

2. UL Approved Equipment

UL was established in 1894 by William Henry Merrill for the testing of products' safety against fire and other dangers related to electricity for the purposes of U.S. insurance companies. The institute has since been testing materials, apparatuses, products, equipment, buildings, systems, etc., concerning the danger to life and property under the auspices of American Insurance Association. It is not directly related with the association but is a completely independent non-profit-making organization, which is known as the world-oldest and greatest authority for safety testing.

To ensure the safety of life and property against fire, electric shock or other dangers which may arise in using equipment, UL assumes the following missions from the consumers' point of view:

- (1) To establish safety standards
- (2) To test products based on those established standards
- (3) To make the test results known to insurers, government agencies, related organizations and general consumers

UL executes tests for above purposes, approves the products which clear applicable standards, and makes them known to the public. There are two methods for indicating UL approval:

(1) Listing service

This is generally referred to as "listing" and is applied to the products and parts which are manufactured so as to ensure safety under any working conditions. Considering that they are used by general consumers, comprehensive investigation and testing are made as to their safety. When accepted, they are given the "listing mark" and made known to the public by means of the categorized products list (Green Book) which is published by UL.

(2) Recognition service

This is applied mainly to the materials or parts which are assembled in final products in manufacturers' factories. When accepted, they are included in the registered parts list (Yellow Book).

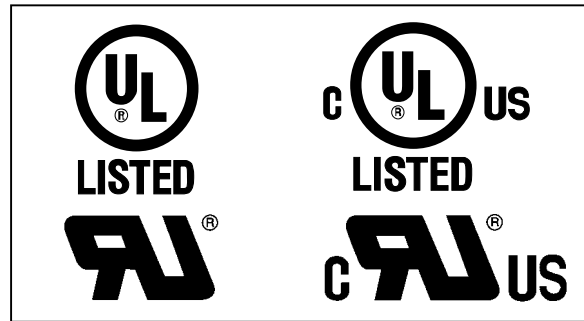


Table 1 Indication of UL approval







Indication of UL approval	Publication method		
	Indication on product	Publication by UL	
Listing	Listing mark 	Categorized product list (Green Book)	White card
Recognition	Recognition mark 	Registered parts list (Yellow Book)	Yellow card

Table 2 Indication of UL-USA approval

Indication of UL-USA approval	Indication on product	Outline
Listing	Listing mark 	- Listing for USA and Canada - UL and CSA certification by testing organization UL
Recognition	Recognition mark 	- Listing for USA and Canada - UL and CSA certification by testing organization UL



■ Contactors and Starters

- Standard magnetic contactors and starters (non-reversing, open type)

Series Standard	Magnetic contactors	Magnetic starters	Max. motor capacity [HP]							Continuous current [A]	Auxiliary contact arrangement		UL File No.	Standard
			Type	Type	Single-phase		3-phase squirrel-cage				Standard	On request		
					110-120V	220-240V	200V	220-240V	400-480V					
NEW SC Series 	SC-03, 03Y	SW-03/3H, 03Y/3H	1/3	1	2	2	5	5	11	1NO	1NC	E42419	UL508	
	SC-0, 0Y	SW-0/3H, 0Y/3H	1/3	1	3	3	5	5	13	1NO	1NC			
	SC-05, 05Y	SW-05/3H, 05Y/3H	1/3	1	3	3	5	5	13	1NO+1NC	2NO, 2NC			
	SC-4-0	SW-4-0/3H	1	2	5	5	7 1/2	7 1/2	20	1NO	1NC			
	SC-4-1	SW-4-1/3H	1	2	5	5	10	10	20	1NO	1NC			
NEO SC Series 	SC-5-1, 5-1Y	SW-5-1/3H, 5-1Y/3H	1	2	5	5	10	10	20	1NO+1NC	2NO, 2NC	E42419	UL508	
	SC-N1	SW-N1/3H	2	5	7 1/2	10	25	25	50	2NO+2NC	4NO+4NC			
	SC-N2	SW-N2/3H	3	7 1/2	10	15	30	30	60	2NO+2NC	4NO+4NC			
	SC-N2S	SW-N2S/3H	3	10	15	20	40	40	80	2NO+2NC	4NO+4NC			
	SC-N3	SW-N3/3H	5	15	20	25	50	50	100	2NO+2NC	4NO+4NC			
	SC-N4	SW-N4/3H	7 1/2	15	25	30	60	60	135	2NO+2NC	4NO+4NC			
	SC-N5	SW-N5/3H	7 1/2	15	30	30	60	75	150	2NO+2NC	4NO+4NC			
	SC-N6	SW-N6/3H	10	20	40	40	75	100	150	2NO+2NC	4NO+4NC			
	SC-N7	SW-N7/3H	15	25	50	50	100	125	200	2NO+2NC	4NO+4NC			
	SC-N8	SW-N8/3H	-	-	60	60	150	150	260	2NO+2NC	4NO+4NC			
	SC-N10	SW-N10/3H	-	-	75	75	150	200	260	2NO+2NC	4NO+4NC			
	SC-N11	SW-N11/3H	-	-	100	100	200	250	350	2NO+2NC	4NO+4NC			
	SC-N12	SW-N12/3H	-	-	125	150	300	350	450	2NO+2NC	4NO+4NC			
SC-N14	SW-N14/3H	-	-	200	200	500	600	660	2NO+2NC	4NO+4NC				
SC-N16	-	-	-	-	250	300	600	700	800	2NO+2NC	4NO+4NC			

Note 1: Contactor ratings refer to the continuous current value.



● Reversing standard contactors and starters (reversing open type)

Series Standard	Magnetic contactors	Magnetic starters	Max. motor capacity [HP]				Continuous current [A]	UL File No.	Standard		
			Type	Type	3-phase squirrel-cage						
					200V	220-240V				440-480V	550-600V
NEW SC Series 	SC-03RM	SW-03RM/3H	2	2	5	5	11	E42419	UL508		
	SC-0RM	SW-0RM/3H	3	3	5	5	13				
	SC-05RM	SW-05RM/3H	3	3	5	5	13				
	SC-4-0RM	SW-4-0RM/3H	5	5	7 1/2	7 1/2	20				
	SC-4-1RM	SW-4-1RM/3H	5	5	10	10	20				
SC-5-1RM	SW-5-1RM/3H	5	5	10	10	20					
NEO SC Series 	SC-N1RM	SW-N1RM/3H	7 1/2	10	25	25	50				
	SC-N2RM	SW-N2RM/3H	10	15	30	30	60				
	SC-N2SRM	SW-N2SRM/3H	15	20	40	40	80				
	SC-N3RM	SW-N3RM/3H	20	25	50	50	100				
	SC-N4RM	SW-N4RM/3H	25	30	60	60	135				
	SC-N5RM	SW-N5RM/3H	30	30	60	75	150				
	SC-N6RM	SW-N6RM/3H	40	40	75	100	150				
	SC-N7RM	SW-N7RM/3H	50	50	100	125	200				
	SC-N8RM	SW-N8RM/3H	60	60	150	150	260				
	SC-N10RM	SW-N10RM/3H	75	75	150	200	260				
	SC-N11RM	SW-N11RM/3H	100	100	200	250	350				
	SC-N12RM	SW-N12RM/3H	125	150	300	350	450				
	SC-N14RM	SW-N14RM/3H	200	200	500	600	660				

Notes 1: Contactor ratings refer to the continuous current value.



2: To use type -03 to -N3 "reversing" magnetic contactors or starters as UL or CSA approved equipment, it is necessary to replace the operation circuit wires with UL or CSA approved ones.

● DC operated magnetic contactors and starters (non-reversing, open type)

Series Standard	Magnetic contactors	Magnetic starters	Max. motor capacity [HP]						Continuous current [A]	UL File No.	Standard
			Type	Type	Single-phase		3-phase squirrel-cage				
					110-120V	220-240V	200V	220-240V			
NEW SC Series 	SC-03/G, 03Y/G	SW-03/G3H, 03Y/G3H	1/3	1	2	2	5	5	11	E42419	UL508
	SC-0/G, 0Y/G	SW-0/G3H, 0Y/G3H	1/3	1	3	3	5	5	13		
	SC-05/G, 05Y/G	SW-05/G3H, 05Y/G3H	1/3	1	3	3	5	5	13		
	SC-4-0/G	SW-4-0/G3H	1	2	5	5	7 1/2	7 1/2	20		
	SC-4-1/G	SW-4-1/G3H	1	2	5	5	10	10	20		
SC-5-1/G, 5-1Y/G	SW-5-1/G3H, 5-1Y/G3H	1	2	5	5	10	10	20			
NEO SC Series 	SC-N1/G	SW-N1/G3H	2	5	7 1/2	10	25	25	50		
	SC-N2/G	SW-N2/G3H	3	7 1/2	10	15	30	30	60		
	SC-N2S/G	SW-N2S/G3H	3	10	15	20	40	40	80		
	SC-N3/G	SW-N3/G3H	5	15	20	25	50	50	100		
	SC-N1/SE	SW-N1/SE3H	2	5	7 1/2	10	25	25	50		
	SC-N2/SE	SW-N2/SE3H	3	7 1/2	10	15	30	30	60		
	SC-N2S/SE	SW-N2S/SE3H	3	10	15	20	40	40	80		
	SC-N3/SE	SW-N3/SE3H	5	15	20	25	50	50	100		
	SC-N4/SE	SW-N4/SE3H	7 1/2	15	25	30	60	60	135		
	SC-N5	SW-N5/3H	7 1/2	15	30	30	60	75	150		
	SC-N6	SW-N6/3H	10	20	40	40	75	100	150		
	SC-N7	SW-N7/3H	15	25	50	50	100	125	200		
	SC-N8	SW-N8/3H	-	-	60	60	150	150	260		
	SC-N10	SW-N10/3H	-	-	75	75	150	200	260		
	SC-N11	SW-N11/3H	-	-	100	100	200	250	350		
	SC-N12	SW-N12/3H	-	-	125	150	300	350	450		
SC-N14	SW-N14/3H	-	-	200	200	500	600	660			
SC-N16	-	-	-	250	300	600	700	800			

Note 1: Contactor ratings refer to the continuous current value.

● Magnetic starters with 2E thermal overload relay (open type)


Series Standard	Non reversing Type	Reversing Type	DC operated (non reversing) Type	Max. motor capacity [HP] ^{*1}				Continuous current [A]	UL File No.	Standard
				3-phase squirrel-cage						
				200V	220-240V	440-480V	550-600V			
NEW SC Series 	SW-03/2E, 03Y/2E	SW-03RM/2E	SW-03/G2E, 03Y/G2E	2	2	5	5	11	E42419	UL508
	SW-0/2E, 0Y/2E	SW-0RM/2E	SW-0/G2E, 0Y/G2E	3	3	5	5	13		
	SW05/2E, 05Y/2E	SW-05RM/2E	SW-05/G2E, 05Y/G2E	3	3	5	5	13		
	SW-4-0/2E	SW-4-0RM/2E	SW-4-0/G2E	5	5	7 1/2	7 1/2	20		
	SW-4-1/2E	SW-4-1RM/2E	SW-4-1/G2E	5	5	10	10	20		
	SW-5-1/2E, 5-1Y/2E	SW-5-1RM/2E	SW-5-1/G2E, 5-1Y/G2E	5	5	10	10	20		
NEO SC Series 	SW-N1/2E	SW-N1RM/2E	SW-N1/G2E, SW-N1/SE2E	7 1/2	10	25	25	50		
	SW-N2/2E	SW-N2RM/2E	SW-N2/G2E, SW-N2/SE2E	10	15	30	30	60		
	SW-N2S/2E	SW-N2SRM/2E	SW-N2S/G2E, SW-N2S/SE2E	15	20	40	40	80		
	SW-N3/2E	SW-N3RM/2E	SW-N3/G2E, SW-N3/SE2E	20	25	50	50	100		
	SW-N4/2E	SW-N4RM/2E	SW-N4SE/2E	25	30	60	60	135		
	SW-N5/2E	SW-N5RM/2E	SW-N5/2E	30	30	60	75	150		
	SW-N6/2E	SW-N6RM/2E	SW-N6/2E	40	40	75	100	150		
	SW-N7/2E	SW-N7RM/2E	SW-N7/2E	50	50	100	125	200		
	SW-N8/2E	SW-N8RM/2E	SW-N8/2E	60	60	150	150	260		
	SW-N10/2E	SW-N10RM/2E	SW-N10/2E	75	75	150	200	260		
	SW-N11/2E	SW-N11RM/2E	SW-N11/2E	100	100	200	250	350		
	SW-N12/2E	SW-N12RM/2E	SW-N12/2E	125	150	300	350	450		
	SW-N14/2E	SW-N14RM/2E	SW-N14/2E	200	200	500	600	660		

Notes 1: Contactor ratings refer to the continuous current value.

2: To use type -03 to -N3 "reversing" magnetic contactors or starters as UL or CSA approved equipment, it is necessary to replace the operation circuit wires with UL or CSA approved ones.


*1 Max. motor capacity for single-phase motors is the same as that for standard magnetic starters.

● Standard auxiliary relays

Series Standard	Type	Poles	Contact arrangement	Continuous current [A]	Operational current [A]						Code		UL File No.	Standard
					AC			DC			AC	DC		
					Volts [V]	Make	Break	Volts [V]	Make	Break				
NEW SC Series 	SH-4, SH-4Y	4	4NO, 3NO+1NC, 2NO+2NC	10	120	60	6	125	0.55	0.55	A600	Q300	E44592	UL508
					240	30	3							
					480	15	1.5	250	0.27	0.27				
					600	12	1.2							
		8 ^{*1}	4NO, 3NO+1NC, 2NO+2NC, 5NO+3NC, 4NO+4NC	10	120	60	6	125	0.55	0.55				
					240	30	3							
					480	15	1.5	250	0.27	0.27				
					600	12	1.2							
	SH-5	5	5NO, 4NO+1NC, 3NO+2NC, 2NO+3NC, 1NO+4NC, 5NC	10	120	60	6	125	0.55	0.55				
					240	30	3							
					480	15	1.5	250	0.27	0.27				
					600	12	1.2							

*1 8-contact products of SH-4(Y) type are a combination of SH-4(Y) (4 contacts) and auxiliary contact block SZ-A□(Y) (Front mounting, 4 contacts).

● DC operated auxiliary relays

Series Standard	Type	Poles	Contact arrangement	Continuous current [A]	Operational current [A]						Code		UL File No.	Standard
					AC			DC			AC	DC		
					Volts [V]	Make	Break	Volts [V]	Make	Break				
NEW SC Series 	SH-4/G, SH-4Y/G	4	4NO, 3NO+1NC, 2NO+2NC	10	120	60	6	125	0.55	0.55	A600	Q300	E44592	UL508
					240	30	3							
					480	15	1.5	250	0.27	0.27				
					600	12	1.2							
		8 ^{*1}	8NO, 7NO+1NC, 6NO+2NC, 5NO+3NC, 4NO+4NC	10	120	60	6	125	0.55	0.55				
					240	30	3							
					480	15	1.5	250	0.27	0.27				
					600	12	1.2							
	SH-5/G	5	5NO, 4NO+1NC, 3NO+2NC, 2NO+3NC, 1NO+4NC, 5NC	10	120	60	6	125	0.55	0.55				
					240	30	3							
					480	15	1.5	250	0.27	0.27				
					600	12	1.2							

*1 8-contact products of SH-4(Y)/G type are a combination of SH-4(Y)/G (4 contacts) and auxiliary contact block SZ-A□(Y) (Front mounting, 4 contacts).

- Standard application of built-in thermal overload relays of magnetic contactors
(protection coordination with over current relay)



Type of magnetic contactor	SW-03/3H, 03Y/3H	SW-0/3H, 0Y/3H	SW-05/3H, 0Y/3H	SW-4-0/3H	SW-4-1/3H	SW-5-1/3H, 5-1Y/3H	SW-N1/3H	SW-N2/3H	SW-N2S/3H	SW-N3/3H	
Type of built-in thermal overload relay	TR-0N/3, 0NY/3			TR-5-1N/3, 5-1NY/3			TR-2N/3		TR-3N/3		
Heat element ratings of built-in thermal overload relay [A]	0.1 - 0.15	0.1 - 0.15		0.1 - 0.15							
	0.13 - 0.2	0.13 - 0.2		0.13 - 0.2							
	0.15 - 0.24	0.15 - 0.24		0.15 - 0.24							
	0.2 - 0.3	0.2 - 0.3		0.2 - 0.3							
	0.24 - 0.36	0.24 - 0.36		0.24 - 0.36							
	0.3 - 0.45	0.3 - 0.45		0.3 - 0.45							
	0.36 - 0.54	0.36 - 0.54		0.36 - 0.54							
	0.48 - 0.72	0.48 - 0.72		0.48 - 0.72							
	0.64 - 0.96	0.64 - 0.96		0.64 - 0.96							
	0.8 - 1.2	0.8 - 1.2		0.8 - 1.2							
	0.95 - 1.45	0.95 - 1.45		0.95 - 1.45							
	1.4 - 2.2	1.4 - 2.2		1.4 - 2.2							
	1.7 - 2.6	1.7 - 2.6		1.7 - 2.6							
	2.2 - 3.4	2.2 - 3.4		2.2 - 3.4							
	2.8 - 4.2	2.8 - 4.2		2.8 - 4.2							
	4 - 6	4 - 6		4 - 6							
	5 - 8	5 - 8		5 - 8							
		6 - 9		6 - 9							
		7 - 11		7 - 11							
				9 - 13							
				12 - 18							
							4 - 6	4 - 6			
							5 - 8	5 - 8			
							6 - 9	6 - 9			
							7 - 11	7 - 11	7 - 11	7 - 11	
							9 - 13	9 - 13	9 - 13	9 - 13	
							12 - 18	12 - 18	12 - 18	12 - 18	
							18 - 26	18 - 26	18 - 26	18 - 26	
							24 - 36	24 - 36	24 - 36	24 - 36	
									28 - 40	28 - 40	
								32 - 42			
									34 - 50	34 - 50	
									45 - 65	45 - 65	
										48 - 68	


¹ Use UL or CSA approved fuses. However, the current values for current limiting fuses are when time-delay fuses (rated current of heat element of thermal overload relay: max. 2.8 to 4.2A) or instantaneous fuses (rated current of heat element of thermal overload relay: min. 4 to 6A) is used. Figures in [] are the rating of CSA approved fuses.

² Use UL or CSA approved molded case circuit breakers. However, the working voltage is 480V or less when combined with SW-03(Y)/3H to -05(Y)/3H types; 600V or less when combined with SW-4-0/3H or greater starters.

SW-N4/3H	SW-N5/3H	SW-N6/3H	SW-N7/3H	SW-N8/3H	SW-N10/3H	SW-N11/3H	SW-N12/3H	SW-N14/3H	max ¹ Current limiting fuses	max ² Molded case circuit breaker	
TR-4N/UL	TR-6N/UL			TR-8N/UL	TR-10N/UL	TR-11N/UL	TR-12N/UL	TR-N14/3	Operational current [A]	Operational current [A]	UL approved FUJI auto breaker types
									1 [15]	15	BU-3EHC
									1 [15]	15	BU-3EHC
									1 [15]	15	BU-3EHC
									1 [15]	15	BU-3EHC
									2 [15]	15	BU-3EHC
									2 [15]	15	BU-3EHC
									3 [15]	15	BU-3EHC
									3 [15]	15	BU-3EHC
									3 [15]	15	BU-3EHC
									5 [15]	15	BU-3EHC
									5 [15]	15	BU-3EHC
									10 [15]	15	BU-3EHC
									10 [15]	15	BU-3EHC
									15	15	BU-3EHC
									15	15	BU-3EHC
									15	15	BU-3EHC
									20	15	BU-3EHC
									30	15	BU-3EHC
									30	15	BU-3EHC
									30	20	BU-3EHC
									50	40	BU-ESB
									20	60	BU-ESB
									20	60	BU-ESB
									20	60	BU-ESB
									20	60	BU-ESB
									20	60	BU-ESB
									50	60	BU-ESB
18 - 26	18 - 26								50	60	BU-ESB
24 - 36	24 - 36								50	60	BU-ESB
28 - 40	28 - 40								70	70	BU-ESB
									70	70	BU-ESB
34 - 50	34 - 50								70	70	BU-ESB
45 - 65	45 - 65								125	125	BU-FSB
									125	125	BU-FSB
53 - 80	53 - 80								150	125	BU-FSB
	65 - 95								150	125	BU-FSB
	85 - 105								150	125	BU-FSB
		45 - 65	45 - 65						150	175	BU-JSB
		53 - 80	53 - 80						150	175	BU-JSB
		65 - 95	65 - 95						150	175	BU-JSB
		85 - 125	85 - 125						150	175	BU-JSB
			110 - 160						200	225	BU-JSB
				65 - 95					225	400	BU-KSB
				85 - 125					225	400	BU-KSB
				110 - 160					225	400	BU-KSB
				125 - 185					225	400	BU-KSB
					85 - 125				300	400	BU-KSB
					110 - 160	110 - 160	110 - 160		300	400	BU-KSB
					125 - 185	125 - 185	125 - 185		300	400	BU-KSB
					160 - 240	160 - 240	160 - 240		300	400	BU-KSB
						200 - 300	200 - 300		450	600	BU-LSB
							240 - 360		450	600	BU-LSB
							300 - 450		450	600	BU-LSB
								240 - 360	800	800	BU-MSB
								300 - 450	800	800	BU-MSB
								400 - 600	800	800	BU-MSB

● Standard thermal overload relays (with 3 heat elements), 2E thermal overload relays

Series	Type	No. of heat elements	Reset	Auxiliary contact	Heat element rating [A] ^{*1}	Protection coordination		Applicable magnetic starter types	UL File No.	Standard
						Max. rated current of current limiting fuse [A] ^{*2}	Max. rated current of molded case circuit breaker [A]			
NEW SC Series 	TR-0N/3, TR-0NY/3 ^{*4} TK-0N TK-0NY	3	Manual/Auto	1NO+1NC	0.1 - 0.15 (0.1)	1 (15)	15	SW-03/3H, 03Y/3H ^{*3} [SW-03/2E, 03Y/2E]	E44592	UL508
					0.13 - 0.2 (0.13)	1 (15)	15			
					0.15 - 0.24 (0.15)	1 (15)	15			
					0.2 - 0.3 (0.2)	1 (15)	15			
					0.24 - 0.36 (0.24)	2 (15)	15			
					0.3 - 0.45 (0.3)	2 (15)	15			
					0.36 - 0.54 (0.36)	3 (15)	15			
					0.48 - 0.72 (0.48)	3 (15)	15			
					0.64 - 0.96 (0.64)	3 (15)	15			
					0.8 - 1.2 (0.8)	5 (15)	15			
					0.95 - 1.45 (0.95)	5 (15)	15			
					1.4 - 2.2 (1.4)	10 (15)	15			
					1.7 - 2.6 (1.7)	10 (15)	15			
					2.2 - 3.4 (2.2)	15	15			
					2.8 - 4.2 (2.8)	15	15			
					4 - 6 (4)	15	15			
					5 - 8 (5)	20	15			
					0.1 - 0.15 (0.1)	1 (15)	15			
					0.13 - 0.2 (0.13)	1 (15)	15			
					0.15 - 0.24 (0.15)	1 (15)	15			
					0.2 - 0.3 (0.2)	1 (15)	15			
					0.24 - 0.36 (0.24)	2 (15)	15			
					0.3 - 0.45 (0.3)	2 (15)	15			
					0.36 - 0.54 (0.36)	3 (15)	15			
					0.48 - 0.72 (0.48)	3 (15)	15			
					0.64 - 0.96 (0.64)	3 (15)	15			
					0.8 - 1.2 (0.8)	5 (15)	15			
					0.95 - 1.45 (0.95)	5 (15)	15			
					1.4 - 2.2 (1.4)	10 (15)	15			
					1.7 - 2.6 (1.7)	10 (15)	15			
					2.2 - 3.4 (2.2)	15	15			
					2.8 - 4.2 (2.8)	15	15			
					4 - 6 (4)	15	15			
5 - 8 (5)	20	15								
6 - 9 (6)	30	15								
7 - 11 (7)	30	15								
NEO SC Series 	TR-5-1N/3 TR-5-1NY/3 ^{*4} TK-5-1N TK-5-1NY	3	Manual/Auto	1NO+1NC	0.1 - 0.15 (0.1)	1 (15)	15	SW-4-0/3H, SW-4-1/3H, SW-5-1/3H, 5-1Y/3H [SW-4-0/2E SW-4-1/2E SW-5-1/2E, 5-1Y/2E]	E42419	
					0.13 - 0.2 (0.13)	1 (15)	15			
					0.15 - 0.24 (0.15)	1 (15)	15			
					0.2 - 0.3 (0.2)	1 (15)	15			
					0.24 - 0.36 (0.24)	2 (15)	15			
					0.3 - 0.45 (0.3)	2 (15)	15			
					0.36 - 0.54 (0.36)	3 (15)	15			
					0.48 - 0.72 (0.48)	3 (15)	15			
					0.64 - 0.96 (0.64)	3 (15)	15			
					0.8 - 1.2 (0.8)	5 (15)	15			
					0.95 - 1.45 (0.95)	5 (15)	15			
					1.4 - 2.2 (1.4)	10 (15)	15			
					1.7 - 2.6 (1.7)	10 (15)	15			
					2.2 - 3.4 (2.2)	15	15			
					2.8 - 4.2 (2.8)	15	15			
					4 - 6 (4)	15	15			
					5 - 8 (5)	20	15			
					6 - 9 (6)	30	15			
					7 - 11 (7)	30	15			
					9 - 13 (9)	30	20			
					12 - 18 (12)	50	40			
					4 - 6 (4)	20	60			
					5 - 8 (5)	20	60			
					6 - 9 (6)	20	60			
					7 - 11 (7)	20	60			
					9 - 13 (9)	20	60			
					12 - 18 (12)	50	60			
					18 - 26 (18)	50	60			
					24 - 36 (24)	50	60			

Series	Type	No. of heat elements	Reset	Auxiliary contact	Heat element rating [A] ¹	Protection coordination		Applicable magnetic starter types	UL File No.	Standard
						Max. rated current of current limiting fuse [A] ²	Max. rated current of molded case circuit breaker [A]			
NEO SC Series 	TR-N2/3 [TK-N2] ⁴	3	Manual	1NO+1NC	4 - 6 (4)	20	60	SW-N2/3H [SW-N2/2E]	E42419	UL508
					5 - 8 (5)	20	60			
					6 - 9 (6)	20	60			
					7 - 11 (7)	20	60			
					9 - 13 (9)	20	60			
					12 - 18 (12)	50	60			
					18 - 26 (18)	50	60			
					24 - 36 (24)	50	60			
					32 - 42 (32)	70	70			
					7 - 11 (7)	20	60			
					9 - 13 (9)	20	60			
					12 - 18 (12)	50	60			
					18 - 26 (18)	50	60			
					24 - 36 (24)	50	60			
					28 - 40 (28)	70	70			
	TR-N3/3 [TK-N3] ⁴	3	Manual	1NO+1NC	7 - 11 (7)	20	60	SW-N2S/3H [SW-N2S/2E]		
					9 - 13 (9)	20	60			
					12 - 18 (12)	50	60			
					18 - 26 (18)	50	60			
					24 - 36 (24)	50	60			
					28 - 40 (28)	70	70			
					34 - 50 (34)	70	70			
					45 - 65 (45)	125	125			
					7 - 11 (7)	20	60			
					9 - 13 (9)	20	60			
					12 - 18 (12)	50	60			
					18 - 26 (18)	50	60			
					24 - 36 (24)	50	60			
					28 - 40 (28)	70	70			
					34 - 50 (34)	70	70			
	TR-N5/3 [TK-N5]	3	Manual	1NO+1NC	45 - 65 (45)	125	125	SW-N3/3H [SW-N3/2E]		
					48 - 68 (48)	125	125			
					7 - 11 (7)	20	60			
					9 - 13 (9)	20	60			
					12 - 18 (12)	50	60			
					18 - 26 (18)	50	60			
					24 - 36 (24)	50	60			
					28 - 40 (28)	70	70			
					34 - 50 (34)	70	70			
					45 - 65 (45)	125	125			
					53 - 80 (53)	150	125			
					7 - 11 (7)	20	60			
					9 - 13 (9)	20	60			
					12 - 18 (12)	50	60			
					18 - 26 (18)	50	60			
	TR-N6/3 [TK-N6] ⁴	3	Manual	1NO+1NC	45 - 65 (45)	150	175	SW-N4/3H [SW-N4/2E]		
					53 - 80 (53)	150	175			
					65 - 95 (65)	150	175			
					85 - 125 (85)	150	175			
					7 - 11 (7)	20	60			
					9 - 13 (9)	20	60			
					12 - 18 (12)	50	60			
					18 - 26 (18)	50	60			
					24 - 36 (24)	50	60			
					28 - 40 (28)	70	70			
					34 - 50 (34)	70	70			
					45 - 65 (45)	125	125			
					53 - 80 (53)	150	125			
					65 - 95 (65)	180	125			
						TR-N7/3 [TK-N7]	3			
53 - 80 (53)	150	175								
65 - 95 (65)	150	175								
85 - 125 (85)	150	175								
110 - 160 (110)	200	225								
7 - 11 (7)	20	60								
9 - 13 (9)	20	60								
12 - 18 (12)	50	60								
18 - 26 (18)	50	60								
24 - 36 (24)	50	60								
28 - 40 (28)	70	70								
34 - 50 (34)	70	70								
45 - 65 (45)	125	125								
53 - 80 (53)	150	125								
	TR-N8/3 [TK-N8]	3	Manual	1NO+1NC				45 - 65 (45)	150	175
					53 - 80 (53)	150	175			
					65 - 95 (65)	150	175			
					85 - 125 (85)	150	175			
					110 - 160 (110)	200	225			
					53 - 80 (53)	225	400			
					65 - 95 (65)	225	400			
					85 - 125 (85)	225	400			
					110 - 160 (110)	225	400			
					125 - 185 (125)	225	400			
					7 - 11 (7)	20	60			
					9 - 13 (9)	20	60			
					12 - 18 (12)	50	60			
					18 - 26 (18)	50	60			
						TR-N10/3 [TK-N10] ⁴	3	Manual	1NO+1NC	85 - 125 (85)
110 - 160 (110)	300	400								
125 - 185 (125)	300	400								
160 - 240 (160)	300	400								
110 - 160 (110)	300	400								
125 - 185 (125)	300	400								
160 - 240 (160)	300	400								
200 - 300 (200)	450	600								
7 - 11 (7)	20	60								
9 - 13 (9)	20	60								
12 - 18 (12)	50	60								
18 - 26 (18)	50	60								
24 - 36 (24)	50	60								
28 - 40 (28)	70	70								
	TR-N12/3 [TK-N12] ⁴	3	Manual	1NO+1NC						110 - 160 (110)
					125 - 185 (125)	300	400			
					160 - 240 (160)	300	400			
					200 - 300 (200)	450	600			
					110 - 160 (110)	300	400			
					125 - 185 (125)	300	400			
					160 - 240 (160)	300	400			
					200 - 300 (200)	450	600			
					240 - 360 (240)	450	600			
					300 - 450 (300)	450	600			
					7 - 11 (7)	20	60			
					9 - 13 (9)	20	60			
					12 - 18 (12)	50	60			
					18 - 26 (18)	50	60			
						TR-N12/3 [TK-N12] ⁴	3	Manual	1NO+1NC	240 - 360 (240)
300 - 450 (300)	800	800								
400 - 600 (400)	800	800								
7 - 11 (7)	20	60								
9 - 13 (9)	20	60								
12 - 18 (12)	50	60								
18 - 26 (18)	50	60								
24 - 36 (24)	50	60								
28 - 40 (28)	70	70								
34 - 50 (34)	70	70								
45 - 65 (45)	125	125								
53 - 80 (53)	150	125								
65 - 95 (65)	180	125								
85 - 125 (85)	150	175								
	TR-N14/3 [TK-N14] ⁴	3	Manual	1NO+1NC						45 - 65 (45)
					53 - 80 (53)	150	175			
					65 - 95 (65)	150	175			
					85 - 125 (85)	150	175			
					110 - 160 (110)	200	225			
					7 - 11 (7)	20	60			
					9 - 13 (9)	20	60			
					12 - 18 (12)	50	60			
					18 - 26 (18)	50	60			
					24 - 36 (24)	50	60			
					28 - 40 (28)	70	70			
					34 - 50 (34)	70	70			
					45 - 65 (45)	125	125			
					53 - 80 (53)	150	125			
						TR-N12/3 [TK-N12] ⁴	3	Manual	1NO+1NC	45 - 65 (45)
53 - 80 (53)	150	175								
65 - 95 (65)	150	175								
85 - 125 (85)	150	175								
110 - 160 (110)	200	225								
7 - 11 (7)	20	60								
9 - 13 (9)	20	60								
12 - 18 (12)	50	60								
18 - 26 (18)	50	60								
24 - 36 (24)	50	60								
28 - 40 (28)	70	70								
34 - 50 (34)	70	70								
45 - 65 (45)	125	125								
53 - 80 (53)	150	125								
	TR-N12/3 [TK-N12] ⁴	3	Manual	1NO+1NC						45 - 65 (45)
					53 - 80 (53)	150	175			
					65 - 95 (65)	150	175			
					85 - 125 (85)	150	175			
					110 - 160 (110)	200	225			
					7 - 11 (7)	20	60			
					9 - 13 (9)	20	60			
					12 - 18 (12)	50	60			
					18 - 26 (18)	50	60			
					24 - 36 (24)	50	60			
					28 - 40 (28)	70	70			
					34 - 50 (34)	70	70			
					45 - 65 (45)	125	125			
					53 - 80 (53)	150	125			
						TR-N14/3 [TK-N14] ⁴	3	Manual	1NO+1NC	45 - 65 (45)
53 - 80 (53)	150	175								
65 - 95 (65)	150	175								
85 - 125 (85)	150	175								
110 - 160 (110)	200	225								
7 - 11 (7)	20	60								
9 - 13 (9)	20	60								
12 - 18 (12)	50	60								
18 - 26 (18)	50	60								
24 - 36 (24)	50	60								
28 - 40 (28)	70	70								
34 - 50 (34)	70	70								
45 - 65 (45)	125	125								
53 - 80 (53)	150	125								
	TR-N14/3 [TK-N14] ⁴	3	Manual	1NO+1NC						45 - 65 (45)
					53 - 80 (53)	150	175			
					65 - 95 (65)	150	175			
					85 - 125 (85)	150	175			
					110 - 160 (110)	200	225			
					7 - 11 (7)	20	60			
					9 - 13 (9)	20	60			
					12 - 18 (12)	50	60			
					18 - 26 (18)	50	60			
					24 - 36 (24)	50	60			
					28 - 40 (28)	70	70			
					34 - 50 (34)	70	70			
					45 - 65 (45)	125	125			
					53 - 80 (53)	150	125			
						TR-N14/3 [TK-N14] ⁴	3	Manual	1NO+1NC	45 - 65 (45)
53 - 80 (53)	150	175								
65 - 95 (65)	150	175								
85 - 125 (85)	150	175								
110 - 160 (110)	200	225								
7 - 11 (7)	20	60								
9 - 13 (9)	20	60								
12 - 18 (12)	50	60								
18 - 26 (18)	50	60								
24 - 36 (24)	50	60								
28 - 40 (28)	70	70								
34 - 50 (34)	70	70								
45 - 65 (45)	125	125								
53 - 80 (53)	150	125								


¹ Parenthesized values in the "Heat element rating" column are the nominal rating to be specified at order placement.

² Parenthesized values in the "Fuse rating" column are for CSA approved starters.

³ 480V or less for a combination of SW-03(Y)/3H, -0(Y)/3H or -05(Y)/3H, SW-N14/3H and molded case circuit breaker

⁴ Separate mounting is available.

● SC and SW series optional units

Series Standard	Name	Type	Specification	Applicable types	UL File No.	Standard	
NEW SC Series NEO SC Series 	Auxiliary contact block (Front mounting)	SZ-A40	4NO	SC-03, 0, 05, 4-0, 4-1, 5-1 ^{*1} , SH-4 ^{*3} , 5 SC-N1, N2, N2S, N3	E44592	UL508	
		SZ-A31	3NO+1NC				
		SZ-A22	2NO+2NC				
		SZ-A20	2NO				
		SZ-A11	1NO+1NC				
	Auxiliary contact block (Side mounting)	SZ-A02	2NC				
		SZ-AS1	1NO+1NC (mounted on both left and right sides)	SC-03, 0, 05, 4-0, 4-1, 5-1, N1, N2, N2S, N3, SH-4, 5			
	Interlock unit	SZ-AS2		SC-N4, N5, N6, N7, N8, N10, N11, N12			
		SZ-RM	A set of interlock and joint block	SC-03, 0, 05, 4-0, 4-1, 5-1, N1, N2, N2S, N3			
	Coil surge suppression unit		SZ-Z1	Varistor 24 - 48V AC/DC			SC-03 - 5-1, SH-4, 5
			SZ-Z2	Varistor 100 - 240V AC/DC			SC-03/G - 5-1/G, SH-4/G, 5/G
			SZ-Z3	Varistor 380 - 440V AC			SC-03 - 5-1, SH-4, 5
			SZ-Z6	Varistor 24 - 48V AC/DC LED			SC-03 - 5-1, SH-4, 5
			SZ-Z7	Varistor 100 - 240V AC/DC LED			SC-03/G - 5-1/G, SH-4/G, 5G
			SZ-Z31	Varistor 24 - 48V AC/DC			SC-N1 - N3
			SZ-Z32	Varistor 100 - 250V AC/DC			SC-N1/G - N3/G
			SZ-Z33	Varistor 380 - 440V AC			SC-N1 - N3
			SZ-Z41	Varistor 24 - 48V AC			SC-N4
			SZ-Z42	Varistor 100 - 250V AC			
			SZ-Z43	Varistor 380 - 440V AC			
			SZ-Z4	CR 24 - 48V AC/DC			SC-03 - 5-1, SH-4, 5
			SZ-Z5	CR 100 - 240V AC/DC			
			SZ-Z8	CR 24 - 48V AC/CD LED			
			SZ-Z9	CR 100 - 240V AC/DC LED			
			SZ-Z34	CR 24 - 48V AC			SC-N1 - N3
			SZ-Z35	CR 100 - 250V AC			
			SZ-Z36	CR 24 - 48V DC			SC-N1/G - N3/G
			SZ-Z37	CR 100 - 250V DC			
			SZ-Z44	CR 24 - 48V AC			SC-N4
	SZ-Z45	CR 100 - 250V AC					
	Main circuit surge suppression unit		SZ-ZM1	Front mounting 3-phase CR 250V AC			SC-03 - 5-1 ^{*2}
			SZ-ZM2	Side mounting 3-phase CR 250V AC			
			SZ-ZM3				SC-N1 - N3
			SZ-ZM4				
	Terminal covers		SZ-T5	For auxiliary contact block (front mounting:) 4 poles			SZ-A40, A31, A22, A20, A11, A02
			SZ-T6	For auxiliary contact block (front mounting:) 3 poles			
			SZ-T7	For auxiliary contact block (front mounting:) 2 poles			SZ-AL, AR, AS1, AS2
			SZ-T1	For contactors (main terminals and coil terminals)			SC-03, 0, SH-4
			SZ-T2				SC-05, SH-5
			SZ-T3				SC-4-0, 4-1, 5-1
			SZ-T4				SC-5-1
			SZ-T22				SC-N1, N2
			SZ-T23				SC-N2S, N3
			SZ-T10	For thermal overload relay separate mounting unit			SZ-HB
			SZ-T11				SZ-HC
SZ-T12			For thermal overload relays	TR-0N			
SZ-T13				TR-5-1N			
SZ-T14			For separate mounting thermal overload relay	TR-N2H			
SZ-T15				TR-N3H			
SZ-T16			For thermal overload relays	TR-N2			
SZ-T17				TR-N3			
SZ-N4T			For magnetic contactors (Terminal on power supply side)	SC(SW)-N4, N5			
SZ-N6T				SC(SW)-N6			
SZ-N7T			For magnetic contactors (Terminal on load side)	SC(SW)-N7			
SZ-N8T			For magnetic starters (Terminal on power supply side)	SC(SW)-N8, N10			
SZ-N11T				SC(SW)-N11, N12			
SZ-WN4T			For magnetic starters (Terminal on load side)	SW-N4, N5			
SZ-WN6T				SW-N6			
SZ-WN7T		SW-N7					
SZ-WN8T		SW-N8					
SZ-WN10T		SW-N10					
SZ-WN11T		SW-N11, N12					
Separate mounting unit		SZ-HB	Separate mounting thermal overload relay assembly	TR-0N			
		SZ-HC		TR-5-1N			
		SZ-HD		TR-N2			
		SZ-HE		TR-N3			
Reset release button		SZ-R1	For resetting thermal overload relay (L=300mm)	TR-0N, 5-1N			
		SZ-R2	For resetting thermal overload relay (L=500mm)				
		SZ-R3	For resetting thermal overload relay (L=700mm)				
Dial cover		SZ-DA	For locking the current setting dial of thermal overload relay	TR-0N, 5-1N			

Note 1: The main unit is approved to satisfy the UL/CSA standard when it is combined with operation counter (SZ-J□) and/or live-section cover (SZ-JC□, or JW□).


*1 Can not be mounted on 5-1(Y) type of 2NO+2NC auxiliary contacts.

*2 SZ-ZM1 type can not be mounted on 5-1(Y) type of 2NO+2NC auxiliary contacts.


*3 Can not be mounted on SH-4 type of 8 auxiliary contacts.

●Contactors / SC-M series


- AC operated non-reversing magnetic contactors

Series Standard	Type	Max. motor capacity [HP] (): Rated operational current						Continuous current [A]	UL File No.	Standard
		Single-phase		3-phase squirrel-cage						
		110-120V	220-240V	200V	220-240V	400-480V	550-600V			
SC-M Series 	SC-M01	1/3 (7.2A)	1 (4.2A)	1.5 (6.9A)	1.5 (6A)	3 (4.8A)	3 (3.9A)	20	E42419	UL508
	SC-M02	1/2 (9.8A)	1.5 (6A)	3 (11A)	3 (9.6A)	5 (7.6A)	5 (6.1A)	20		


- DC operated non-reversing magnetic contactors

Series Standard	Type	Max. motor capacity [HP] (): Rated operational current						Continuous current [A]	UL File No.	Standard
		Single-phase		3-phase squirrel-cage						
		110-120V	220-240V	200V	220-240V	400-480V	550-600V			
SC-M Series 	SC-M01/G	1/3 (7.2A)	1 (4.2A)	1.5 (6.9A)	1.5 (6A)	3 (4.8A)	3 (3.9A)	20	E42419	UL508
	SC-M01/G1	1/3 (7.2A)	1 (4.2A)	1.5 (6.9A)	1.5 (6A)	3 (4.8A)	3 (3.9A)	20		
	SC-M01/G2	1/3 (7.2A)	1 (4.2A)	1.5 (6.9A)	1.5 (6A)	3 (4.8A)	3 (3.9A)	20		
	SC-M02/G	1/2 (9.8A)	1.5 (6A)	3 (11A)	3 (9.6A)	5 (7.6A)	5 (6.1A)	20		
	SC-M02/G1	1/2 (9.8A)	1.5 (6A)	3 (11A)	3 (9.6A)	5 (7.6A)	5 (6.1A)	20		
	SC-M02/G2	1/2 (9.8A)	1.5 (6A)	3 (11A)	3 (9.6A)	5 (7.6A)	5 (6.1A)	20		


- AC operated reversing magnetic contactors

Series Standard	Type	Max. motor capacity [HP] (): Rated operational current				Continuous current [A]	UL File No.	Standard
		3-phase						
		200V	220-240V	400-480V	550-600V			
SC-M Series 	SC-M01RM	1.5 (6.9A)	1.5 (6A)	3 (4.8A)	3 (3.9A)	20	E42419	UL508
	SC-M02RM	3 (11A)	3 (9.6A)	5 (7.6A)	5 (6.1A)	20		


-DC operated reversing magnetic contactors

Series Standard	Type	Max. motor capacity [HP] (): Rated operational current				Continuous current [A]	UL File No.	Standard
		3-phase						
		200V	220-240V	400-480V	550-600V			
SC-M Series 	SC-M01/GRM	1.5 (6.9A)	1.5 (6A)	3 (4.8A)	3 (3.9A)	20	E42419	UL508
	SC-M01/G1RM	1.5 (6.9A)	1.5 (6A)	3 (4.8A)	3 (3.9A)	20		
	SC-M01/G2RM	1.5 (6.9A)	1.5 (6A)	3 (4.8A)	3 (3.9A)	20		
	SC-M02/GRM	3 (11A)	3 (9.6A)	5 (7.6A)	5 (6.1A)	20		
	SC-M02/G1RM	3 (11A)	3 (9.6A)	5 (7.6A)	5 (6.1A)	20		
	SC-M02/G2RM	3 (11A)	3 (9.6A)	5 (7.6A)	5 (6.1A)	20		

- 2E thermal overload relay


Series Standard	Type	No. of heat elements	Reset	Auxiliary contact	Heat element rating [A]	Applicable magnetic contactor types	Protection coordination Fuse rating [A] Class K-5	UL File No.	Standard
SC-M Series 	TK-M0	3	Manual/Auto	1NC	0.11-0.17	SC-M01	1	E44592	UL508
					0.17-0.26	SC-M01/G□	1		
					0.26-0.43	SC-M01RM	1		
					0.43-0.65	SC-M01/G□RM	1		
					0.65-1.0	SC-M02	3		
					0.85-1.3	SC-M02/G□	3		
					1.1-1.6	SC-M02RM	6		
					1.35-2.0	SC-M02/G□RM	6		
					1.7-2.4		6		
					2.2-3.2		10		
					2.5-4.0		15		
					3.0-4.7		15		
					4.0-6.3		20		
					5.5-8.0		30		
	7.5-10.5		40						
	TK-M0Q	3	Manual/Auto	1NC	1.35-2.0		6		
					1.7-2.4		10		
					2.2-3.2		15		
					3.0-4.7		15		
					4.0-6.3		20		
5.5-8.0						30			
7.4-10.5		40							

- SC-M Series optional accessories


Series Standard	Model	Type	Specification	Applications	UL File No.	Standard	
SC-M Series 	Auxiliary contact block (Front mounting)	SZ-MA40	4NO, A600, Q600	SC-M01	E44592	UL508	
		SZ-MA31	3NO+1NC, A600, Q600	SC-M01/G□			
		SZ-MA22	2NO+2NC, A600, Q600	SC-M02			
		SZ-MA13	1NO+3NC, A600, Q600	SC-M02/G□			
		SZ-MA04	4NC, A600, Q600				
		SZ-MA20	2NO, A600, Q600				
		SZ-M11	1NO+1NC, A600, Q600				
		SZ-MA02	2NC, A600, Q600				
		Auxiliary contact block (Side mounting)	SZ-MAS10	1NO, A600, Q600			
			SZ-MAS01	1NC, A600, Q600			
	Coil surge suppression unit	SZ-MZ1	CR 12 - 60V AC/DC 50/60Hz				
		SZ-MZ2	CR 72 - 250V AC/DC 50/60Hz				
		SZ-MZ3	Built-in diode (6 - 250V DC)				
	Interlock unit	SZ-MRM	A set of interlock and joint block				
	Reversing connection kit	SZ-MRWC	Reversing circuit wiring kit				
Solid-state time-delay unit	SZ-MT2	ON delay 0.2 - 24s					
	SZ-MT5	ON delay 0.5 - 60s					
Input terminal	SZ-MHT	Separate mounting thermal relay input terminal	TK-M0				
Base unit	SZ-MHB	DIN 35mm-wide rail mounted, screw mounted	TK-M0Q				
Auxiliary contact block	SZ-MA10	Contact arrangement : 1NC, A600, Q600					

● Contactors / SC-E Series


- AC operated / Non-reversing contactors


Series Standard	Type	Rated capacity [HP] (): Rated operational current						Continuous current [A]	UL File No.	Standard
		Single-phase motor			3-phase squirrel cage motor					
		110-120V	220-240V	200V	220-240V	440-480V	550-600V			
SC-E Series 	SC-E02	1/3 (7.2A)	1 (8A)	2 (7.8A)	2 (6.8A)	5 (7.6A)	5 (6.1A)	20	E42419	UL508
	SC-E03	1/2 (9.8A)	2 (12A)	3 (11A)	3 (9.6A)	7 1/2 (11A)	7 1/2 (9A)	20		
	SC-E04	1 (16A)	3 (17A)	5 (17.5A)	5 (15.2A)	10 (14A)	10 (11A)	25		
	SC-E05	2 (24A)	3 (17A)	5 (17.5A)	7 1/2 (22A)	15 (21A)	15 (17A)	32		
	SC-E1	2 (24A)	3 (17A)	7.5 (25.3A)	10 (28A)	25 (34A)	25 (27A)	50		
	SC-E2	3 (34A)	5 (28A)	10 (32.2A)	15 (42A)	30 (40A)	30 (32A)	60		
	SC-E2S	3 (34A)	10 (50A)	15 (48.3A)	20 (54A)	30 (40A)	30 (32A)	65		
	SC-E3	5 (56A)	15 (68A)	20 (62.1A)	25 (68A)	50 (65A)	50 (52A)	100		
	SC-E4	5 (56A)	15 (68A)	25 (78.2A)	30 (80A)	50 (65A)	50 (52A)	105		
	SC-E5	7.5 (80A)	15 (68A)	30 (92A)	30 (80A)	60 (77A)	75 (77A)	150		
	SC-E6	10 (100A)	20 (88A)	40 (119.6A)	40 (104A)	75 (96A)	100 (99A)	150		
SC-E7	15 (135A)	25 (110A)	50 (149.5A)	50 (130A)	100 (124A)	125 (125A)	200			

- DC operated / Non-reversing contactors


Series Standard	Type	Rated capacity [HP] (): Rated operational current						Continuous current [A]	UL File No.	Standard
		Single-phase motor			3-phase squirrel cage motor					
		110-120V	220-240V	200V	220-240V	440-480V	550-600V			
SC-E Series 	SC-E02/G	1/3 (7.2A)	1 (8A)	2 (7.8A)	2 (6.8A)	5 (7.6A)	5 (6.1A)	20	E42419	UL508
	SC-E03/G	1/2 (9.8A)	2 (12A)	3 (11A)	3 (9.6A)	7 1/2 (11A)	7 1/2 (9A)	20		
	SC-E04/G	1 (16A)	3 (17A)	5 (17.5A)	5 (15.2A)	10 (14A)	10 (11A)	25		
	SC-E05/G	2 (24A)	3 (17A)	5 (17.5A)	7 1/2 (22A)	15 (21A)	15 (17A)	32		
	SC-E1/G	2 (24A)	3 (17A)	7.5 (25.3A)	10 (28A)	25 (34A)	25 (27A)	50		
	SC-E2/G	3 (34A)	5 (28A)	10 (32.2A)	15 (42A)	30 (40A)	30 (32A)	60		
	SC-E2S/G	3 (34A)	10 (50A)	15 (48.3A)	20 (54A)	30 (40A)	30 (32A)	65		
	SC-E3/G	5 (56A)	15 (68A)	20 (62.1A)	25 (68A)	50 (65A)	50 (52A)	100		
	SC-E4/G	5 (56A)	15 (68A)	25 (78.2A)	30 (80A)	50 (65A)	50 (52A)	105		
	SC-E5	7.5 (80A)	15 (68A)	30 (92A)	30 (80A)	60 (77A)	75 (77A)	150		
	SC-E6	10 (100A)	20 (88A)	40 (119.6A)	40 (104A)	75 (96A)	100 (99A)	150		
SC-E7	15 (135A)	25 (110A)	50 (149.5A)	50 (130A)	100 (124A)	125 (125A)	200			


- 2E thermal overload relay

Series Standard	Type	No. of heat elements	Reset	Auxiliary contact arrangement	Heat element ratings [A]	Protection coordination		Applicable magnetic contactor types	UL File No.	Standard
						AC 600V Max. rated current of UL breaker [A]	AC 600V Max. rated current of UL fuse [A]			
SC-E Series 	TK-E02	3	Manual / Auto	1NO + 1NC	0.1-0.15 (0.1)	15	15	SC-E02, E02/G	E44592	UL508
					0.13-0.2 (0.13)	15	15			
					0.15-0.24 (0.15)	15	15			
					0.2-0.3 (0.2)	15	15			
					0.24-0.36 (0.24)	15	15			
					0.3-0.45 (0.3)	15	15			
					0.36-0.54 (0.36)	15	15			
					0.48-0.72 (0.48)	15	15			
					0.64-0.96 (0.64)	15	15			
					0.8-1.2 (0.8)	15	15			
					0.95-1.45 (0.95)	15	15			
					1.4-2.2 (1.4)	20	15			
					1.7-2.6 (1.7)	20	15			
					2.2-3.4 (2.2)	20	15			
					2.8-4.2 (2.8)	20	15			
					4-6 (4)	20	15			
					5-8 (5)	20	15			
					6-9 (6)	20	30			
					7-11 (7)	20	30			
					0.1-0.15 (0.1)	15	15			
					0.13-0.2 (0.13)	15	15			
					0.15-0.24 (0.15)	15	15			
					0.2-0.3 (0.2)	15	15			
					0.24-0.36 (0.24)	15	15			
					0.3-0.45 (0.3)	15	15			
					0.36-0.54 (0.36)	15	15			
					0.48-0.72 (0.48)	15	15			
					0.64-0.96 (0.64)	15	15			
					0.8-1.2 (0.8)	15	15			
					0.95-1.45 (0.95)	15	15			
					1.4-2.2 (1.4)	20	15			
					1.7-2.6 (1.7)	20	15			
					2.2-3.4 (2.2)	20	15			
					2.8-4.2 (2.8)	20	15			
					4-6 (4)	20	15			
					5-8 (5)	20	15			
					6-9 (6)	20	30			
					7-11 (7)	20	30			
					9-13 (9)	30	30			
					0.1-0.15 (0.1)	15	15			
					0.13-0.2 (0.13)	15	15			
					0.15-0.24 (0.15)	15	15			
					0.2-0.3 (0.2)	15	15			
					0.24-0.36 (0.24)	15	15			
					0.3-0.45 (0.3)	15	15			
					0.36-0.54 (0.36)	15	15			
					0.48-0.72 (0.48)	15	15			
					0.64-0.96 (0.64)	15	15			
					0.8-1.2 (0.8)	15	15			
					0.95-1.45 (0.95)	15	15			
					1.4-2.2 (1.4)	20	15			
					1.7-2.6 (1.7)	20	15			
					2.2-3.4 (2.2)	20	15			
					2.8-4.2 (2.8)	20	15			
					4-6 (4)	20	15			
					5-8 (5)	20	15			
					6-9 (6)	20	30			
					7-11 (7)	20	30			
					9-13 (9)	30	30			
					12-18 (12)	30	50			
					0.1-0.15 (0.1)	15	15			
					0.13-0.2 (0.13)	15	15			
					0.15-0.24 (0.15)	15	15			
					0.2-0.3 (0.2)	15	15			
					0.24-0.36 (0.24)	15	15			
					0.3-0.45 (0.3)	15	15			
					0.36-0.54 (0.36)	15	15			
					0.48-0.72 (0.48)	15	15			
					0.64-0.96 (0.64)	15	15			
					0.8-1.2 (0.8)	15	15			
					0.95-1.45 (0.95)	15	15			
					1.4-2.2 (1.4)	20	15			
					1.7-2.6 (1.7)	20	15			
					2.2-3.4 (2.2)	20	15			
					2.8-4.2 (2.8)	20	15			
					4-6 (4)	20	15			
					5-8 (5)	20	15			
					6-9 (6)	20	30			
					7-11 (7)	20	30			

Series Standard	Type	No. of heat elements	Reset	Auxiliary contact arrangement	Heat element ratings [A]	Protection coordination		Applicable magnetic contactor types	UL File No.	Standard
						AC 600V Max. rated current of UL breaker [A]	AC 600V Max. rated current of UL fuse [A]			
SC-E Series 	TK-E02	3	Manual / Auto	1NO + 1NC	9-13 (9)	30	30	SC-E05, E05/G	E44592	UL508
					12-18 (12)	30	50			
					16-22 (16)	50	50			
					20-25 (20)	50	50			
	TK-E2	3	Manual / Auto	1NO + 1NC	4-6 (4)	60	20	SC-E1, E1/G		
					5-8 (5)	60	20			
					6-9 (6)	60	20			
					7-11 (7)	60	20			
					9-13 (9)	60	20			
					12-18 (12)	60	50			
					18-26 (18)	60	50			
					24-36 (24)	50	50			
					4-6 (4)	60	20	SC-E2, E2/G		
					5-8 (5)	60	20			
					6-9 (6)	60	20			
					7-11 (7)	60	20			
					9-13 (9)	60	20			
					12-18 (12)	60	50			
					18-26 (18)	60	50			
					24-36 (24)	50	50			
					32-42 (32)	70	70	SC-E2S, E2S/G		
					4-6 (4)	60	20			
					5-8 (5)	60	20			
					6-9 (6)	60	20			
					7-11 (7)	60	20			
					9-13 (9)	60	20			
					12-18 (12)	60	50			
					18-26 (18)	60	50			
					24-36 (24)	50	50			
					32-42 (32)	70	70			
					40-50 (40)	70	70			
					44-54 (44)	70	70			
	TK-E3	3	Manual / Auto	1NO + 1NC	7-11 (7)	60	20	SC-E3, E3/G		
					9-13 (9)	60	20			
					12-18 (12)	60	50			
					18-26 (18)	60	50			
					24-36 (24)	50	50			
					28-40 (28)	70	70			
					34-50 (34)	70	70			
					45-65 (45)	125	125			
					48-68 (48)	125	125	SC-E4, E4/G		
					7-11 (7)	60	20			
					9-13 (9)	60	20			
					12-18 (12)	60	50			
					18-26 (18)	60	50			
					24-36 (24)	50	50			
					28-40 (28)	70	70			
					34-50 (34)	70	70			
	45-65 (45)	125	125							
	48-68 (48)	125	125							
64-80 (64)	125	125								
TK-E5	3	Manual / Auto	1NO + 1NC	18-26 (18)	60	50	SC-E5			
				24-36 (24)	50	50				
				28-40 (28)	70	70				
				34-50 (34)	70	70				
				45-65 (45)	125	125				
				65-95 (65)	125	150				
				85-105 (85)	125	150				
TK-E6	3	Manual / Auto	1NO + 1NC	45-65 (45)	175	150	SC-E6			
				53-80 (53)	175	150				
				65-95 (65)	175	150				
				85-125 (85)	175	150				
				45-65 (45)	175	150	SC-E7			
				53-80 (53)	175	150				
				65-95 (65)	175	150				
				85-125 (85)	175	150				
				110-160 (110)	225	200				

● SJ series high-sensitivity contactor (open type)

Standard	Non-reversible types		Max. motor capacity [HP]						Continuous current [A] ^{*1}	Auxiliary contact arrangement	Coil voltage code	UL File No.	Standard		
	Magnetic contactor	Magnetic starters	Single-phase			3-phase									
			Type	Type	110-120V	220-240V	110-120V	220V						220-240V	440-480V
SJ Series 	SJ-0G, 06G	SJ-0WG/N3H, 06WG/N3H	1/3	1	1	2	3	-	15	1NO, 1NC	12V DC 24V DC	E42419	UL508		
		SJ-0WG/2E, 06WG/2E													
	SJ-1SG	SJ-1SWG/3H SJ-1SWG/2E	1	2	2	5	5	7 1/2	25	2NO, 2NO+2NC					


Standard	Reversible types		Max. motor capacity [HP]						Continuous current [A] ^{*1}	Auxiliary contact arrangement	Coil voltage code	UL File No.	Standard		
	Magnetic contactor	Magnetic starters	Single-phase			3-phase									
			Type	Type	110-120V	220-240V	110-120V	220V						220-240V	440-480V
SJ Series 	SJ-0G, 06G	SJ-0WGRM/N3H, 06WGRM/N3H	1/3	1	1	2	3	-	15	1NO, 1NC	12V DC 24V DC	E42419	UL508		
		SJ-0WGRM/2E, 06WGRM/2E													
	SJ-1SG	SJ-1SWGRM/3H SJ-1SWGRM/2E	1	2	2	5	5	7 1/2	25	2NO, 1NO+1NC					

*1 Applicable when used as magnetic contactor


Notes 1: Allowable voltage variation is 85% to 110% of rated voltage.

2: Be careful of the polarity of operation coil terminals.


● FC Series AC operated magnetic contactors (open type)

Series Standard	Type	Max. motor capacity [HP]						Continuous current [A]	Auxiliary contact arrangement	UL File No.	Standard
		Single-phase		3-phase							
		110-120V	220-240V	200V	220-240V	440-480V	550-600V				
FC Series 	FC-0UL	1/2	1	1	1	-	-	15	1NO, 1NC	E42419	UL508
	FC-0TUL										
	FC-0SUL										
	FC-0STUL										
	FC-0/GUL										
	FC-0T/GUL										
	FC-1UL	1	2	5	5	7.5	7.5	20	1NO+1NC		
	FC-1SUL	2	3	5	7.5	10	7.5	26	1NO+1NC		
	FC-2SUL	3	5	10	10	15	10	35	1NO+1NC		
FC-3UL	3	7.5	10	15	25	15	45	1NO+1NC			
FC-4UL	5	10	15	20	30	25	65	1NO+1NC			

● FC Series DC operated magnetic contactors (open type)

Series Standard	Type	Max. motor capacity [HP]					Continuous current [A]	Auxiliary contact arrangement	UL File No.	Standard
		Single-phase		3-phase						
		110-120V	220-240V	200V	220-240V	380-440V				
FC Series 	FC-0/GUL	1/2	1	1	1	-	15	1NO, 1NC	E42419	UL508
	FC-0T/GUL									
	FC-0S/GUL									
	FC-0ST/GUL									

● SB series DC magnetic contactors

Series Standard	Type	Main contact arrangement	Operational current [A]												Continuous current [A]		UL File No.	Standard
			For variable-speed motor								DC motor (class DC2/DC4)				NO contact	NC contact		
			NO contact (2 serial poles)				Dynamic brake applied NC contact (activation time: 3 seconds)				NO contact (2 serial poles)							
			110V	240V	440V	550V	110V	240V	440V	550V	110V	240V	440V	550V				
SB Series 	SB-2N/UL	2NO	50	50	35	35	75	75	75	75	40	35	18	15	50	50	E42419	UL508
	SB-2NB/UL	2NO+1NC	50	50	35	35	75	75	75	75	40	35	18	15	50	50		
	SB-2N/SEUL	2NO	50	50	35	35	75	75	75	75	40	35	18	15	50	50		
	SB-2NB/SEUL	2NO+1NC	50	50	35	35	75	75	75	75	40	35	18	15	50	50		
	SB-5N/UL	2NO	110	110	110	110	165	165	165	165	85	85	60	45	110	100		
	SB-5NB/UL	2NO+1NC	110	110	110	110	165	165	165	165	85	85	60	45	110	100		
	SB-6N/UL	2NO	140	140	140	140	210	210	210	210	125	120	80	50	140	100		
	SB-6NB/UL	2NO+1NC	140	140	140	140	210	210	210	210	125	120	80	50	140	100		
	SB-10N/UL	2NO	240	240	240	240	360	360	360	360	240	200	120	100	240	160		
	SB-10NB/UL	2NO+1NC	240	240	240	240	360	360	360	360	240	200	120	100	240	160		
	SB-11N/UL	2NO	320	320	320	320	480	480	480	480	320	290	200	150	320	200		
SB-11NB/UL	2NO+1NC	320	320	320	320	480	480	480	480	320	290	200	150	320	200			

- Notes
- 1: The duty for variable-speed motor control (NO contact) and that for dynamic brake (NC contact) are applicable to the no-voltage circuit of twice the making capacity and to that of one time the making capacity, respectively.
 - 2: The continuous current values for dynamic brake application are for the intermittent operation of 600 cycle/hour and 3-second activation time.
 - 3: The values for DC motor application are applicable to the motor load of class DC2 (start/stop of shunt motors - time constant L/R: 2ms when closed and 7.5ms when open) or DC4 (start/stop of series motors - time constant L/R: 7.5ms when closed and 10ms when open) under JEM1038.

● Standard application of built-in thermal overload relays


Type	No. of heat elements	Reset	Auxiliary contact arrangement	Heat element ratings [A]	Protection coordination		Applicable magnetic starter types
					Max. rated current of current limiting fuse [A] ^{*1}	Max. rated current of molded case circuit breaker [A]	
TR-0/UL	3	Manual	1(NO+NC)	0.48 - 0.72 (0.48)	15	15	SJ-0WG/UL
				0.64 - 0.96 (0.64)	15	15	
				0.8 - 1.2 (0.8)	15	15	
				0.95 - 1.45 (0.95)	15	15	
				1.4 - 2.2 (1.4)	15	15	
				1.7 - 2.6 (1.7)	15	15	
				2.2 - 3.4 (2.2)	15	15	
				2.8 - 4.2 (2.8)	15	15	
				4 - 6 (4)	15	15	
				5 - 8 (5)	20	15	
				6 - 9 (6)	30	15	
7 - 9.6 (7)	30	15					
TR-0N/3Z716 TK-0NZ716	3	Manual/Auto	1NO+1NC	0.1 - 0.15 (0.1)	1 (15)	-	SJ-0WG/N3H SJ-0WG/2E
				0.15 - 0.24 (0.15)	1 (15)		
				0.24 - 0.36 (0.24)	2 (15)		
				0.36 - 0.54 (0.36)	3 (15)		
				0.54 - 0.72 (0.48)	3 (15)		
				0.64 - 0.96 (0.64)	3 (15)		
				0.8 - 1.2 (0.8)	5 (15)		
				0.95 - 1.45 (0.95)	5 (15)		
				1.4 - 2.2 (1.4)	10 (15)		
				1.7 - 2.6 (1.7)	10 (15)		
				2.2 - 3.4 (2.2)	15		
				2.8 - 4.2 (2.8)	15		
				4 - 6 (4)	15		
				5 - 8 (5)	20		
6 - 9 (6)	30						
7 - 11 (7)	30						
TR-5-1N/3 TK-5-1N	3	Manual/Auto	1NO+1NC	0.1 - 0.15 (0.1)	1 (15)	-	SJ-1SWG/3H SJ-1SWG/2E
				0.15 - 0.24 (0.15)	1 (15)		
				0.24 - 0.36 (0.24)	2 (15)		
				0.36 - 0.54 (0.36)	3 (15)		
				0.48 - 0.72 (0.48)	3 (15)		
				0.64 - 0.96 (0.64)	3 (15)		
				0.8 - 1.2 (0.8)	5 (15)		
				0.95 - 1.45 (0.95)	5 (15)		
				1.4 - 2.2 (1.4)	10 (15)		
				1.7 - 2.6 (1.7)	10 (15)		
				2.2 - 3.4 (2.2)	15		
				2.8 - 4.2 (2.8)	15		
				4 - 6 (4)	15		
				5 - 8 (5)	20		
6 - 9 (6)	30						
7 - 11 (7)	30						
9 - 13 (9)	30						
12 - 18 (12)	30						

*1 Parenthesized values in the fuse rating column are for CSA approved products.

Note 1: Parenthesized figures in the "Heat element rating" column are the nominal rating to be specified at order placement.

■ Solid-state Contactors


● 3-pole Solid-state contactors

Series Standard	Rated main-circuit voltage	Type		Number of main circuit elements	Continuous current [A]	Max. motor capacity [HP] (at 60 Hz)				UL File No.	Standard
		Main body	Cooling fin			Single-phase		3-phase			
						110-120V	220-240V	220-240V	440-480V		
SS Series 	100-240V AC	SS032	-	2	3	-	1/10	1/2	-	E132864	UL508
		SS033	-	3							
		SS082	Fins integrated into main body	2	8	1/10	1/4	3/4	-		
		SS083		3							
		SS202	SX1-D10	2	20	1/6	1/2	1 1/2	-		
		SS203	SX1-D10	3							
		SS302	SX1-D10	2	30	1/3	1	2	-		
		SS303	SX1-E12	3							
		SS402	SX1-D14	2	40	1/2	1 1/2	3	-		
		SS403	SX1-E12	3							
		SS502	SX1-E12	2	50	1	3	5	-		
		SS503	SX1-E17	3							
	SS802	SX1-C12	2	80	3	5	10	-			
	SS803	SX1-C12	3								
	SS1202	SX1-C12	2	120	3	5	10	-			
	SS1203	SX1-C12	3								
	200-480V AC	SS302H	SX1-E12	2	30	-	1	5	-		
		SS303H	SX1-E12	3							
SS502H		SX1-E12	2	50	-	3	5	10			
SS503H		SX1-E17	3								
SS802H		SX1-C12	2	80	-	5	10	20			
SS803H		SX1-C12	3								
SS1202H	SX1-C12	2	120	-	5	10	20				
SS1203H	SX1-C12	3									

Notes 1: Figures in "Continuous current" and "Max. motor capacity" columns are those when operated at 40 °C in ambient temperature with cooling fins mounted.


2: Motor running conditions: make-break frequency =1200 times per hour; duty cycle = 25%; motor starting current = 6 times the total load current; motor starting time = 0.7 second or less.

● Single-pole Solid-state contactors


Series Standard	Rated main-circuit voltage	Type	Number of main circuit elements	Continuous current [A]	Max. motor capacity [HP] (at 60 Hz)				UL File No.	Standard
					Single-phase		3-phase			
					120V	240V	240V	480V		
SS Series 	100-240V AC	SS101	1	10	-	-	-	-	E132864	UL508
		SS201	1	20	-	-	-	-		
		SS301	1	30	-	-	-	-		
		SS401	1	40	-	-	-	-		
		SS501	1	50	-	-	-	-		
		SS701	1	70	2	5	3	10		
		SS1001	1	100	3	7 1/2	5	15		
		SS1501	1	150	5	10	10	20		
		SS2001	1	200	7 1/2	15	10	30		
		200-480V AC	SS701H	1	70	5	10	10		
	SS1001H		1	100	7 1/2	15	15	30		
	SS1501H		1	150	10	25	20	40		
SS2001H	1		200	20	40	30	60			

■ Molded Case Circuit Breakers/Earth Leakage Circuit Breakers

● EA-UL Series




Series	Type	Current [A]	Poles	Voltage [V] AC	Interrupting capacity [kA]		UL File No.	Standard
					UL240V	IEC230V		
SA-UL Series 	EA100CUL	60, 70, 75, 80, 90, 100	2	240	14	25	E90584	UL489
			3	240	14	25		

● SA-UL Series


Series	Type	Current [A]	Poles	Voltage [V] AC	Interrupting capacity [kA]		UL File No.	Standard
					UL240V	IEC230V		
SA-UL Series 	SA50RCUL	3, 5, 10, 15, 20, 30, 40, 50	2	240	14	25	E90584	UL489
			3	240	14	25		
	SA100CUL	15, 20, 30, 40, 50, 60, 70, 75, 80, 90, 100	2	240	35	50		
			3	240	35	50		
	SA100CUL	15, 20, 30, 40, 50, 60, 70, 75, 80, 90, 100	2	480	85	100		
			3	480	85	100		
	SA225CUL	125, 150, 175, 200, 225	2	240	35	50		
			3	240	35	50		
	SA225RCUL	125, 150, 175, 200, 225	2	480	85	100		
			3	480	85	100		
	SA400CUL	250, 300, 350, 400	2	240	42	50		
			3	240	42	50		
	SA400RCUL	250, 300, 350, 400	2	480	85	85		
			3	480	85	85		
SA600RCUL	500, 600	3	480	85	85			
SA800RCUL	700, 800	3	480	85	85			


Note 1: Product conforming to UL508: indication in applicable load output [HP].

● External operating handles


Series	Type	Applicable model				UL File No.	Standard
		MCCBs		ELCBs			
		E series	S series	E series	S series		
V-type handle 	BZ6V10C	EA32AC, 33AC EA52AC, 53AC EA52C, 53C EA62C, 63C EA103AC, 102C, 103C EA102CUL, 103CUL	SA32C, 33C SA52C, 53C SA52RC, 53RC SA62C, 63C SA62RC, 63RC SA52RCUL, 53RCUL	EG32AC, 33AC, 33C EG52AC, 53AC, 53C EG63C EG103AC, 102C, 103C EG102CUL, 103CUL	SG33C SG53C SG53RC SG63C SG63RC SG53RCUL	E93289	UL489
	BZ6V30C	-	SA102C, 103C SA102CUL, 103CUL SA102RC, 103RC SA102RCUL, 103RCUL	-	SG103C SG103CUL SG103RC		
	BZ6V40C	EA202C, 203C	SA202C, 203C SA202CUL, 203CUL SA202RC, 203RC SA202RCUL, 203RCUL	EG203C	SG203C SG203CUL SG203RC		
	BZ6V60C	EA402C, 403C	SA402C, 403C SA402CUL, 403CUL SA402RC, 403RC SA402RCUL, 403RCUL	EG403C	SG403C SG403CUL SG403RC		
	BZ6V70C	EA603C, 803C	SA603RC, 803RC SA603RCUL, 803RCUL	EG603C EG803C	SG603RC SG803RC		
N-type handle 	BZ6N10C	EA32AC, 33AC EA52AC, 53AC EA52C, 53C EA62C, 63C EA103AC, 102C, 103C	SA32C, 33C SA52C, 53C SA52RC, 53RC SA62C, 63C SA62RC, 63RC	EG32AC, 33AC, 33C EG52AC, 53AC, 53C EG63C EG103AC, 102C, 103C	SG33C SG53C SG53RC SG63C SG63RC	E216772	UL508
	BZ6N10CP	EA102CUL, 103CUL	SA52RCUL, 53RCUL	EG102CUL, 103CUL	SG53RCUL	E93289	UL489
	BZ6N30CP	-	SA102CUL, 103CUL SA102RCUL, 103RCUL	-	SG103CUL		
	BZ6N40CP	-	SA202CUL, 203CUL SA202RCUL, 203RCUL	-	SG203CUL		
	BZ6N60CP	-	SA402CUL, 403CUL SA402RCUL, 403RCUL	-	SG403CUL		
	BZ6N70CP	-	SA603RCUL, 803RCUL	-	-		
Flange-type Handle 	BZ6UF30D	-	SA100CUL SA100RCUL	-	SG103CUL	E93289	UL489
	BZ6UF40D	-	SA225CUL SA225RCUL	-	SG203CUL		
	BZ6UF60D	-	SA400CUL SA400RCUL	-	SG403CUL		

● α -TWIN Series (UL 508 listed)



Frame [A]			30					50					60			100						
Type			EG32AC		EG33AC	EG33C	EG52AC		EG53AC		EG53C	EG63C		EG103AC		EG102C	EG103C					
Pole			2	3	3	2		3		3	3		3	2		3						
Rated operating voltage [V]	AC		240					240					240			240						
Rated current [A]			5	10	15	20	30	5	10	15	20	30	40	50	60	60	75	100	60	75	100	
UL508 	3-phase	Applicable load output [Hp], for 3 poles	AC220-240V	0.5	1	2	2	3	0.5	1	2	2	3	5	7.5	10	10	10	15	10	10	15
	Single-phase	Applicable load output [Hp]	AC220-240V	1/6	1/3	3/4	1	2	1/6	1/3	3/4	1	2	3	3	5	5	5	7.5	5	5	7.5
High-speed type	Rated operating AC voltage [V] [UL508 (cUL)]		240					240					240			240						
	Rated sensitive current $I_{\Delta n}$ [mA] [UL508 (cUL)]		15, 30, 100					15, 30, 100/200					30,100/200			100/200		100/200/500				
	Pick-up current [UL1053]		0.7 × rated sensitive current																			
Tripping time (S) [UL1053]			0.1 or less																			
UL File No.			E216772																			

Frame [A]			30					50					60					
Type			SG33C					SG53C					SG63C			SG63RC		
Pole			3					3					3			3		
Rated operating voltage [V]	AC		240					240					240					
Rated current [A]			3	5	10	15	20	30	5	10	15	20	30	40	50	60	60	
UL508 	3-phase	Applicable load output [Hp], for 3 poles	AC220-240V	-	0.5	1	2	2	3	0.5	1	2	2	3	5	7.5	10	10
	Single-phase	Applicable load output [Hp]	AC220-240V	-	1/6	1/3	3/4	1	2	1/6	1/3	3/4	1	2	3	3	5	5
High-speed type	Rated operating AC voltage [V] [UL508 (cUL)]		240					240					240			240		
	Rated sensitive current $I_{\Delta n}$ [mA] [UL508 (cUL)]		30, 100/200/500															
	Pick-up current [UL1053]		0.7 × rated sensitive current															
Tripping time (S) [UL1053]			0.1 or less															
UL File No.			E216772															


● BU □ A series

Series UL approved	Type	Current [A]	Poles	Voltage [V]		Interrupting capacity [kA]				UL File No.	Standard
				AC	DC	AC [V]		DC [V]			
						240	480	250	125/250		
BU-240V dedicated 	BU-ECA	5, 10, 15, 20, 30, 40, 50, 60, 70, 80, 100	2 3	240V	-	10	-	-	-	E90584	UL489
	BU-GCA	125, 150, 175, 200, 225	2 3	240V	-	10	-	-	-		
	BU-GDA	125, 150, 175, 200, 225	2 3	240V	-	22	-	-	-		
	BU-KDA	250, 300, 350, 400	2 3	240V	250	22	-	10	10		


● BU □ B series

Series UL approved	Type	Current [A]	Poles	Voltage [V]		Interrupting capacity [kA]					UL File No.	Standard
				AC	DC	AC [V]			DC [V]			
						600	480	240	250	125/250		
BU standard 	BU-JSB	125, 150, 175, 200, 225, 250	2 3	600	250	22	30	50	10	10	E90584	UL489
	BU-KSB	250, 300, 350, 400	2 3	600	250	22	30	50	10	10		
	BU-LSB	500, 600	2 3	600	250	22	30	50	10	10		
	BU-MSB	700, 800	2 3	600	-	22	30	50	-	-		
	BU-NSB	1000, 1200	2 3	600	-	22	30	50	-	-		
BU high-performance 	BU-JHB	125, 150, 175, 200, 225, 250	2 3	600	250	25	35	65	10	10	E90584	UL489
	BU-KHB	250, 300, 350, 400	2 3	600	250	25	35	65	10	10		
	BU-LHB	500, 600	2 3	600	250	25	35	65	10	10		
	BU-MHB	700, 800	2 3	600	-	25	42	65	-	-		
	BU-NHB	1000, 1200	2 3	600	-	25	42	65	-	-		

● BU □ C series







Series UL approved	Type	Current [A]	Poles	Voltage [V]		Interrupting capacity [kA]			UL File No.	Standard
				AC	DC	AC [V]		AC [V]		
						240	480	250		
BU-UL/CE certificate Series 	BU2EHC	15,20,25,30,35,40,45,	2	480	250	18	14	10	E90584	UL489
	BU3EHC	50,60,70,80,90,100	3	600		18	14	10		
	BU2FHC	15,20,25,30,35,40,50,	2	480		65	25	20		
	BU3FHC	60,70,80,90,100	3	600		65	25	20		

■ Manual Motor Starters


Series Standard	Type	Thermal current setting range Operational current I _e [A]	Max. motor capacity and full-load current 3-phase [HP]				Group Installation Rated breaking capacity [kA]				UL File No.	Standard
			AC200-208V	AC220-240V	AC440-480V	AC550-600V	AC240V	AC480V	AC600V	Max. fuse /MCCB Rated current [A]		
			BM3 Series 	BM3RSB	0.1-0.16	-	-	-	-	100		
0.16-0.25	-	-			-	-	100	50	10	500		
0.25-0.4	-	-			-	-	100	50	10	500		
0.4-0.63	-	-			-	-	100	50	10	500		
0.63-1	-	-			1/2	1/2	100	50	10	500		
1-1.6	1/4	1/3			3/4	3/4	100	50	10	500		
1.6-2.5	1/2	1/2			1	1 1/2	100	50	10	500		
2.5-4	3/4	3/4			2	3	100	50	10	500		
4-6.3	1	1 1/2			3	5	100	50	10	500		
6.3-10	2	3			5	7 1/2	100	22	10	500		
9-13	3	3			7 1/2	10	100	22	10	500		
11-16	3	5			10	10	100	22	10	500		
14-20	5	5		10	15	50	22	10	500			
19-25	7 1/2	7 1/2		15	20	50	22	10	500			
24-32	10	10		20	30	50	22	10	500			
BM3RHB	0.1-0.16	-		-	-	-	100	50	10	500		
	0.16-0.25	-		-	-	-	100	50	10	500		
	0.25-0.4	-		-	-	-	100	50	10	500		
	0.4-0.63	-		-	-	-	100	50	10	500		
	0.63-1	-		-	1/2	1/2	100	50	10	500		
	1-1.6	1/4		1/3	3/4	3/4	100	50	10	500		
	1.6-2.5	1/2		1/2	1	1 1/2	100	50	10	500		
	2.5-4	3/4		3/4	2	3	100	50	10	500		
	4-6.3	1		1 1/2	3	5	100	50	10	500		
	6.3-10	2		3	5	7 1/2	100	50	10	500		
	9-13	3		3	7 1/2	10	100	50	10	500		
	11-16	3		5	10	10	100	50	10	500		
14-20	5	5		10	15	100	50	10	500			
19-25	7 1/2	7 1/2		15	20	100	50	10	500			
24-32	10	10		20	30	100	50	10	500			
BM3VSB	6.3-10	2		3	5	7 1/2	100	50 (22)	10	600		
	9-13	3		3	7 1/2	10	100	50 (22)	10	600		
BM3VHB	11-16	3		5	10	10	100	50 (22)	10	600		
	14-20	5		5	10	15	100	50 (22)	10	600		
	19-25	7 1/2		7 1/2	15	20	100	50 (22)	10	600		
	24-32	10		10	20	30	100	50 (22)	10	600		
	28-40	10		10	30	30	100	50 (22)	10	600		
	35-50	15		15	30	40	100	50 (22)	10	600		
	45-63	20		20	40	60	100	50 (22)	10	600		

Note 1: The figures in parentheses () are for BM3VSB.

■ Circuit Protector

Series Standard	Type	Voltage [V]	Current [A]	Interrupting capacity (250V AC)	Internal circuit	UL File No.	Standard
E 	CP3□E	250V AC 60V DC	0.05-30A	1,000A	Series type Shunt type Relay type (current tripping) Switch type	E96846 E83461 (Switch type)	UL1077
	V 	CP3□V					
T 	CP3□T	240V AC 60V DC	0.1-30A	1,000A	Series type	E96846	UL1077
F 	CP3□F	240V AC 60V DC	0.1-30A	2,500A	Series type		
P 	CP3□P	240V AC 60V DC	0.3-25A	1,000A	Series type		
B 	CP5□B	240V AC 60V DC	0.3-50A	1,500A	Series type		


■ Super-rapid Fuses

Series Standard	Type	Rating			UL File No.	Standard
		Voltage [V]	Current [A]	Interrupting capacity		
	CR2LS-10/UL	250V AC, 400V DC	10	10kA (pf0.8) at 250V AC 10kA (time constant: 2.0ms) at 400V DC	E92312	UL248
	CR2LS-20/UL		20			
	CR2LS-30/UL		30			
	CR2LS-50/UL		50			
	CR2LS-75/UL		75			
	CR2LS-100/UL		100			
	CR2L-150/UL		150			
	CR2L-200/UL		200			
	CR2L-260/UL		260			
	CR2L-350/UL		350			
	CR2L-400/UL		400			
			CR6L-20/UL			
CR6L-30/UL		30				
CR6L-50/UL		600V AC	50	100kA (pf0.8) at 600V AC 10kA (time constant: 3.0ms) at 600V DC		
CR6L-75/UL			75			
CR6L-100/UL		600V AC, 600V DC	100	50kA (pf0.8) at 600V AC 10kA (time constant: 1.0ms) at 600V DC		
CR6L-150/UL			150			
CR6L-200/UL			200			
CR6L-300/UL			300			


■ Pushbuttons, Selector Switches, Pilot Lights, Buzzers

- Command switches <AR22/DR22/AR30/DR30/AM22/DM22 series>



a. Illuminated pushbutton switches

Series Standard	Bezel	Operator	Type						UL File No.	Standard
			AR22		AR30		AM22			
			Momentary	Alternate	Momentary	Alternate	Momentary	Alternate		
	Round bezel	Flush round head	AR22F0L	AR22F5L	-	-	AM22F0L	AM22F5L	E44592	UL508
		Extended round head	AR22E0L	AR22E5L	AR30E0L	AR30E5L	AM22E0L	AM22E5L		
		Mushroom head (40mm dia.)	AR22M0L	AR22M5L	-	-	AM22M0L	AM22M5L		
		Mushroom head (29mm dia.)	AR22M4L	AR22M9L	-	-	AM22M4L	AM22M9L		
		Extended with transparent full guard (24mm dia.)	AR22G4L	AR22G9L	AR30G4L	AR30G9L	AM22G4L	AM22G9L		
		Extended with full guard (24mm dia.)	AR22G1L	AR22G6L	AR30G3L	AR30G8L	-	-		
		Extended with full guard (24mm dia. with openings)	AR22G2L	AR22G7L	AR30G2L	AR30G7L	AM22G2L	AM22G7L		
		Push-lock, turn-reset (40mm dia. with white arrow)	AR22V5L (Returning method : turn-reset)		AR30V5L (Returning method : turn-reset)		-	-		
	Push-pull	-	-	AR30Q7L (Returning method : automatic return)		-	-			
	Square bezel	Flush square head	AR22F0M	AR22F5M	-	-	-	-		
		Extended square head	AR22E0M	AR22E5M	-	-	-	-		
		Flush round head	AR22F0P	AR22F5P	-	-	-	-		
		Extended round head	AR22E0P	AR22E5P	-	-	-	-		
		Mushroom head (29mm dia.)	AR22M4P	-	-	-	-	-		



b. Pushbutton switches

Series Standard	Bezel	Operator	Type						UL File No.	Standard	
			AR22		AR30		AM22				
			Momentary	Alternate	Momentary	Alternate	Momentary	Alternate			
	Round bezel	Flush round head	AR22F0R	AR22F5R	AR30F0R	AR30F5R	AM22F0R	AM22F5R	E44592	UL508	
		Extended round head	AR22E0R	AR22E5R	AR30E0R	AR30E5R	AM22E0R	AM22E5R			
		Mushroom head (40mm dia.)	AR22M0R	AR22M5R	AR30M0R	AR30M5R	AM22M0R	AM22M5R			
		Mushroom head (29mm dia.)	AR22M4R	AR22M9R	AR30M4R	-	AM22M4R	-			
		Extended with full guard (24mm dia.)	AR22G3R	AR22G8R	-	-	AM22G3R	AM22G8R			
		Flush with full guard(24mm dia.)	AR22G2R	AR22G7R	-	-	-	-			
		Extended with full guard (24mm dia.)	-	-	AR30G1R	AR30G6R	-	-			
		Mushroom head with full guard (40mm dia.)	AR22M3R	-	AR30M3R	-	AM22M3R	AM22M8R			
		Extended with half guard	AR22G0R	AR22G5R	AR30G0R	AR30G5R	-	-			
		Pin lock	-	-	AR30GPR	-	-	-			
		Giant head	-	-	AR30B0R	-	-	-			
		Pushbutton with selector ring(2-position)	AR22S1R	-	AR30S1R	-	-	-			
		Pushbutton with selector ring(2-position)	AR22S2R	-	AR30S2R	-	-	-			
		Pushbutton with selector ring(2-position)	AR22S3R	-	AR30S3R	-	-	-			
		Pushbutton with selector ring(2-position)	AR22S6R	-	AR30S6R	-	-	-			
		Push, turn-lock	-	-	AR30N0R	-	-	-			
		Pushbutton with emergency operating cap	-	-	AR30FVR	-	-	-			
		Mushroom head with full guard (35mm dia. metal nut)	-	-	AR30GSR	-	-	-			
		Giant head with full guard	-	-	AR30B2R	-	-	-			
		Giant head with full guard	-	-	AR30B3R	-	-	-			
		Giant head with guard	-	-	AR30B1R	-	-	-			
		Push-lock, turn-reset (40mm dia. with white arrow)	AR22V5R	(Returning method : turn-reset)	AR30V5R	(Returning method : turn-reset)	-	-			
		Square bezel	Flush square head	AR22F0S	AR22F5S	-	-	-			-
			Extended square head	AR22E0S	AR22E5S	-	-	-			-
			Flush round head	AR22F0Y	AR22F5Y	-	-	-			-
Extended round head	AR22E0Y		AR22E5Y	-	-	-	-				
Mushroom head (29mm dia.)	AR22M4Y		-	-	-	-	-				


c. Emergency stop pushbutton switches

Series Standard	Bezel	Operator	Type						UL File No.	Standard
			AR22		AR30		AM22			
			With white arrow	No white arrow	With white arrow	No white arrow	With white arrow	No white arrow		
	Round bezel	Push-lock, turn-reset (29mm dia.)	AR22VSR	AR22V4R	-	-	AM22VSE	-	E44592	UL508
		Push-lock, turn-reset (40mm dia.)	AR22V0R	AR22V2R AR22V3R	AR30V0R	AR30V2R	AM22V0E	-		
		Push-lock, turn-reset (65mm dia.)	-	-	AR30V1R	-	-	-		
		Key-release push-lock, turn-reset (40mm dia.)	-	AR22V7R	-	-	-	-		
		Push-lock, pull-reset (35mm dia.)	-	AR22Q2R	-	AR30Q2R	-	-		
	Round bezel	Unibody push-lock, turn-reset (40mm dia.)	AR22VGE	-	-	-	-			

d. Emergency stop illuminated pushbutton switches

Series Standard	Bezel	Operator	Type						UL File No.	Standard
			AR22		AR30		AM22			
			With white arrow	No white arrow	With white arrow	No white arrow	With white arrow	No white arrow		
	Round bezel	Push-lock, turn-reset (29mm dia.)	AR22VSL	-	-	-	AM22VSF	-	E44592	UL508
		Push-lock, turn-reset (40mm dia.)	AR22V0L	AR22V2L	AR30V0L	AR30V2L	AM22V0F	-		
		Push-lock, turn-reset (40mm dia. transparent in all colors)	AR22VDL	AR22VAL	AR30VDL	-	AM22VDF	-		
	Round bezel	Unibody push-lock, turn-reset (40mm dia.)	AR22VGF	-	-	-	-			


e. Pilot lights

Series Standard	Bezel	Lens	Type			UL File No.	Standard
			DR22	DR30	DM22		
	Round bezel	Dome	DR22D0L	DR30D0L	DM22D0L	E44592	UL508
		Extended round	DR22E3L	DR30E3L	DM22E3L		
		Faceted	DR22K0L	DR30K0L	DM22K0L		
	Square bezel	Flush square	DR22F3M	-	-		
		Flush square (Transparent lens)	DR22F4M	DR30F4M*	-		
		Flush square (12mm high frame)	DR22F5M	-	-		
		Extended square	DR22E3M	-	-		
		Flush rectangular	DR22E3N	-	-		
		Flush rectangular (Transparent lens)	-	DR30F4N*	-		
		Flush square large type (Transparent lens)	-	DR30M4M*	-		
Extended round	DR22E3P	-	-				


Note 1. With resistor unit and resistor types : Not approved

Note 2. * LED 12V AC type : Not approved


f. Selector switches

Series Standard	Bezel	Operator	Type						UL File No.	Standard
			AR22		AR30		AM22			
			Standard Type	Control type	Standard type	Control type	Standard type	Control type		
	Round bezel	Knob	AR22PR	AR22PCR	AR30PR	AR30PCR	AM22PR	AM22PCR	E44592	UL508
		Lever	AR22WR	AR22WCR	AR30WR	AR30WCR	AM22WR	AM22WCR		
		Cylindrical knob	AR22RR	AR22RCR	-	-	-	-		
		Key	AR22JR	AR22JCR	AR30JR	AR30JCR	AM22JR	AM22JCR		
		Key (long durability)	AR22JAR	-	AR30JAR	-	-	-		
	Square bezel	Lever	-	-	AR30HR	-	-	-		
		Knob	AR22PY	AR22PCY	-	-	-	-		
		Lever	AR22WY	AR22WCY	-	-	-	-		
		Cylindrical knob	AR22RY	AR22RCY	-	-	-	-		
		Key	AR22JY	AR22JCY	-	-	-	-		


g. Illuminated selector switches

Series Standard	Bezel	Operator	Type			UL File No.	Standard
			AR22	AR30	AM22		
			Standard type	Standard type	Standard type		
	Round bezel	Knob	AR22PL	AR30PL	AM22PL	E44592	UL508
	Square bezel	Knob	AR22PP	-	-		

h. Joy stick selector switches (Lever switches)

Series Standard	Bezel	Handle	Type						UL File No.	Standard
			AR22		AR30		AM22			
			Manual return	Spring return	Manual return	Spring return	Manual return	Spring return		
	Round bezel	Ball type (without lock)	AR22A0□	AR22A5□	AR30A0□	AR30A5□	-	-	E44592	UL508
		Ball type (with lock)	AR22A1□	AR22A6□	AR30A1□	AR30A6□	-	-		
		Rubber cap type (without lock)	AR22A2□	AR22A7□	AR30A2□	AR30A7□	-	-		

i. Buzzers

Series Standard	Bezel	Sound	Type			UL File No.	Standard
			DR22	DR30	DM22		
			Standard type	Standard type	Standard type		
	Round bezel	Electronic sound	DR22B5	DR30B5	-	E44592	UL508
		Electronic sound (economy)	-	DR30B6	-		
		Electronic sound (IP54)	DR22B8	DR30B8	-		

Note: 6V AC, 110V DC types : Not approved

j. Contact ratings

AC (COS $\phi=0.35$)

Contact rated code	120V		240V		480V		600V	
	Making current	Breaking current	Making current	Breaking current	Making current	Breaking current	Making current	Breaking current
A600	60A	6.0A	30A	3.0A	15A	1.5A	12A	1.2A
B300 (AR22VG)	30A	3.0A	15A	1.5A	-	-	-	-

DC $T_{0.95} = 6P$ (Max. 300ms)

Description	Contact rated code	Making current - Breaking current		
		125V	250V	301V – 600V
Illuminated pushbutton switch Pushbutton (With selector ring type: AR22S2R, AR30S2R only) Emergency stop pushbutton switch Emergency stop illuminated pushbutton switch (Except the overlap contact types)	P600	1.1A	0.55A	0.2A
Overlap contact types of products shown above Pushbutton (With selector ring type: AR22S1R, AR22S6R, AR30S1R and AR30S6R only) Selector switch (2-position only, except the overlap contact types) Illuminated selector switch (2-position only, except the overlap contact types)	Q300 (AR22VG)	0.55A	0.27A	-
Pushbutton (With selector ring type: AR22S3R, AR30S3R only) Selector switch (2-pos./overlap contact type, 3-, 4-, 5-pos. Type) Illuminated selector switch (2-pos./overlap contact type, 3-pos. Type)	Q600	0.55A	0.27A	0.1A
	R300	0.22A	0.11A	-


Note : Joy stick selector switches (Lever switches): 250V AC, 5A (Res. load) 125V DC, 0.2A 24V DC, 1A (Res. load)

k. Lamp ratings


	LED lamp	Incandescent lamp	Neon lamp (AR22VGF type)
Full-voltage (without transformer)	Max. 24V AC/DC	Max. 30V AC/DC	Max. 240V AC
With transformer	Max. 550V AC (Short-body type: Max. 220V AC)		-

● Command switches <AH25 series>


a. Pushbutton switches

Series Standard	Name	Type	Specification		UL File No.	Standard	
		AH25	Contact arrangement	Color			
	Pushbutton switches	E	1NO	Green Red Black Dark green Yellow White Orange Blue	E44592	UL508	
		E5	1NC				
		F	1NO+1NC				
		F5	2NO				
		G	2NC				
		G1	2NO+2NC				
		G5	3NO, 3NC				
		G6	3NO+3NC				
		M	4NO, 4NC				
		M5	4NO+4NC				
		SE	(1NO+1NC or 2NO+2NC for E5, F5, G5, G6, M5, SF5 and SE5 types)				
		SE5					
		SF					
		SF5					
	Wobble stick switch	U					
	Pushbutton with selector ring (2-position)	S1	2NO+2NC				
		S2					
		S3					
		S4					
		S5					
		S6					
Mechanically interlocked pushbutton switches	F5/F□	1NO+1NC + 1NO+1NC					
	F5/E□						
	F5/M□						
	E5/E□						
	E5/M□						
	M5/M□						


b. Selector switches

Series Standard	Name	Type	Specification		UL File No.	Standard	
		AH25	Contact arrangement	Color			
	Selector switches (2-position)	J0	1NO, 1NC	(For P type) Black Green Red	E44592	UL508	
		J2	1NO+1NC				
		P0	2NO, 2NC				
		P2	2NO+2NC				
		SJ2	3NO, 3NC				
		SP2	3NO+3NC				
	Selector switches (3-position)	J3	4NO, 4NC	4NO+4NC (2NO+2NC for P1 and PC types)			
		J5					
		P1					
		P3					
		P5					
		P6					
		J6					
		PC					
		SJ3					
SP3							

c. Illuminated pushbutton switches

Series Standard	Name	Type	Specification		UL File No.	Standard
		AH25	Contact arrangement	Color		
	Illuminated pushbutton switches	L	·Without transformer	Green Red White Blue (except LED) Yellow Orange	E44592	UL508
		L1	1NO, 1NC, 1NO+1NC			
		L2	2NO, 2NC, 2NO+2NC			
		L3	3NO, 3NC, 3NO+3NC			
		L4	4NO, 4NC, 4NO+4NC			
		L5	·With transformer			
		L6	1NO, 1NC, 1NO+1NC			
		L7	2NO, 2NC, 2NO+2NC			
		L8	(1NO+1NC or 2NO+2NC for L5, L6, L7, L8, SL5 and SL6 types)			
		SL				
		SL1				
		SL5				
		SL6				

d. Pilot lights

Series Standard	Name	Type	Specification		UL File No.	Standard
		AH25	Lamp voltage	Color		
	Pilot lights	ZK	·Without transformer Incandescent	Green Red	E44592	UL508
		ZM				
		ZN	LED Max. 24V AC/DC ·With transformer	Blue (except LED) Yellow Orange		
		ZS				

e. Contact ratings


Voltage [V]	Application		Continuous current [A]	AC	
	UL	CSA		Make [A]	Break [A]
110-120	●		10	60	6.0
120		●			
220-240	●			30	3.0
240		●			
440-480	●			15	1.5
480		●			
550-600	●			12	1.2
600		●			

Voltage [V]	Application		DC
	UL	CSA	Make and break currents [A]
115-125	●		1.1
115		●	
125			
230-250	●		0.55

Note: AH25-J3, -J5, -P3 and -P1 types cannot be used in DC circuit.

● Command switches <AH164/AH165/AH165-2/AH225/AG225/AH16P/AH22P/AH16P-2/AG22 and AG23 series>

a. AH164/AH165 series

Series Standard	Name	Type		Specification		Contact	Indicator	UL File No.	Standard	
		AH164	AH165	Contact arrangement	Color					
	Pushbutton switches	E SF TF TGF M SM TM	E SF TF TGF M SM TM V ^{*1} V1 ^{*1}	1NO+1NC 2NO+2NC 3NO+3NC	Green Red Black Yellow White Orange Blue	250V AC5A max, 24V DC1A 125V DC0.2A, Resistive load (Cannot be used when potential differs in the same contact or unit)		E44592	UL508	
		E5 SF5 TF5 TGF5 M5 SM5 TM5	E5 SF5 TF5 TGF5 M5 SM5 TM5							
	Illuminated pushbutton switches	L SL TL TGL	L SL TL TGL	1NO+1NC 2NO+2NC 3NO+3NC	Green Red White Yellow Orange Blue			- Without transformer For incandescent lamps (120V AC/DC max 1.2W) 6V, 14V, 28V, 48V, AC/DC For LED lamps ^{*3} 5V, 6V, 12V, 24V DC For neon lamps 110V, 120V, 220V AC - With transformer For incandescent/LED lamps: 110V, 220V AC		
		L5 SL5 TL5 TGL5	L5 SL5 TL5 TGL5							
	Emergency stop pushbutton switches	-	V5 V6	NC NC	Red					
Selector switches	P0 P1 P2 P3 P6 P7 SP0 SP1 SP2 SP3 SP6 SP7 J0 J1 J2 J3 J6 J7 SJ0 SJ1 SJ2 SJ3 SJ6 SJ7	P0 P1 P2 P3 P6 P7 SP0 SP1 SP2 SP3 SP6 SP7 J0 J1 J2 J3 J6 J7 SJ0 SJ1 SJ2 SJ3 SJ6 SJ7 RJM2 ^{*2} JM2 ^{*2}	1NO+1NC 2NO+2NC 3NO+3NC	Knob color: black; key type: A, B, C, D, E, F, G, H, and J						
Pilot lights	Z ZS ZT	Z ZS ZT ZM ZT1	-	Green Red White Yellow Orange Blue	-	- Without transformer For incandescent lamps (except ZM types) (120V AC-DC max 1.2W) 6V, 14V, 28V, 48V, AC/DC 6.3V, 18V, 24V, 30V AC/DC (ZT1 types) For LED lamps ^{*3} 5V, 6V, 12V 24V DC 6V DC, 12V, 15V, 24V AC/DC (ZT1 types) 12V, 24V DC (ZM types) For neon lamps 110V, 120V, 220V AC - With transformer For incandescent/LED lamps: 110V, 220V AC				
Buzzers	TX2	X	-	Black	-	6V, 12 - 24V, 35 - 48V AC/DC				

*1 Contact arrangement is 1NC or 2NC; button color is red.

*2 Contact arrangement is 1NO+1NC or 2NO+2NC.

*3 The spot LED type and 2-color LED type have not been approved.

b. AH165-2/AH225/AG225/AH16P/AH22P/AH16P-2 series

Series Standard	Name	Type						Specification		Contact	Indicator	UL File No.	Standard	
		AH165-2	AH225	AG225	AH16P	AH16P-2	AH22P	Contact arrangement	Color					
RJ	Pushbutton switches	F, E, SF, SE, SCE, M, YM, S2, YS2, V, YV, SG ^{*1}	F, E, M, S2, V	F, E, CE, M, S2, V	TF, SF, E, TGF, M, SM, TM	F, E, SF, SE, SCE, M, YM, S2, YS2, V, YV	F, E, M, S2, V	1NO+1NC 2NO+2NC 3NO+3NC (Items for P board: 3NO + 3NC not included)	Green Red Black Yellow White Orange Blue	250V AC5A max 24V DC1A 125V DC0.2A Resistive load (Cannot be used when potential differs within the same contact or unit)	-	E44592	UL508	
		F5, E5, SF5, SE5, SCE5, SG5 ^{*1}	F5, E5	F5, E5, CE5	TF5, SF5, E5, TGF5, M5, SM5, TM5	F5, E5, SF5, SE5, SCE5	F5, E5							
	Illuminated pushbutton switches	FL, EL, SFL, SEL, SCL, ML, YML, VL, YVL, SGL ^{*1}	FL, EL, ML, VL	FL, EL, CL, ML, VL	TL, SL, L, TGL	FL, EL, SFL, SEL, SCL, ML, YML, VL, YVL	FL, EL, ML, VL	1NO+1NC 2NO+2NC 3NO+3NC (Items for P board: 3NO + 3NC not included)	Green Red White Yellow Orange Blue (LED lamps are for AH165-2, AH16P and AH16P-2 types only.)	-	For incandescent lamps 120V AC/DC max 1.2W 6V, 14V, 28V, 48V AC/DC For LED lamps 5V, 6V, 12V, 24V DC For neon lamps (Except for items for P board) 110V, 120V, 220V AC	-	E44592	UL508
		FL5, EL5, SFL5, SEL5, SCL5, SGL5 ^{*1}	FL5, EL5	FL5, EL5, CL5	TL5, SL5, L5, TGL5	FL5, EL5, SFL5, SEL5, SCL5	FL5, EL5							
	Selector switches	P, YP, H, SH, J, YJ, SP ^{*1} , SJ ^{*1}	P, H, J	P, H, J	P, SP, H, J, SJ	P, YP, H, SH, J, YJ	P, H, J	1NO+1NC 2NO+2NC 3NO+3NC (Items for P board: 3NO + 3NC not included)	Knob color: black; key type: A, B, C, D, E and F	-	-	-	-	-
Illuminated selector switches	PL	PL	PL	-	-	-	1NO+1NC 2NO+2NC	Green Red White Yellow Orange Blue (LED lamps are for AH-165-2 type only.)	-	For incandescent lamps 120V AC/DC max 1.2W 6V, 14V, 28V, 48V AC/DC For LED lamps 5V, 6V, 12V, 24V DC	-	-	-	
Pilot lights	Z, ZE, SZ, SZE	-	-	ZT, ZS, Z	Z, ZE, SZ, SZE	-	-	Green Red White Yellow Orange Blue	-	For incandescent lamps 120V AC/DC max 1.2W 6V, 14V, 28V, 48V AC/DC For LED lamps 5V, 6V, 12V, 24V DC For neon lamps (Except for items for P board) 110V, 120V, 220V AC	-	-	-	


*1 Certified contact configuration: 1NO + 1NC only

c. AG22/AG23 series


Series Standard	Name	Type		Specification		Contact	Indicator	UL File No.	Standard
		AG22	AG23	Contact arrangement	Color				
RJ	Illuminated pushbutton switches	Incandescent	LA, LB, L5A, L5B	LA, LB, LC, LD, LE, LF, L5A, L5B, L5C, L5D, L5E, L5F	AG22; 1NO+1NC 2NO+2NC	Green Red White Yellow Orange Blue (except LED)	250V AC5A max 24V DC 1A 125V DC 0.2A Resistive load (Cannot be used when potential differs within the same contact or unit)	E44592	UL508
			LED	Contact portion L1, L2 L51, L52	Contact portion L1, L2, L3, L4 L51, L52, L53, L54				
		LED	Illuminating portion LA□3, LB□3	Illuminating portion LA□3, LB□3, LC□3, LD□3, LE□3, LF□3					
	Pilot lights	Incandescent	ZA, ZB	ZA, ZB, ZC, ZD, ZE, ZF	-	-	-	-	-
LED			Case Z6	Case Z6					
LED		Illuminating portion ZA□3, ZB□3	Illuminating portion ZA□3, ZB□3, ZC□3, ZD□3, ZE□3, ZF□3						

● Command switches <AG28/DG28 series>

a. Illuminated pushbutton switch, Pushbutton switch

Series Standard	Bezel	Operator	Type				UL File No.	Standard
			Illuminated pushbutton switch		Pushbutton switch			
			Momentary	Alternate	Momentary	Alternate		
	Square bezel	Flush square head	AG28F0M	AG28F5M	AG28F0S	AG28F5S	E44592	UL508
		Flush with full guard	AG28G2M	AG28G7M	AG28G2S	AG28G7S		
		Pushbutton with selector ring (2-position, 24mm dia.)	-	-	AG28S2Y	-		

b. Selector switch, Illuminated pushbutton switch, Pilot light


Series Standard	Bezel	Operator	Type			UL File No.	Standard
			Selector switch		Pilot light		
			Non-illuminated type	Illuminated type			
	Square bezel	Knob	AG28PY	AG28PP	-	E44592	UL508
		Flush square head	-	-	DG28F3M		

c. Ratings

Please refer to “j. Contact ratings” and “k. Lamp ratings” for command switches (AR22, DR22, AR30, and DR30 series) in the table above.


■ Control Relays

● Control relays

Series Standard	Type	Contact arrangement	Voltage	Resistive load	Inductive load	Continuous current	UL File No.	Standard
	HH52□ HH52□W	2(NO+NC) single contact, bifurcated contact	120V AC	5A	1.5A	5A	E42419	UL508
			240V AC	5A				
			30V DC	5A	2A (15ms)			
	HH52□U	2(NO+NC) high capacity single contact	120V DC	0.3A	0.2A (15ms)	7A		
			120V AC	7A	1.5A			
			240V AC	7A				
			30V DC	7A	2A (15ms)			
	HH53□	3(NO+NC) single contact	120V DC	0.3A	0.2A (15ms)	5A		
			120V AC	5A	1.5A			
			240V AC	5A				
			30V DC	5A	2A (15ms)			
	HH54□	4(NO+NC) single contact	120V DC	0.3A	0.2A (15ms)	3A		
			120V AC	3A	1A			
			240V AC	3A				
			30V DC	3A	2A (15ms)			
	HH54□U	4(NO+NC) high capacity single contact	120V DC	0.3A	0.2A (15ms)	5A		
			120V AC	5A	1A			
			240V AC	5A				
			30V DC	5A	2A (15ms)			
	HH54□W	4(NO+NC) bifurcated contact	120V DC	0.3A	0.2A (15ms)	3A		
120V AC			3A	1A				
240V AC			3A					
30V DC			3A	2A (15ms)				
HH62□	2(NO+NC) single contact	120V DC	0.3A	0.2A (15ms)	10A			
		120V AC	10A	1.5A				
		240V AC	10A					
		30V DC	8A	2A (15ms)				
HH62□W	2(NO+NC) bifurcated contact	120V DC	0.3A	0.2A (15ms)	7A			
		120V AC	5A	1.5A				
		240V AC	5A					
		30V DC	5A	2A (15ms)				
HH63□ HH64□	3(NO+NC) single contact	120V DC	0.3A	0.2A (15ms)	10A	E142976 (HH63□) E142975 (HH64□)		
		120V AC	10A	1.5A				
	4(NO+NC) single contact	240V AC	10A					
		30V DC	8A	2A (15ms)				
HH22P□-UL	2(NO+NC) single contact, bifurcated contact	120V DC	0.5A	0.3A (15ms)	6A	E42419		
		120V AC	6A	2A				
		240V AC	6A					
		30V DC	6A	3A (15ms)				
HH23P□-UL	3(NO+NC) single contact, bifurcated contact	120V DC	0.5A	0.3A (15ms)	6A			
		120V AC	6A	2A				
		240V AC	6A					
		30V DC	6A	3A (15ms)				

□: P, B or S (mounting method)

● Card relays, terminal relays

Series Standard	Type	Contact arrangement	Voltage	Resistive load	Inductive load	Continuous current	UL File No.	Standard
	RT11-UL, 17-UL	1(NO+NC)	120V AC	3A	1A	3A	E83461	UL508
			240V AC	3A	-			
			30V DC	3A	2A (7ms)			
			120V DC	0.3A	0.2A (7ms)			
	RB104, 105	1NO	120V AC	-	1A	5A	E44592	
			240V AC	5A	-			
			30V DC	5A	2A (15ms)			
			120V DC	0.5A	0.2A (15ms)			
	RS4□ RS6N (-P) RS16 (-P)	4-pole 6-pole 16-pole	120V AC	-	1A	5A (2A for RS6N and RS16)		
			240V AC	5A (2A for RS6N and RS16)	-			
			30V DC	5A (2A for RS6N and RS16)	2A (15ms)			
			120V DC	0.5A	0.2A (15ms)			

● Sockets

Standard	Type	Specification	Used with	UL File No.	Standard
	TP58	Soldering	HH52	E90265	UL508
	TP58B	PC board			
	TP58R2	Wire wrap			
	TP58X2	Rail mounting (M3.5)			
	TP58X1	Rail mounting (M3)			
	TP511	Soldering	HH53		
	TP511B	PC board			
	TP511R2	Wire wrap			
	TP511X2	Rail mounting (M3.5)			
	TP514	Soldering	HH54		
	TP514B	PC board			
	TP514R2	Wire wrap			
	TP514X2	Rail mounting (M3.5)			
	TP514X1	Rail mounting (M3)			
	TP68	Soldering	HH62	E42419	
	TP68B	PC board			
	TP68R	Wire wrap			
	TP68X2	Rail mounting (M3.5)			
	TP611X2	Rail mounting (M3.5)			
	TP614X2	Rail mounting (M3.5)	HH64	E142975	
8GB-UL	Soldering	HH22	E42419		
11GB-UL	Soldering	HH23			


■ Timers

Type and rating


Standard	Type	Operation	Mounting	Indication	Contact arrangement	Control output	Input voltage	Power consumption	Timing range	Standard					
	MS4SM	On-delay Flicker One-shot momentary action Signal off-delay	Surface/flush	Power-on Time up	Time-limit 2(NO+NC)	See the UL approved type list shown at page 45	100 to 240V AC 50/60Hz 24V AC/DC 48 to 127V DC	Approx. 10VA for AC type. Approx. 1W for DC type.	From 0.6 seconds to 60 hours, 16 changeable ranges	UL508					
	MS4SA	On-delay													
	MS4SC	On-delay	Power-on Time up	Time-limit 1(NO+NC) + instantaneous 1(NO+NC)											
	MS4SR	Repeat	Power-on ON	Time-limit 2(NO+NC)											
	MS4SF	Off-delay	Power-on	Time-limit 2(NO+NC)											
	MS4SF-R	Off-delay	Power-on	Time-limit 1(NO+NC) + instantaneous reset											
	MS4SY	△-△	△ contact input △ contact output	Time-limit 1NO (△) 1NO (△) instantaneous 1NO											
	ST7P-2	On-delay	Surface	Power-on Time up	Time-limit 2(NO+NC)						240V AC 3A (Resistive load)	100V AC 200V AC 24V DC	100V AC approx. 1.2VA 200V AV approx. 1.5VA 24V DC approx. 1.1W	0.06 to 0.5s 0.1 to 1s 0.3 to 3s 0.4 to 5s 1 to 10s 2 to 30s 4 to 60s	0.25 to 3min 1 to 10min 2 to 30min 4 to 60min 0.2 to 2h 0.5 to 6h 1 to 12h
	ST7P-4	On-delay	Surface	Power-on Time up	Time-limit 4(NO+NC)										
	MS7S1	On-delay	Surface	Time up	Time-limit 1(NO+NC)						220V AC 1A (Resistive load)	100/200V AC 110/220V AC 50/60Hz Terminal switchover 24V AC, 24V DC	Approx. 2VA for AC type. Approx. 1W for DC type.	0.2 to 1.2s 1 to 6s 5 to 30s 0.5 to 3min 2 to 12min 5 to 30min 10 to 60min	0.5 to 3s 2 to 12s 10 to 60s 1 to 6min

Note: For connection, use a socket applicable to the object type.

● Supertimer


Standard	Type	Operation	Control output	UL File No.	Standard
c  US	MS4SM	On-delay Flicker One-shot momentary action Signal off-delay	Contact rating: 5A, 250V AC (resistive load)	E44592	UL508
	MS4SA	On-delay			
	MS4SC	On-delay	Contact rating: 5A, 240V AC (resistive load)		
	MS4SR	Repeat	Contact rating: 5A, 250V AC (resistive load)		
	MS4SF	Off-delay	Contact rating: 3A, 250V AC (resistive load)		
	MS4SF-R	Off-delay	Contact rating: 5A, 250V AC (resistive load)		
	MS4SY	Star-delta	Contact rating: 5A, 240V AC (resistive load)		
	MS7S1	On-delay	Contact rating: 1A, 220V AC (resistive load)		
	ST7P-2	On-delay	Contact rating: 3A, 240V AC (resistive load)		
	ST7P-4	On-delay			

● Sockets


Standard	Type Standard	Specification	Used with	UL File No.	Standard
c  US	TP411X	Rail mounting, screw terminal (11-pin)	MS4SM	E195744	UL508
	TP411SBA	Flush mounting, screw terminal (11-pin)			
	ATX2NS	Flush mounting, solder terminal (11-pin)			
	TP48X	Rail mounting, screw terminal (8-pin)	MS4SA MS4SC MS4SF MS4SY MS4SR	E90265	
	TP48SB	Flush mounting, screw terminal (8-pin)			
	ATX1NS	Flush mounting, solder terminal (8-pin)			
	TP88X1 TP88X2	Rail mounting, screw terminal (8-pin)			
	TP88	Surface mounting, solder terminal (8-pin)	ST7P-2		
	TP88R2	Surface mounting, wire wrap (8-pin)			
	TP88B	Surface mounting, PC board (8-pin)			
	TP814X1 TP814X2	Rail mounting, screw terminal (11-pin)			
	TP814	Surface mounting, solder terminal (11-pin)	ST7P-4		
	TP814R2	Surface mounting, wire wrap (11-pin)			
	TP814B	Surface mounting, PC board (11-pin)			

■ Terminal Blocks


● High-strength terminal blocks

Standard	No. of poles	Type	Connecting wire size	Rated current [A]	UL File No.	Standard
	3	SKT14A-3C	14-8AWG-Cu	50	E45457	UL1059
		SKT38A-3C	14-6AWG-Cu	65		
		SKT60A-3C	12-4AWG-Cu	85		
		SKT100A-3C	12-2AWG-Cu	115		

● Combination terminal blocks

Standard	Type	Withstand voltage [V]	Rated current [A]	Connecting wire size	UL File No.	Standard
	LT2F-010	600	15	20-16AWG-Cu	E45457	UL1059
	LT2F-020		19	16-14AWG-Cu		
			22			
	LT2F-030		27	14-10AWG-Cu		
	LT2F-040		35	12-10AWG-Cu		
			40			
	LT2F-080		68	8-6AWG-Cu		
	LT2F-020W		19	18-14AWG-Cu		
	LT2E-020		20	20-14AWG-Cu		
	LT2E-030		30	18-12AWG-Cu		
	LT2E-040		40	18-10AWG-Cu		
	LT2E-080		75	10-6AWG-Cu		
	LT2E-090		95	8-4AWG-Cu		
	LT2E-150		150	4-2/0AWG-Cu		
	LT2E-200		200	2-4/0AWG-Cu		
	LT2E-300		300	2/0-300AWG-Cu		
LT2E-400	400	4/0-350AWG-Cu				
LT2E-600	550	300-600AWG-Cu				


● Relaying connector terminal block

Standard	Type	Withstand voltage [V]	Rated current [A]	Connecting wire size	UL File No.	Standard
	LP5W-20H5	125	1	22-16AWG-Cu	E45457	UL1059
	LP5W-24H1					
	LP5W-26H5					
	LP5W-34H5					
	LP5W-40H1					
	LP5W-40H5					
	LP5W-50H5					

■ Limit Switches

● AL type

a. Type

Standard	Series	Type	Name of actuator	Ratings	UL File No.	Standard																																		
	General-purpose	AL-N11□□UL	Roller lever type	<table border="1"> <tr> <td rowspan="2">DC</td> <td colspan="4">Make and break currents [A]</td> </tr> <tr> <td>Voltage</td> <td>30V</td> <td>125V</td> <td>250V</td> </tr> <tr> <td rowspan="2"></td> <td colspan="2">Load type</td> <td colspan="2">Resistive load</td> </tr> <tr> <td colspan="4">Continuous current</td> </tr> <tr> <td>5A</td> <td>5</td> <td>0.4</td> <td>0.2</td> </tr> <tr> <td rowspan="3">AC</td> <td>Contact current code</td> <td>Voltage</td> <td>Make</td> <td>Break</td> </tr> <tr> <td rowspan="2">B300</td> <td>120V</td> <td>30A</td> <td>3A</td> </tr> <tr> <td>240V</td> <td>15A</td> <td>1.5A</td> </tr> </table>	DC	Make and break currents [A]				Voltage	30V	125V	250V		Load type		Resistive load		Continuous current				5A	5	0.4	0.2	AC	Contact current code	Voltage	Make	Break	B300	120V	30A	3A	240V	15A	1.5A	E44592	UL508
		DC	Make and break currents [A]																																					
			Voltage		30V	125V	250V																																	
			Load type		Resistive load																																			
			Continuous current																																					
		5A	5		0.4	0.2																																		
		AC	Contact current code		Voltage	Make	Break																																	
			B300		120V	30A	3A																																	
					240V	15A	1.5A																																	
		AL-N21□□UL	Adjustable roller lever type																																					
		AL-N31□□UL	Rod lever type																																					
		AL-P11□□UL	Push plunger type																																					
	AL-P21□□UL	Roller plunger type																																						
	AL-P31□□UL	Ball plunger type																																						
	AL-F11□□UL	Fork roller lever type																																						
	AL-S11□□UL	Coil spring type																																						
	AL-S21□□UL	Spring rod type																																						
	AL-W11□□UL	Wire spring type																																						
	AL-Y11□□UL	Side push plunger type																																						
	AL-Y21□□UL	Side roller plunger type																																						
	AL-Y31□□UL	Side ball plunger type																																						
	Small	AL-SN11□□UL	Roller lever type																																					
		AL-SN21□□UL	Adjustable roller lever type																																					
		AL-SN31□□UL	Rod lever type																																					
AL-SP11□□UL		Push plunger type																																						
AL-SP21□□UL		Roller plunger type																																						
AL-SK11□□UL		Roller arm type																																						
AL-SK21□□UL		Reverse roller arm type																																						
AL-SS11□□UL		Spring rod type																																						

Note: Symbols for lamp voltage and type are filled in □□.

□□

Lamp type

Symbol	Type
1	Neon lamp
2	LED lamp

Lamp voltage

Symbol	Voltage	Manufacture	
		Neon lamp	LED
A	5 to 8V	-	○
B	10 to 15V	-	○
E	18 to 24V	-	○
H	110 to 220V	○	-

b. Performance

Item	General-purpose (AL)	Small (AL-S)
Insulation resistance	Min. 100M (by 500V DC megger) between non-continuous terminals or between each terminal and uncharged metal part.	
Withstand voltage	1500V between each terminal and uncharged metal part	
Vibration resistance ^{*1}	Double amplitude 1.5mm, 10 to 55 Hz	
Impact resistance ^{*1}	300 m/s ²	
Permissible operation cycle	120 cycle/min.	
Temperature rise	50°C or less	
Life	Mechanical 30 million cycles (N1 type) 10 million cycles (other types)	10 million cycles
Ambient temperature	-10°C to +80°C	
Ambient humidity	95% RH or less	

^{*1} Except coil spring, spring rod and wire spring types

Contact reliability:

It was confirmed that these switches work without problem under the circuit conditions of 5V AC/DC and 2mA. However, operation ranges may change depending on environmental conditions and load types. For details, contact Fuji Electric.

c. Operational characteristics

- General-purpose (AL)

Item \ Type	AL-N11UL	AL-N21UL ^{*1}	AL-N31UL ^{*2}	AL-P11UL	AL-P21UL	AL-P31UL	AL-F11UL
Required operating force: OF max.	9N	9N	2.9N	15N	15 N	15 N	9.5 N
Return force: RF min.	0.5N	0.5N	1.5N	8.2N	8.2N	8.2N	-
Movement before operation: PT min.	12°	12°	12°	2mm	2mm	2mm	55°
Movement after operation: OT min.	65°	65°	65°	5mm	5mm	5mm	35°
Differential movement: MD max.	7°	7°	7°	1mm	1mm	1mm	-
Overall movement: TT min.	75°	75°	75°	-	-	-	90±10°

^{*1} When lever length is 38 mm

^{*2} When rod lever length is 135 mm

Item \ Type	AL-Y11UL	AL-Y21UL	AL-Y31UL	AL-S11UL	AL-S21UL	AL-W11UL
Required operating force: OF max.	40N	40N	40N	1.5N	1.5N	1.5N
Return force: RF min.	9N	9N	9N	-	-	-
Movement before operation: PT min.	2.8mm	2.8mm	2.8mm	30mm	30mm	40mm
Movement after operation: OT min.	4mm	4mm	4mm	-	-	-
Differential movement: MD max.	1mm	1mm	1mm	-	-	-

- Small (AL-S)

Item \ Type	AL-SP11UL	AL-SP21UL	AL-SK11UL	AL-SK21UL	AL-SN11UL	AL-SN21UL ^{*1}	AL-SN31UL ^{*1}	AL-SS11UL
Required operating force: OF max.	4.5N	8.5N	4N	4N	7N	7N	7N	1.5N
Return force: RF min.	2N	4.5N	1.8N	1.8N	0.5N	0.5N	0.5N	-
Movement before operation: PT min.	2mm	2mm	2.5mm	2.5mm	30°	30°	30°	30mm
Movement after operation: OT min.	4mm	3mm	5mm	5mm	40°	40°	40°	-
Differential movement: MD max.	1mm	1mm	1.3mm	1.3mm	8°	8°	8°	-

^{*1} When lever/rod length is 25 mm