWITCHES

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125.

125.

IEC conventional free air thernal current, Ith	(≤40 °C)	А	16	25	32	40	63	63	80	100	125
IEC rated insulation voltage, Ui		V	1000								
IEC rated impulse withstand voltage, Uimp		kV	8								
IEC rated operational current, le											
· · · · · ·	400 V	А	16	25	32	40	63	63	80	100	125
AC21A	500 V	А	16	25	32	40	63	63	80	100	125
	690 V	Α	16	25	32	40	63	63	80	100	125
	400 V	А	16	25	32	40	45	63	80	100	125
AC22A	500 V	А	16	25	32	40	45	63	80	100	125
	690 V	А	16	25	32	40	45	63	80	100	125
	400 V	А	16	25	32	40	45	63	80	100	125
AC23A	500 V	А	16	25	25	25	25	63	63	80	100
	690 V	А	16	25	25	25	25	47	47	47	47
IEC rated operational power	1	r	T	P	r	r	T	r	T	r	-
AC23A	400 V	kW	7.5	11	15	18.5	22	30	45	55	55
	690 V	kW	11	22	22	22	22	45	45	45	45
IEC reactive power for capacitor control 400	V	kvar	7.5	10	12.5	15	15	25	30	40	50
IEC protection against short-circuit											
Rated short-time withstand current (1 s),	lcw	A rms	800					2500			
Rated conditional short-circuit current		kA rms	50								
With fuse class gG		Α	16	25	32	40	63	63	80	100	125
IEC making capacity (AC23A 400 V)		А	400		•	•	450	1250		•	
IEC breaking capacity (AC23A 400 V)		Δ	320				360	1000			
Mechanical life (depending on the application	n)	cycles	100,000					30,000			
Electrical life (IEC AC21A)	.,	cycles	100,000				15 000	30,000			
		cycles					15,000				
UL/CSA general use at 600 V		A	16	25	32	40	50	60	100	100	100
UL/CSA short-circuit rating at 600 V		kA	5	5	5	5	5	50	50	50	50
UL/CSA fuse class/max rating at 600 V		Type/A	RK5/20	RK5/30	RK5/35	RK5/45	RK5/45	-/100	-/100	-/100	-/100
UL/CSA Hp ratings				-							-
Single phase	120 V	hp	1	1.5	2	2	2	3	3	5	7.5
	240 V	hp	2	3	5	5	7.5	7.5	10	10	10
	200–208 V	hp	5	7.5	10	10	10	20	25	30	25
	240 V	hp	5	7.5	10	15	15	20	30	30	30
Inree phase	480 V	hp	10	15	20	20	30	40	40	50	50
	600 V	hn	10	20	20	25	30	40	40	60	40
Terminals	0001	1.14		20	20	20		10			
	_		Lug clamp								
L BE	Туре		IEC/EN 609	47-1 designa	tion: Pillar ter	minal.					
	А		5.6 mm (0.2	2 in.)				12.4 mm (0.	.49 in.)		
	B		6.5 mm (0.2	6 in.)				10.4 mm (0.	.41 in.)		
T T	Screw		M4	,				M8	,		
	Tool		Phillins 2					Metric Allen	kev 4		
	1001	Nem	18.2					5.6			
Tightening torque		lb-in	16-18					45-54			
		mm ²	0.75-16					4-50			
Conductor section (solid/stranded)		AWG	18-6					12–1			
Ambient Conditions											
	Operating	°C	-25 to +55								
Iemperature	Storage	°C	-40 to +70								
	-										

Mounting position

Mounting

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To build a complete GS or LK switch, order the following parts:

LK4 Nonfusible and GS2 Fusible

Handle Assembly

Black Handle, GS2AH150

Disconnect Switches Refer to Catalog 9421CT0301



Lugs if needed



Lugs Kit, GS1AW503

600 A, LK4SU3N

Choose a Switch

Example: LK4SU3N (600 A non-fusible switch) + GS2AE6 (320 mm Style D shaft) + GS2AH150 (black/black, locking) To add auxiliary contacts: For front-mounted contacts order LK4AD30N (front-mounted auxiliary contact holder) + GS2AM110.

Shaft 320 mm, GS2AE6

Shaft

LK4 Nonfusible Disconnect Switches

LK4 and GS2 Disconnect Switches

NOTE: Switches in the shaded area are now available as kits. See Table 8.61.

Table 8.60: LK Nonfusible IEC Style Disconnect Switches

Pole	Rating	Catalog No.	Maxi	mum Hors	epower R	Short Circ Rating,	Shaft Style		
	(~)		240 V	480 V	600 V	250 Vdc	Fuse	SCCR kA	Otyle
NOTE: Switches in the shaded area are now available as kits.									
3	30	LK4DU3CN [1]	10	20	30		J	100	AL
3	60	LK4GU3CN [1]	20	40	50	_	J	100	AL
3	100	LK4JU3CN [1]	20	50	50	N/A	J	100	AL
3	100	LK4JU3N	30	75	100	15	J	200	В
3	200	LK4MU3N	75	150	200	15	J	200	В
3	400	LK4QU3N	125	250	350	50	J	200	В
3	600	LK4SU3N	200	400	350	50	J	200	D
3	800	LK4TU3N	200	500	500		L	100	D
3	1000	LK4UU3N	200	500	500	-	L	100	D
3	1200	LK4WU3N	200	500	500	_	L	100	D

Table 8.61: New! Kits for Compact Switches LK4: 30, 60 and 100 A

Pating				Pieces Included [2]		
(A)	Number	Compact Switch	400 mm Shaft	Handle Color / NEMA Rating	Handle	Guide Cone
30 ^	LK4DUKB1	LK4DU3CN	LK4AE41CN	Black / NEMA 1, 12, 3R	LK4AH0110CN	GS2AEH12
	LK4DUKB4	LK4DU3CN	LK4AE41CN	Black / NEMA 4, 4X	LK4AH0410CN	GS2AEH12
30 A	LK4DUKR1	LK4DU3CN	LK4AE41CN	Red / NEMA 1, 12, 3R	LK4AH0120CN	GS2AEH12
	LK4DUKR4	LK4DU3CN	LK4AE41CN	Red / NEMA 4, 4X	LK4AH0420CN	GS2AEH12
	LK4GUKB1	LK4GU3CN	LK4AE41CN	Black / NEMA 1, 12, 3R	LK4AH0110CN	GS2AEH12
60 4	LK4GUKB4	LK4GU3CN	LK4AE41CN	Black / NEMA 4, 4X	LK4AH0410CN	GS2AEH12
00 A	LK4GUKR1	LK4GU3CN	LK4AE41CN	Red / NEMA 1, 12, 3R	LK4AH0120CN	GS2AEH12
	LK4GUKR4	LK4GU3CN	LK4AE41CN	Red / NEMA 4, 4X	LK4AH0420CN	GS2AEH12
	LK4JUKB1	LK4JU3CN	LK4AE41CN	Black / NEMA 1, 12, 3R	LK4AH0110CN	GS2AEH12
100 4	LK4JUKB4	LK4JU3CN	LK4AE41CN	Black / NEMA 4, 4X	LK4AH0410CN	GS2AEH12
100 A	LK4JUKR1	LK4JU3CN	LK4AE41CN	Red / NEMA 1, 12, 3R	LK4AH0120CN	GS2AEH12
	LK4JUKR4	LK4JU3CN	LK4AE41CN	Red / NEMA 4, 4X	LK4AH0420CN	GS2AEH12



30-100 A Compact NOTE: The kit also includes rod LK4AE41CN.

 $\mathbf{\infty}$ Table 8.59: Building a Complete GS or LK Switch

100-400 A

No longer sold as components. Purchase Kits containing Switch, Handle, Shaft, and Guide Cone as listed in Table 8.61. [1]

[2] Components are NOT sold separately. Only 400 mm shaft can be purchase separately.

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LK4 Nonfusible and GS2 Fusible **Disconnect Switches** Refer to Catalog 9421CT0301

UL 98 IEC Style Disconnect Switches







NOTE: Switches in the shaded area are now available as kits. See Table 8.61.

Table 8.62: Handles and Shafts for LK Switches

Deting		Handlo		Sh	aft	Shaft	Guide Cone/31	Chaff	Support	
Kating (A)		Hallule		12.6 in. / 320 mm	15.7 in. / 400 mm	19.6 in. / 500 mm	Guide Gone[3]	Style	Bracket	
(~)	Catalog No.	Туре	Color	Catalog No.	Catalog No.	Catalog No.	Catalog No.	Otyle	Catalog No.	
NOTE: Sw	vitches in the sha	ded area are no	ow available a	as kits.						
30–100	LK4AH110CN[4]	1, 3R, 12	Black							
30–100	LK4AH1120CN[4]	1, 3R, 12	Red/Yellow				000451140	A1		
30–100	LK4AH410CN[4]	4, 4X	Black	LK4AE IZGN	LK4AE12GN	_	_	GSZAEHIZ	AL	_
30–100	LK4AH420CN [4]	4, 4X	Red/Yellow					1		
100-400	GS2AH130	1, 3R, 12	Black	000450				1		
100–400	GS2AH140	1, 3R, 12	Red		000450	0004501	0004500	00045412	P	CRAAERD
100–400	GS2AH430	4, 4X	Black	GOZAEZ	GOZAEZI	G3ZAE23	GSZAEHTZ	Б	GOZAEOD	
100–400	GS2AH440	4, 4X	Red/Yellow							
600	GS2AH150	1, 3R, 4, 4X, 12	Black							
600	GS2AH160	1, 3R, 4, 4X, 12	Red/Yellow	000456	0004564		000451140	D		
800-1200	GS2AH170	1, 3R, 4, 4X, 12	Black	GSZAE0	G52AE01	-	GSZAEHIZ	D	_	
800-1200	GS2AH180	1, 3R, 4, 4X, 12	Red/Yellow							

Table 8.63: Auxiliary Contacts for LK Switches

	-		
Switch Amperes	Catalog No.	Description	
30–60	MDSAN11	Auxiliary Contact 1 N.O. and 1 N.C.	
30–60	MDSAN20	Auxiliary Contact 2 N.O.	
100–400	LK4AD10N	Auxiliary Contact 1 N.O. and 1 N.C.	
100-400	LK4AD20N	Auxiliary Contact 2 N.O.	
600-1200	LK4AD30N	Auxiliary Contact Holder	
600-1200	GS2AM110	Auxiliary Contact 1 N.O.	
600-1200	GS2AM101	Auxiliary Contact 1 N.C.	

Table 8.64: Terminal Shrouds for LK Switches

Switch Amperes	Catalog No.	Description
30–60	LK4AP3CN	Shroud Top and Bottom, 3-Pole
100-200	LK4AP33TN	Shroud Top LK4, 3-Pole, 100/200 A
100-200	LK4AP33BN	Shroud Bottom LK4, 3-Pole, 100/200 A
400	LK4AP53TN	Shroud Top LK4, 3-Pole, 400 A
400	LK4AP53BN	Shroud Bottom LK4, 3-Pole, 400 A
600 [5]	LK4AP63N	Shroud Bottom LK4, 3-Pole, 600 A
800-1200 [5]	LK4AP83N	Shroud Bottom LK4, 3-Pole, 800–1200 A

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[3] Optional on shafts for LK4DU3CN, LK4GU3CN and LK4JU3CN.

[4] [5] No longer sold as components. Purchase Kits containing Switch, Handle, Shaft, and Guide Cone as listed in Table 8.61.

600-1200 A standard with top shroud.

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LK4 Nonfusible and GS2 Fusible

Disconnect Switches Refer to Catalog 9421CT0301



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GS2GU3N



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DISCONNECT SWITCHE

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Shorting Links

GS2 Fusible Disconnect Switches Table 8.65: GS Fusible IEC Style Disconnect Switches

Pole Rating		Catalog No.	Maximum Horsepower Rating				Short Circ Rating,	Shaft	
	(~)		240 V	480 V	600 V	250 Vdc	Fuse	SCCR kA	Otyle
3	30	GS1DDU3	7.5	15	20	5	CC	100	AG
3	30	GS1DU3	7.5	15	20	5	J	100	AG
3	30	GS2EEU3	7.5	15	20	5	CC	100	В
3	30	GS2EU3N	7.5	15	20	5	J	100	В
3	60	GS2GU3N	15	30	50	10	J	100	В
3	100	GS2JU3N	30	60	75	20	J	200	В
3	200	GS2MU3N	60	125	150	40	J	200	В
3	400	GS2QU3N	125	250	350	50	J	200	В
3	600	GS2SU3	200	500	500	_	J	200	С
3	800	GS2TU3	200	500	500		J	200	С

Table 8.66: Handles and Shafts for GS Switches [6]

Rating	Handle			Shaft: 12.6 in. (320 mm)	Shaft: 15.7 in. (400 mm)	Shaft: 19.7 in. (500 mm)	Shaft Guide	Shaft	Support Bracket
(1)	Catalog No.	Туре	Color	Catalog No.	Catalog No.	Catalog No.	Catalog No.	Style	[7]
30–60	GS2AH110	1, 3R, 12	Black						
30–60	GS2AH120	1, 3R, 12	Red/ Yellow	GS2AE8	S2AE8 GS2AE81	Ι	GS2AEH12	AG	-
30–60	GS2AH410	4, 4X	Black						
30–60	GS2AH420	4, 4X	Red/ Yellow						
30–400	GS2AH130	1, 3R, 12	Black	ck d/ ow ck d/ ow		GS2AE23	GS2AEH12	в	GS2AESB
30–400	GS2AH140	1, 3R, 12	Red/ Yellow		GS2AE21				
30-400	GS2AH430	4, 4X	Black						
30–400	GS2AH440	4, 4X	Red/ Yellow						
600- 800	GS2AH150	1, 3R, 4, 4X, 12	Black	000455	0004554	GS2AE53	GS2AEH12	с	
600- 800	GS2AH160	1, 3R, 4, 4X, 12	Red/ Yellow	G32AE5	G52AE51				-

NOTE: Hole adapter kit for GS1 to GS2 Handles: GS2AH100TO200.

Table 8.67: Auxiliary Contacts for GS Switches [8]

Switch Amperes	Catalog No.	Description
30-800	GS1AM110	Auxiliary Contact, 1 N.O.
30-800	GS1AM101	Auxiliary Contact, 1 N.C.
30	GS1AD10	Auxiliary Contact Holder

Table 8.68: Shorting Links

For use on:	Shorting Links per Kit	Catalog No.
GS2, 60 A	3	GS1AU203
GS2, 100 A	3	GS1AU303
GS2, 200 A	3	GS1AU403
GS2, 400 A	3	GS1AU503
GS2, 600–800 A	3	GS1AU803

Table 8.69: NFPA79 Kit

For Use With:	Description	Kit Part Number
GS2Q3N	NFPA 79 Internal Handle Kit 400 A Switch Shaft	GS2AD040N
GS2GU3N, GS2GLU3N, GS2JU3N, GS2JLU3N	NFPA 79 Internal Handle Kit 60–200 A Switch Shaft	GS2AD030N
GS1DDU3, GS1DU3	NFPA 79 Internal Handle Kit for 5 mm Shafts	GS1AD010

Table 8.70: Terminal Shrouds for GS Switches, Line or Load [9]

Switch Amperes	Catalog No.	Description
30–100	_	Standard on product
200	GS2AP43	GS2, 3-Pole, 200 A
400	GS2AP53	GS2, 3-Pole, 400 A
600-800	GS2AP73	GS2, 3-Pole, 600–800 A

GS2AH100TO200-GS1 to GS2 Handle Adapter if using GS1 holes. [6]

- [7] [8] [9] Not for use with flange disconnects.
- GS1DU3 and GS1DDU3 switches allow up to 4 auxiliary contacts without adding contact holder GS1AD10. For more than 4 contacts, GS1AD10 is required.
- Order one terminal shroud per side. For example, order one terminal shroud for either the line side or load side; order two terminal shrouds for both the line side and load side.



Accessories, LK4 Nonfusible and GS2 Fusible

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Refer to Catalog 9421CT0301

Flange Handle Cable Operator Kit



Terminal Lugs

Cable Operator Kits for GS2 Switches

Table 8.71: Cable Operator Kits for GS2 Switches [10] [11] [12]

Catalog No.	Description
200 A and Below	
GS2AH36F	36 in. Cable Operator Kits for GS2 Switches, 200 A and Below
GS2AH60F	60 in. Cable Operator Kits for GS2 Switches, 200 A and Below
GS2AH120F	120 in. Cable Operator Kits for GS2 Switches, 200 A and Below
GS2AH144F	144 in. Cable Operator Kits for GS2 Switches, 200 A and Below
GS2AH180F	180 in. Cable Operator Kits for GS2 Switches, 200 A and Below
400 A	
GS2AH460F	60 in. Cable Operator Kits for GS2 Switches, 400 A
GS2AH4120F	120 in. Cable Operator Kits for GS2 Switches, 400 A
GS2AH4144F	144 in. Cable Operator Kits for GS2 Switches, 400 A
GS2AH4180F	180 in. Cable Operator Kits for GS2 Switches, 400 A

Table 8.72: Handles for use with Cable Operator Kits [12]

Catalog No.	NEMA Type Enclosure	Type of Handle
9422A1	1, 3, 3R, 4, (Sheet Steel)	6 in.
9422A2	4, 4X (Stainless)	6 in.
9422A3	1, 3, 3R, 4, (Sheet Steel)	4 in.
9422A4	4, 4X (Stainless)	4 in.

Accessories

Table 8.73: Terminal Lugs

For Use On:	Rating	No. of Wires per Lug	No. of Lugs per Terminal	Lug Size (AWG)	Wire Type	Lugs per Kit	Lug Kit Catalog Number
LK4DU3CN	30	1	1	#12-2/0	Cu	_	Standard
LK4GU3CN	60	1	1	#12-2/0	Cu	_	Standard
LK4JU3N	100	1	1	6–300 kcmil	Cu/Al	6	GS1AW403
LK4MU3N	200	1	1	6–300 kcmil	Cu/Al	6	GS1AW403
		2	1	350 MCM6	Cu/Al	6	GS1AW603
LK4QU3N	400	1	1	600 MCM-4	Cu/Al	6	GS1AW606
		2		250 MCM—1/0	0 (4)	<u>^</u>	004414/500
LK4SU3N	600	2	1	2 x 2–600 kcmil	Cu/Al	6	GS1AW503
LK4TU3N	800	2	2	2 x 2–600 kcmil	Cu/Al	12	GS1AW903
LK4UU3N	1000	2	2	2 x 2–600 kcmil	Cu/Al	12	GS1AW903
LK4WU3N	1200	2	2	2 x 2–600 kcmil	Cu/Al	12	GS1AW903
GS1DDU3	30	1	1	#14#10	Cu	—	Standard
GS1DU3	30	1	1	#14#10	Cu		Standard
GS2EEU3	30	1	1	#14_#10	Cu		Standard
GS2EU3N	30	1	1	#14#6	Cu		Standard
GS2GU3N	60	1	1	#10#6	Cu		Standard
GS2JU3N	100	1	1	#12#1	Cu		Standard
GS2MU3N	200	1	1	6–300 kcmil	Cu/Al	6	GS1AW403
		2	1	350 MCM6	Cu/Al	6	GS1AW603
GS2QU3N	400	1	1	600 MCM-4 250 MCM-1/0	Cu/Al	6	GS1AW606
GS2SU3	600	2	1	2 x 2–600 kcmil	Cu/Al	6	GS1AW503
GS2TU3	800	2	1	2 x 2–600 kcmil	Cu/Al	6	GS1AW503

Table 8.74: Power Distribution Lugs GS1 or GS2 Only

For Use On:	Rating	No. of Wires per Lug	Lug Size (AWG)	Wire Type	Lugs per Kit	Lug Kit Catalog No.
GS1JU3	100	6	#14-#6	Cu	3	GS1AW306 [13]
GS2MU3N	200	12	#14-#4	Cu	3	GS1AW406
GS2QU3N	400	12	#14-#4	Cu	3	GS1AW406
GS2MU3N	200	6	#12-2/0	Cu	3	GS1AW506
GS2QU3N	400	6	#12-2/0	Cu	3	GS1AW506

Does not include handle. For handle, see Table 8.72.

[10] Not compatible with GS2EEU3.. [11]

[12] A 400 A cable operator kit uses either 9422AP1 or AP2 handle.

[13] Cannot be used on GS2JU3N.

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Handle Part No.

LK4AH110CN LK4AH120CN LK4AH410CN LK4AH420CN

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LK4DU3CN and LK4GU3CN, 30–100 A Compact Nonfusible **Disconnect Switches**





Handle for 30–100 A Compact Nonfusible Disconnect Switches



LK4JU3N / LK4MU3N / LK4QU3N, 100-400 A Nonfusible **Disconnect Switches—Dimensions**





GS2AH130 GS2AH140 GS2AH430 GS2AH440

Handle Part No.

.11



Rating (A)	Dimensions = in. (mm)								
Rating (A)	А	В	С	D	E	F			
100-200	3.72 (94.6)	10.1 (256)	7.09 (1.80)	1.97 (50)	6.3 (160)	6.3 (160)			
400	4.92 (128)	16 (406)	9.05 (230)	2.56 (65)	8.26 (210)	10.2 (260)			

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8-28



Dimensions, LK4 Nonfusible and GS2 Fusible Refer to Catalog 9421CT0301

LK4SU3N, 600 A Nonfusible Disconnect Switches—Dimensions





ERATING MECHANISMS AND DISCONNECT SWITCHES

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Rating	Dimensions = in. (mm)									
(A)	AC	F	Н	J	М	N	N1	AA	Z	
600	18.12 (460)	11 (280)	5.5 (140)	5.0 (127.5)	10.03 (255)	6.88 (175)	2.34 (59.5)	12.6 (320)	1.85 (47)	

Handle for 600 and 800 A Fusible Disconnect Switches





Rating (A)		Dimensions = in. (mm)								
	AC	F	H	J	М	N	N1	Z		
800-1200	18.12 (460)	14.64 (372)	5.5 (140)	6.83 (173.5)	13.66 (347)	6.88 (175)	2.34 (59.5)	1.85 (47)		

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Handle Part No.

GS2AH170 GS2AH180

Dimensions: ·

in.

mm

Dimensions, LK4 Nonfusible and GS2



Ø 1.46 Ø 37

Fusible Refer to Catalog 9421CT0301

Handle for 800–1200 A Fusible Disconnect Switches



GS1DDU3, 30 A Fusible Disconnect Switches, Class CC Fuses and GS1DU3, 30 A Fusible Disconnect Switches, Class J Fuses-**Dimensions**





Pating (A)				Dimensions	s = in. (mm)			
vanng (A)	F	H	J	J1	N	N1	AA	Z
30 / CC	3.78 (96)	3.28 (83.5)	1.47 (37.5)	0.59 (15)	3.13 (79.5)	1 (25.5)	4.56 (116)	1.12 (28.5)
30 / J	4.13 (105)	3.89 (99)	1.47 (37.5)	0.59 (15)	3.13 (79.5)	1 (25.5)	4.56 (116)	1.12 (28.5)

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GS2GU3N, 60 A Fusible Disconnect Switches, Class J Fuses





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Front operation Door drilling Direction of template operation



Side operation Door drilling Direction of template operation





Dimensions, LK4 Nonfusible and GS2 Fusible

Refer to Catalog 9421CT0301

GS2JU3N, 100 A Fusible Disconnect Switches, Class J Fuses

Handle for 100 A, 200 A, and 400 A Fusible Disconnect Switches



Direction of Door drilling operation template



GS2MU3N, 200 A Fusible Disconnect Switches, Class J Fuses



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Flange Mounted and Cable Operated

Dimensions, LK4 Nonfusible and GS2 Fusible



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GS2QU3N, 400 A Fusible Disconnect Switches, Class J Fuses

Refer to Catalog 9421CT0301





GS2SU3, 600 A Fusible Disconnect Switches, Class J Fuses GS2TU3, 800 A Fusible Disconnect Switches, Class J Fuses

9.84 250

6.10

3.12

2.3





Disconnect Switches

The 9422 disconnect switches are the ideal selections for the PV String Combiner Box internal disconnect switch and control panel applications. These switches are designed for variable depth, flange mounting, traditional side mounting and bracket mounting applications providing complete flexibility in the PV string combiner box designs. The switches are compatible with 9422A handle operators and 9423 door mechanisms and are UL 98 recognized (E52369 Vol. 1, Sec. 18) and CSA certified. See page 8-34, page 10.27, and page 29 for dimensional information. 8-37, and page 8-38 for dimensional information.

Table 8.75: 9422 Disconnect Switches, Flange Mounted and Variable Depth

Disconnect Variable			Maximu	m Horse	power R	atings			Fuse Cli (A), I	p Rating Non-	Switch and Operating Mechanism ONLY	Switch Used with Cable Operators ONLY (No Handle	Switch and Operating Mechanism with Handle Mechanism, Overpacked[2]				
Switch Size	Depth (in.)		AC Systems Volts (Motor Volts)		AC Systems Volts (Motor Volts)		v	Vdc		Fuse Vdc Type		Type, For J, K or I	Class H, R Fuses	(No Handle Mechanism)	Mechanism or Cable Operator) [1]	Type A1 Handle	Type A2 Handle
		208 (200)	240 (230)	480 (460)	600 (575)	250	600		250 V	600 V	Cat. No.	Cat. No.	Cat. No.	Cat. No.			
								None	-	I	9422TCN30	9422TCN30C	9422ATCN301	9422ATCN302			
30 A	6.625-18	7.5	7.5	15	20	5	15	H, J,	30		9422TCF30	9422TCF30C	9422ATCF301	9422ATCF302			
								K, R	60	30	9422TCF33	9422TCF33C	9422ATCF331	9422ATCF332			
						10	30	None	-	I	9422TDN60	9422TDN60C	9422ATDN601	9422ATDN602			
60 A	6.625-18	_	15	30	50			H, J,	60	30	9422TDF60	9422TDF60C	9422ATDF601	9422ATDF602			
								K, R	_	60	9422TDF63	9422TDF63C	9422ATDF631	9422ATDF632			
								None	_	_	9422TEN10	9422TEN10C	9422ATEN101	9422ATEN102			
100 A	6.625–18	25	30	60	75	20	50	H, J, K, R	100	100	9422TEF10	9422TEF10C	9422ATEF101	9422ATEF102			
	0.40.40.05							None	_		9422TF1	_	9422ATF11	9422ATF21			
200 A	9.12-19.25	40	60	125	150	40	50	H, J,	200	200	9422TF2	_	9422ATF12	9422ATF22			
	[3]							K, R	_	400	9422TF3 [4]	_	9422ATF13 [4]	9422ATF23 [4]			
400 A Fixed Depth [5]	11.38 (A5 or A6 Handle)	75	405	050	050	50	50	None	_	_	9422TG1 [6] [7]	_	For handle selec	tion, see page 8-			
400 A Variable Depth [5]	15.87–19 (A7 or A8 Handle) [8]	75	125	250	350	50	50	H, J, K, R	400	400	9422TG2 [6] [7]	_	3	4.			



9422TCN30



Bracket Mounted **Disconnect Switch**

The 9422 Bracket Mount Disconnect Switch is designed for combiner boxes and control panel applications. The Bracket Mount Disconnect Switch is shipped with the switch and external handle assembled to a bracket, ready for quick installation. A protective trim plate is provided to prevent any mounting screws from being accessible from the front. The trim plate also provides an attractive installation feature. The switches are fully compatible with the 9423 closing mechanisms.

Table 8.76	9422	Bracket Mounted	Disconnect	Switches

		Maximu	n Horsep	ower Ra	ating			Fuse Clip	Rating	Switch and	
Disconnect Switch Size	AC S	ystems (Motor Vo	lts)	V	dc	Fuse Type	(A), N Interchar Type for J, K, or F	(A), Non- Interchangeable Type for Class H, J, K, or R Fuses Only		
	208 (200)	240 (230)	480 (460)	600 (575)	250	600		250 V	600 V	Cat. No.	
							None			9422BTCN30	
00.4	30 A 7.5 7.5 15 20 5 1		-	45	H, J, K,	30	_	9422BTCF30			
30 A		7.5	15	20	5	15	R	60	30	9422BTCF33	
			J [9]	60	30	9422BTCF32					
		15 15	30	50	10		None	-	_	9422BTDN60	
00 A	15					30	H, J, K,	60	30	9422BTDF60	
60 A							R	_	60	9422BTDF63	
							J [9]	_	60	9422BTDF62	
							None			9422BTEN10	
100 A	25	30	60	75	20	50	H, J, K, R	100	100	9422BTEF10	
							J [9]	100	100	9422BTEF11	
							None	_	_	9422TFB1	
200 A	40	60	125	150	40	50	H, J, K, R	200	200	9422TFB2	
							J [9]	_	400	9422TFB3	

[1] See for ordering information for the cable operator.

[2] Variable depth only - no cable operator. [3] 9422 R2 will extend maximum mounting depth 7 inches, see Table 8.86 for information

- [4] Accommodates Class J fuses only.
- [5] Switches are fixed-depth or adjustable depending on handle selection.
- Commercially available enclosures may not accept 9422TG1 and 2 operating mechanisms. Contact enclosure manufacturer for availability of enclosures for use with these switches. [6]
- [7] Right hand flange mounting only and requires a special enclosure.
- [8] Variable in increments of 0.63 inches
- [9] Space saving design-Type J fuses mounted on the non-fused bracket.

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Flange Mounted and Cable Operated

Accessories, Disconnect Switches

Class 9422 / Refer to Catalog 9420CT9701



Handle Information for 9422 Disconnect Switches

The Handle Mechanism Kit contains all parts needed to mount the handle to the flange of the enclosure. Two flange mounting methods are offered. For right or left hand flange mounting use Types A1–A4 and Types A9–A10 kits. For right-hand mounting only, use Type A5–A8 handles. The type AP1 and AP2 handles are used on the PowerPact[™] M and P operating mechanisms, 9422 RM1 and 9422 CMP. The dimensions are identical to 9422 A1.



Handle Mechanisms

These handle mechanism kits are used with the circuit breaker variable depth and cable operating mechanisms. The kits contain all parts necessary for mounting the handle to the flange of the enclosure. Types A1–A4, A1Y, and AP1 are suitable for right or left-hand flange mounting.

Table 8.77: 9422 Disconnect Switch and Circuit Breaker Handle Mechanisms

Handle Depth (in.)	NEMA Type 1, 3, 3R, 4, 12 Enclosures	NEMA Type 4, 4X Stainless Steel Enclosures		
	Cat. No.	Cat. No.		
4 [10]	9422A3	9422A4		
6 [10]	9422A1	04004.0		
0 [10]	9422A1Y [11]	9422A2		
6 [12]	9422AP1	9422AP2		
10 [13]	9422A9	9422A10		
10	9422AP9	9422AP10		
12 [14] [15]	9422A7	9422A8		

NOTE: See Handle Information, page 8-34 for dimensional information.

Accessories

Class R Fuse Kits

When installed, this kit rejects all fuses except Class R. The kits are available for field installation. With rejection kit and Class R fuses installed, the switch is UL component recognized for use on systems with fault current up to 200,000 RMS symmetrical amperes.

Table 8.78: Class R Fuse Kits

Disconnect Switch	Switch	Fuse C	Class R Kit				
Туре	Туре	250 V	250 V 600 V				
30 A	TCF30	30	_	RFK03			
	TCF33	60	30	RFK06			
00.4	TDF60	60	30	RFK06			
60 A	TDF63	_	60	RFK06H			
100 A	TEF10	100	100	RFK10			
200 4	TF2	200	200	9999SR4			
200 A	TF3	200	200	9999SR4			
400 A	TG2	400	400	9999SR5			



Type A1



Handle Mechanisms NOTE: Type 9422A1Y is a 6-in. yellow base with gray handle and red knob.



Handle Mechanisms

[10] Use with 30–200 A, 9422 switches and all circuit breaker mechanisms.

- [11] Yellow base with gray handle and red knob.
- [12] Use only with 9422RM1, 9422CMP, and PowerPact M and P operating mechanisms.
- [13] Use with Type D2 remote or dual adapter kit.
- [14] Use only with 400 A, 9422TG1 and 9422TG2 disconnect switch.[15] Adjustable depth.

[15] **8-34**

OPERATING MECHANISMS AND DISCONNECT SWITCHES



Electrical Interlocks for Disconnect Switches

Table 0.79. Electrical interiocks								
Disconnect Switch Size	Switch Type	Electrical Interlocks Cat No.						
30 A 60 A 100 A	TCF, TCN, TDF, TDN,	9999TC10 [16]						
	TEF, TEN	9999TC20 [17]						
	DTOE DTON DTDE DTON DTEE DTEN	9999TC11 [16]						
10071	BIGF, BIGN, BIDF, BIDN, BIEF, BIEN	9999TC21 [17]						
000.4	TF, ATF	9999R8 [16]						
200 A	TF, ATF	9999R9 [17]						
100.1	TG	9999R35 [16]						
400 A	TG	9999R36 [17]						

Internal Barrier Kits

Provides an additional barrier that helps prevent accidental contact with live parts. Field-installed transparent barriers do not restrict visual inspection of the switch. Barriers provide IEC529 IP2X "finger safe" protection when door of enclosed disconnect switch is open. A convenient door allows use of test probes without accessing fuses and replacement of fuses without removing barrier. Barrier must be used with the skirt kit to enclose a panel mounted 9422 disconnect.

Table 8.80: Internal Barrier Kits

Disconnect	Barrier	Skirt		
Switch Size	Cat. No.	Cat No.		
30 A	SS06	SS0306SK		
60 A	SS06	SS0306SK		
100 A	SS10	SS10SK		





9422CFT40

Cable Operators for 9422 Disconnect Switches

Table 8.81: Cable Operators for 9422 Disconnect Switches

Switch Type	Cable Me	chanisms [18]	Cable Mechanisms with A1 Handle for NEMA Type 1, 3, 3R, 4, and 12 Enclosures			
	Cable Length (in.)	Cat. No.	Cat. No.			
TON000 TOF000 TOF000	36	9422CFT30	9422CFT31			
TONSUC, TOFSUC, TOFSUC,	48	9422CFT40	—			
TEN10C TEE10C	60	9422CFT50	9422CFT51			
TEITING, TEITING	120	9422CFT10	9422CFT11			

Table 8.82: Class 9422 Replacement / Refrofit Fuse Clip Kits

Disconnect Switch Size	Switch Type	Fuse Type	Fuse Clip	Rating (A)	Line and Load Fuse Clip Kit (includes load base and fuse pullers)		
			250 V	600 V	Cat. No.		
30 A	TCF30	H, K, J, R	30		9422TC30		
	TCN30 TCF33		60	30	9422TC33		
00 A	TDNGO		60	30	9422TC33		
60 A	I DIN60	п, к, ј, к	_	60	9422TD63		

Table 8.83: Lug Data

Disconnect Switch	Wire Size	(Min.–Max.)	Lug Kits, Cu	Lug Kits, Al
Size	Cu	Al	Cat No.	Cat No.
30–60 A	14–2 AWG	10–2 AWG	CL0306F	AL0306F
100 A	10–0 AWG	6–0 AWG	CL10F	AL10F
200 A	6 AWG – 600 kcmil	6 AWG – 600 kcmil	_	_
400 A	4 AWG – 500 kcmil	_	_	_

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[16] 1 N.C. or N.O. Contact depending on wiring.
[17] 2 N.C. or N.O. or 1 N.O. or 1 N.C. Contact depending on wiring.

[18] Purchase handle mechanism separately (9422A1, A2, A3, or A4)

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Flange Mounted and Cable Operated

-1.41-1 41 30 A 60 A = 3.50 100 A = 5.75 1.00 1.00 4.50 0 0 4 B 10.30 1.50* - 4 00 *0.30 for 100 A Class J fuses . - 5.50





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Table 8.84: Dimensions 30, 60, and 100 A Class 9422 Disconnect Switches

Switch Type	Maximum Voltage	Fuse Type	Dimension A	Dimension B
	30 A, 250 V	H, K, R	1.625	
30 A	30 A, 600 V	H, K, R	4.25	
	30 A, 600 V	J	1.625	
	60 A, 250 V	H, K, R	2.25	_
60 A	60 A, 600 V	H, K, R	4.75	
	60 A, 600 V	J	1.625	
	100 A, 250 V	H, K, R		3.25
100 A	100 A, 600 V	H, K, R	_	5.25
	100 A, 600 V	J		3.25





Table 8.85: Dimensions

Туре	A in. (mm)	C in. (mm)	D in. (mm)	Min. Enclosure Depth <i>[19]</i> in. (mm)	E in. (mm) Fusible Device	F in. (mm)
BTCN, BTDN, BTEN	_		6.56 (167)	8.00 (203)		—
BTCF, BTDF, BTEF	9.50 (241)	1.88 (48)	8.56 (217)	10.00 (254)	11.88 (302)	6.38 (162)
TFB1	11.50 (292)	3.88 (99)	9.50 (241)	12.00 (305)		13.19 (335)

NOTE: Back panel support is recommended for Types TFB1, 2, & 3. Other devices may also require support if the flange is not sufficiently rigid.

OPERATING MECHANISMS AND DISCONNECT SWITCHES

Dimensions, Disconnect Switches

Class 9422 / Refer to Catalog 9420CT9701

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able	8.86:	: Dimensions	(in. / mi	m) for	200 A	Di Type TF Disco	mens	sions Swite	ches											
Туре	(A)	Switch Size Fuse Clips	Α	в	с	D [20]	Е	F	G	н	J	к	L	м	N	Р	Q	R	s	т
TF1	200	None	13.33 339	9.38 238	1.64 42	9.12–19.25 232–489	2.33 59	8.00 203	—	-	—	9.44 240	6.50 165	9.53 242	—	_	—	3.14 80	1.03 26	0.75 19
TF2	200	Class J 200 A 600 V	13.33 339	9.38 238	1.64 42	9.12-19.25 232-489	2.33 59	8.00 203	0.09 3	_	2.77 70	9.44 240	6.50 165	_	14.11 358	_	9.63 245	3.14 80	1.03 26	0.75 19
TF2	200	Class H, K, R 200 A 250 V	13.33 339	9.38 238	1.64 42	9.12–19.25 232–489	2.33 59	8.00 203	0.09 3	_	4.14 105	9.44 240	6.50 165	_	15.48 393	_	9.63 245	3.14 80	1.03 26	0.75 19
TF2	200	Class H, K, R 200 A 600 V	13.33 339	9.38 238	1.64 42	9.12–19.25 232–489	2.33 59	8.00 203	0.09 3	_	6.64 169	9.44 240	6.50 165	_	17.98 457	_	9.63 245	3.14 80	1.03 26	0.75 19
TF3	200	Class J	13.33 330	9.38 238	1.64	9.12-19.25 232-489	2.33	8.00 203	0.09	_	2.77 70	9.44 240	6.50 165	9.53 242	18.53	_	9.63 245	3.14 80	1.03 26	0.75



[20] The dimensions shown may be extended 7 in. by using 9422R2 (two required per switch).

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Dimensions, Disconnect Switches

Class 9422 / Refer to Catalog 9420CT9701



Disconnect Switches—400 A Type TG

Outline Dimensions and General Location 400 A Disconnect Switches Nonfusible and Non-Interchangeable Fuse Clip Type Fusible Switches

Table 8.87: Handle Mechanism—Types A7 and A8









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Door Mounted Class 9421 / Refer to Catalog 9420CT9701



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9421 Type L Circuit Breaker Operating Mechanism

Type L Circuit Breaker Mechanisms

Type L door-mounted, variable depth operating mechanisms feature heavy duty, all metal construction with trip indication. All mechanisms can be padlocked in the Off Off with up to three padlocks, which also locks the enclosure when the door is closed. (The 3 in. handle accepts one padlock.) Complete kits are rated for NEMA 1, 3R, and 12 enclosures. They include a handle assembly, operating mechanism, and shaft assembly.

Table 8.89: Complete Kits

Complet Does Not Include	te Kit Circuit B	reaker	Includes Operating Mechanism and Handle						
Use W	lith		Standard 6 in. Handle				Short 3 in. Handle		
ose min			Standard	I Shaft Kit	Long S	shaft Kit	Long S	Shaft Kit	
Circuit Breaker or Interrupter Type	No. of Poles	Frame Size (A)	Cat. No.	Mounting Depth [1]	Cat. No.	Mounting Depth [1]	Cat. No.	Mounting Depth [1]	
PowerPact [™] B	2–3	125	9421LB1	5.50– 10.75	9421LB4	5.50– 21.38	9421LB3	5.50– 21.38	
PowerPact H and J	2–3	250	9421LJ1	5.50– 10.75	9421LJ4	5.50– 21.38	9421LJ3	5.50- 21.38	
PowerPact L	2–3	600	9421LD1	7.25– 12.06	9421LD4	7.25– 22.63	3 in. handle	es are not ded for use	
PowerPact M and P [2]	3	1200	9421LW1 [3]	9.00- 12.50	9421LW4 [3]	9.00- 23.50	with these of breakers.	circuit	

Table 8.90: Component Parts

Use With			3 in. Handle Assemblies NEMA 1, 3R, 12	Standard Handle Assemblies NEMA 1, 3R, 12	Operating Mechansm Includes Lockout	Standa (Support Brack)	rd Shaft et <i>Not</i> Required)	Long Shaft (Support Bracket Required)		
Circuit Breaker or Interrupter Type	No. of Poles	Frame Size (A)	Cat. No.	Cat. No.	Cat. No.	Mounting Depth [1]	Cat. No.	Mounting Depth [1]	Cat. No.	
PowerPact B	2–3	125	9421LH3 [4]	9421LH6 [4]	9421LB7	5.50-10.75	9421LS8	5.50-21.38	9421LS13	
PowerPact H & J	2–3	250	9421LH3 [4]	9421LH6 [4]	9421LJ7	5.50-10.25	9421LS8	5.50-21.38	9421LS13	
	2–3	600	[5]	9421LH6 [4]	9421LD7	7.25-12.06	9421LS8	7.25-22.63	9421LS13	
DoworDoot D & I		4000		9421LH6 [4]	9421LD14	7.25-12.06	9421LS8	—	—	
FOWEIFACID&L	4	(300 V)	—	9421LH6 [4]	9421LD44	_	_	7.25-22.63	9421LS13	
		(000 1)		_	9421LD74	_	_	_	_	
PowerPact M & P [2]	3	1200	[5]	9421LHP8 [4]	9421LW7	7.19-11.63	9421LS8	7.19-22.25	9421LS10	

Table 8.91: NEMA 4 and 4X Handle Assemblies

Use With			Standard Han	dle Assemblies	Special 3 in. Version		
Circuit Breaker or	No. of	Frame Size (A)	NEMA 1, 3R, 4, 12 (Painted)	NEMA 1, 3R, 4, 4X, 12 (Chrome Plated)	NEMA 1, 3R, 4, 12 (Painted)	NEMA 1, 3R, 4, 4X, 12 (Chrome Plated)	
interrupter Type	Foles		Cat. No.	Cat. No.	Cat. No.	Cat. No.	
PowerPact B	2–3	125	9421LH46	9421LC46	9421LH43	9421LC43	
PowerPact H and J; NSF	2–3	250	9421LH46	9421LC46	9421LH43	9421LC43	
PowerPact D and L	2–3	600	9421LH46	9421LC46	3 in. handles are not recommend	led for use with these circuit	
PowerPact M and P	3	1200	94211 HP48	9421I CP48	breakers.		



Table 8.92: Auxiliary and Alarm Switches for PowerPact™ Circuit Breakers

•							
Description	B-Frame	H- and J-Frame	D- and L-Frame	D- and L-Frame			
1 Auxiliary Switch 1a 1b	LV26950	S29450	S29450	S29450			
2 Auxiliary Switch 2a 2b	_	2 x S29450	2 x S29450	2 x S29450			
3 Auxiliary Switch 3a 3b	-	-	3 x S29450	3 x S29450			
NOTE: The leasting of the approximation the singuit hypothesy determined its function							

NOTE: The location of the accessory in the circuit breaker determines its function.

3 in. Handle Assembly



[1] Mounting depth measured in inches from circuit breaker mounting surface (control panel) to outside of enclosure door.

- These circuit breaker operating mechanisms must use the 9421LHP •• or LCP •• handles only. [2] Type LW1 and LW4 include an 8 in. handle (9421LHP8) rather than a 6 in. handle.
- [3] For a red handle and yellow bezel, add suffix RY to catalog number, e.g., 9421LH6RY.
- [4] [5]

3 in. handles are not recommended for use with these circuit breakers.

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Door Mounted Class 9421 / Refer to Catalog 9420CT9701





Panel Drilling for PowerPact™ M and P Circuit Breaker Operating Mechanisms: 9421LW1, 9421LW4, and 9421LW7



Door Drilling Dimensions



X: Minimum to wall or barrier to insure adequate wire bending space to lug surface when the maximum wire size is used. Refer to NEC 430-10.

12.37 (314) 0 Ø 800 A 12.86 (32) 9.20 7.87 (234) (200) 1200 A 63E 16.26 (41) (413) 0 ¢ Hole for padlock 3.02 (77) C/L handle & circuit breaker togale 10.48 (266)



Table 8.93: Shaft Cutting Dimensions

Class	Type	Shaft Length	H = Stand	lard Shaft	H = Long Shaft		
CidSS	iype	Formula	Min.	Max.	Min.	Max.	
9421	LJ1, LJ4, LJ7	L = H – 3.00 (76)	5.5 (138)	10.75 (273)	5.5 (138)	21.63 (543)	
9421	LD1, LD4, LD7	L = H – 4.25 (108)	7.25 (184)	12.06 (306)	7.25 (184)	22.63 (575)	
9421	LW1, LW4, LW7	L = H – 4.89 (124)	7.19 (183)	11.63 (295)	7.19 (183)	22.25 (565)	

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Flexible Cable Mechanisms

- For use with Class 9422 handle operators (you must select a 9422A• handle to complete the operating mechanism)
- · Specially designed for tall, deep enclosures where placement flexibility is required

Table 8.94: Flexible Cable Mechanisms for use with Schneider Electric™ (formerly Merlin Gerin™) Circuit Breakers and PowerPact™ 3-Pole Circuit Breakers

Circuit Breaker			Cable N	lechanism
Туре	No. of Poles	Frame Size (A)	Length	Catalog No.
			36 in.	9422CSB30
PowerPact	0.0	105	60 in.	9422CSB50
B-Frame	2-3	125	84 in.	9422CSB70
			120 in.	9422CSB10
			36 in.	9422CSF30
MG-NSF	0.0	250	60 in.	9422CSF50
H- and L-Frame	2-3		84 in.	9422CSF70
n- and 5-r rame			120 in.	9422CSF10
			36 in.	9422CSF304
MG-NSF	4	250	60 in.	9422CSF504
			120 in.	9422CSF104
			36 in.	9422CSJ30
MG-NSJ PowerPact	3	600	60 in.	9422CSJ50
			120 in.	9422CSJ10
			36 in.	9422CSJ304
D and Frame	4	600	60 in.	9422CSJ504
			120 in.	9422CSJ104
DowerDeat M. and			48 in.	9422CMP40
PowerPact IVI- and P-Frame [6]	3	1200	50 in.	9422CMP50
F-I Tame [0]			120 in.	9422CMP10

9422CMP

5.47

NOTE: Refer to NEC Article 430-10 for minimum dimension X from circuit breaker top mounting hole to wall or barrier to ensure adequate wire bending space. NOTE: Bend radius in cable must never be less than 6 inches.

Flexible Cable Mechanism 9422CSJ30

Electrical clearances must be maintained between cable and live electrical parts.











[6] Must use 9422AP1 or 9422AP2 Handle with this operating mechanism.

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Operating Mechanisms for Circuit Breakers

Flexible Cable Mechanisms

Class 9422 / Refer to Catalog 9420CT9701



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Dual Cable Operating Mechanisms for Square D[™] Circuit Breakers

Dual Cable Operating Mechanisms are designed for use with Square D brand PowerPact[™] B, D, H, J, and L circuit breakers through 600 A frame sizes. The cable mechanisms allow for a single handle operator, Class 9422A, to operate both circuit breakers. The cable mechanism is designed especially for tall, deep enclosures where placement flexibility is required. There are numerous cable arrangements to choose from to accommodate many applications.

Features

- · Separate cables for each circuit breaker
- Rugged metal flange handle operator
- Maximized flexibility of circuit breaker placement for existing and new applications ٠
- · Control panel can be fed from two separate supply voltages (if required)
- Dual mechanism allows both separate supply voltages to be controlled by a single • handle to improve security features

Table 8.95: Dual Cable Operating Mechanisms Selection

Circuit Breaker Type	Cable Length in. / mm (quantity)	Catalog Number	Frame Size (max.)	
	120 in. / 3048 mm (2)	9422CSBD1		
	36 in. / 914 mm (1) 60 in. / 1524 mm (1)	9422CSBD35		
DawarDaat D	60 in. / 1524 mm (1-CSF 3 pole) 60 in. / 1524 mm (1-CSF 4 pole)	9422CSBD55	105 4	
ruweiradi b	36 in. / 914 mm (1) 120 in. / 3048 mm (1)	9422CSBD31	125 A	
	36 in. / 914 mm (2)	9422CSBD33		
	60 in. / 1524 mm (1) 120 in. / 3048 mm (1)	9422CSBD51		
	120 in. / 3048 mm (2)	9422CSFD1		
	36 in. / 914 mm (1) 60 in. / 1524 mm (1)	9422CSFD35		
	60 in. / 1524 mm (1-CSF 3 pole) 60 in. / 1524 mm (1-CSF 4 pole)	9422CSFD345		
PowerPact H & J MG NSF	36 in. / 914 mm (1) 120 in. / 3048 mm (1)	9422CSFD31	250 A	
	36 in. / 914 mm (2)	9422CSFD33		
	60 in. / 1524 mm (1) 120 in. / 3048 mm (1)	9422CSFD51		
	60 in. / 1524 mm (2)	9422CSFD55		
	60 in. / 1524 mm (2-CSJ)	9422CSJD50 [7]		
	120 in. / 3048 mm (2-CSJ)	9422CSJD10 [8]	600 A	
PowerPact D & L	60 in. / 1524 mm and 120 in. / 3048 mm (2-CSJ)	9422CSJD51[8]	000 A	
MG NSJ	120 in. / 3048 mm (1-CSF) and 120 in. / 3048 mm (1-CSJ)	9422CSFJD10	250 A	
	60 in. / 1524 mm (1-CSF) 60 in. / 1524 mm (1-CSJ)	9422CSFJD50	600 A	

Handle Mechanisms

These handle mechanism kits are used with the circuit breaker variable depth and cable operating mechanisms. The kits contain all parts necessary for mounting the handle to the flange of the enclosure. Types A1–A4, A1Y, and AP1 are suitable for right or lefthand flange mounting

Table 8.96: 9422 Disconnect Switch and Circuit Breaker Handle Mechanisms

Handle Depth (in.)	NEMA Type 1, 3, 3R, 4, 12 Enclosures	NEMA Type 4, 4X Stainless Steel Enclosures								
	Cat. No.	Cat. No.								
4 [9]	9422A3	9422A4								
6 (0)	9422A1	0.100.0.0								
0 [9]	9422A1Y [10]	9422A2								
6 [11]	9422AP1	9422AP2								
10 [12]	9422A9	9422A10								
10	9422AP9	9422AP10								
12 [13] [14]	9422A7	9422A8								

NOTE: See Handle Information, page 8-34 for dimensional information.



[7] Must use the 9422AP1 or 9422AP2 operating handle with this operating mechanism.

- [8] Must use the 9422AP1 or 9422AP2 operating handle with this operating mechanism.
- [9] Use with 30-200 A, 9422 switches and all circuit breaker mechanisms
- [10] Yellow base with gray handle and red knob.
- Use only with 9422RM1, 9422CMP, and PowerPact M and P operating mechanisms. [11]
- Use with Type D2 remote or dual adapter kit [12]
- Use only with 400 A, 9422TG1 and 9422TG2 disconnect switch. [13] Adjustable depth.

[14] 8-42



Flexible Cable Mechanisms Class 9422 / Refer to Catalog 9420CT9701



9422 Type R Circuit Breaker Mechanism

Flange-Mounted, Variable-Depth Operating Mechanisms

Designed for installation in custom built control enclosures where main or branch circuit protective devices are required. All circuit breaker operating mechanisms are suitable for either right- or left-hand flange mounting, convertible on the job.

NOTE: The operating mechanisms do not include handle mechanisms. You must select a 9422A• handle to complete the installation.

Table 8.97: Variable-Depth Operating Mechanisms for Use with Schneider Electric™ Brand Circuit Breakers (Formerly Merlin Gerin™ Brand)

Use with				Operating Mechanism	
Circuit Breaker Frame Size	No. of Poles	Frame Size A	Variable Depth Mtg. Range (in.) [15]	(Does Not Include Handle Mechanism)	
				Cat. No.	
Schneider Electric (formerly Merlin Gerin) Circuit Breakers and PowerPact™ Frame 3-Pole Circuit Breakers					
PowerPact B-Frame	2–3	125	5.88-17.75	9422RB1	
MG-NSF PowerPact H- and J-Frame	2–3	250	5.88-17.75	9422RQ1	
MG-NSJ PowerPact D-and L-Frame	3	600	9.00-17.75	9422RS1	
PowerPact M- and P-Frame [16]	3	1200	10.50-18.38	9422RM1	

Table 8.98: Electrical Interlocks—Class 9999

Description	Cat. No.
Single Pole, Double Throw	9999R26
Double Pole, Double Throw	9999R27

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[15] Class 9422 Type R2 will extend mounting depth 7 inches—not recommended for use with the 9422RM1 operating mechanism (see Table 8.96).

[16] These circuit breaker operating mechanisms must use the 9422APx handles.

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Flexible Cable Mechanisms

Class 9422 / Refer to Catalog 9420CT9701



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Dimensions

Minimum to wall or barrier to insure adequate wire bending space to lug surface when the maximum wire size is used with standard lugs. Refer to NEC 430-10.

0.89 (23)

4.90 (124)

4.63 (118)

4::5

9.69 (246)

[.

9422RQ1

9422RM1

10.69

(4) 1/4-20 mounting screws

(4) 0.50 (13) DIA.

0.69



0

9.50 (241)

1.19 (30) \$ 1

0.44 (11)





