

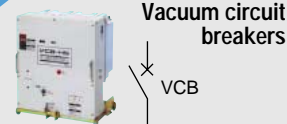
FUJI Low Voltage Distribution and Control Equipment



Fuji Electric FA meets customer needs with a wide range of products and

Power receiving

Vacuum circuit breakers




VCB

Voltage transformers



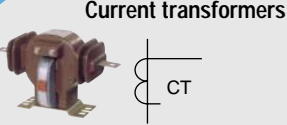
VT

**Pushbuttons
Selectors
Pilot lights**



P 14

Current transformers




CT


Power monitoring equipment



Multi display lights



Cast-resin transformers



T

Voltmeters




Air circuit breakers




P 13

**MCCBs
ELCBs**




P 10

**MCCBs
ELCBs**




P 10

**MCCBs
ELCBs**



P 10

**MCCBs
ELCBs**



P 10

Manual motor starters



P 6

**Magnetic contactors
and starters**



P 2

**Magnetic contactors
and starters**




P 2

Magnetic contactors




P 6

Semiconductor fuses




**Inverters
Servo system**



Combination starters



Solid state contactors



Motor load 1

Motor load 2

Motor load 3

Heaters


solid reliability

Fuji Electric FA Components & Systems Co., Ltd. provides a wide range of component equipment and system products, such as power distribution, control, and drive control equipment, to support the operation and safety of factory FA lines, intelligent buildings, and other applications.



Time delay relays

P 17




Industrial control relays

P 18




Current-limiting fuses




Panel switches



Ammeters




Protective relays



Terminal blocks



Surge protective devices



MCCBs
ELCBs

P 10



Voltage transformers




Power monitoring unit

P 20



Magnetic contactors for capacitor bank



Current transformers

Capacitors

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Power Monitoring Unit	20

Magnetic Contactors and Starters

Controlling energy to manage motors and machinery



SW-0



SW-N5

■ Standard type non-reversing, open 03 to N1

Type	Contactor Starter	SC-03 SW-03/3H	SC-0 SW-0/3H	SC-05 SW-05/3H	SC-4-0 SW-4-0/3H	SC-4-1 SW-4-1/3H	SC-5-1 SW-5-1/3H	SC-N1 SW-N1/3H	
Max. motor capacity (kW)	200-240V 380-440V 500-550V IEC 60947-4-1 600-660V	2.5 4 4 4	3.5 5.5 5.5 5.5	3.5 5.5 5.5 5.5	4.5 7.5 7.5 7.5	5.5 11 11 7.5	5.5 11 11 7.5	7.5 15 15 11	
Operational current (A)	200-240V 380-440V 500-550V 600-660V	11 9 7 5	13 12 9 7	13 12 9 7	18 16 13 9	22 22 17 9	22 22 17 9	32 32 24 15	
Thermal current (A)		20	20	20	25	32	32	50	
Auxiliary contact arrangement		1NO 1NC	1NO 1NC	1NO+1NC 2NO, 2NC	1NO 1NC	1NO 1NC	1NO+1NC, 2NO 2NC, 2NO+2NC	2NO+2NC 4NO+4NC	
Durability (x 10 ⁶ operations)	Electrical 200V 400V	2 1.75	2 1.5	2 1.5	1.5 1	1.5 1	1.5 1	1.5 1	
	Mechanical	10	10	10	10	10	10	10	
Switching cycle per hour		1800	1800	1800	1800	1800	1800	1200	
Thermal overload relay	Standard type	TR-0N/3	TR-0N/3	TR-0N/3	TR-5-1N/3	TR-5-1N/3	TR-5-1N/3	TR-N2/3	
	Phase-loss protection	TK-0N	TK-0N	TK-0N	TK-5-1N	TK-5-1N	TK-5-1N	TK-N2	
Setting range (A)		0.1-0.15 0.13-0.2 0.15-0.24 0.2-0.3 0.24-0.36 0.3-0.45 0.36-0.54 0.48-0.72 0.64-0.96 0.8-1.2 0.95-1.45 1.4-2.2 1.7-2.6 2.2-3.4 2.8-4.2 4-6 5-8 6-9 7-11	0.1-0.15 0.13-0.2 0.15-0.24 0.2-0.3 0.24-0.36 0.3-0.45 0.36-0.54 0.48-0.72 0.64-0.96 0.8-1.2 0.95-1.45 1.4-2.2 1.7-2.6 2.2-3.4 2.8-4.2 4-6 5-8 6-9 7-11 9-13	0.1-0.15 0.13-0.2 0.15-0.24 0.2-0.3 0.24-0.36 0.3-0.45 0.36-0.54 0.48-0.72 0.64-0.96 0.8-1.2 0.95-1.45 1.4-2.2 1.7-2.6 2.2-3.4 2.8-4.2 4-6 5-8 6-9 7-11 9-13	0.1-0.15 0.13-0.2 0.15-0.24 0.2-0.3 0.24-0.36 0.3-0.45 0.36-0.54 0.48-0.72 0.64-0.96 0.8-1.2 0.95-1.45 1.4-2.2 1.7-2.6 2.2-3.4 2.8-4.2 4-6 5-8 6-9 7-11 9-13 12-18	0.1-0.15 0.13-0.2 0.15-0.24 0.2-0.3 0.24-0.36 0.3-0.45 0.36-0.54 0.48-0.72 0.64-0.96 0.8-1.2 0.95-1.45 1.4-2.2 1.7-2.6 2.2-3.4 2.8-4.2 4-6 5-8 6-9 7-11 9-13 12-18 16-22	0.1-0.15 0.13-0.2 0.15-0.24 0.2-0.3 0.24-0.36 0.3-0.45 0.36-0.54 0.48-0.72 0.64-0.96 0.8-1.2 0.95-1.45 1.4-2.2 1.7-2.6 2.2-3.4 2.8-4.2 4-6 5-8 6-9 7-11 9-13 12-18 16-22	0.1-0.15 0.13-0.2 0.15-0.24 0.2-0.3 0.24-0.36 0.3-0.45 0.36-0.54 0.48-0.72 0.64-0.96 0.8-1.2 0.95-1.45 1.4-2.2 1.7-2.6 2.2-3.4 2.8-4.2 4-6 5-8 6-9 7-11 9-13 12-18 16-22	4-6 5-8 6-9 7-11 9-13 12-18 18-26 24-36
	Dimensions (mm)	Contactors	43 x 81 x 80	43 x 81 x 80	53 x 81 x 80	53 x 81 x 81	53 x 81 x 81	64 x 81 x 81	74 x 87 x 96
	W x H x D	Starters	44 x 122 x 80	44 x 122 x 80	53 x 122 x 80	53 x 127 x 81	53 x 127 x 81	64 x 127 x 81	74 x 146 x 96
	Standard		IEC 60947-4-1, EN60947-4-1, VDE0660, TÜV, CE mark, CSA C22.2, UL508, CCC, NK, LR, BV, KR						

■ Standard type non-reversing, open N2 to N7





Type	Contact Starter	SC-N2 SW-N2/3H	SC-N2S SW-N2S/3H	SC-N3 SW-N3/3H	SC-N4 SW-N4/3H	SC-N5 SW-N5/3H	SC-N6 SW-N6/3H	SC-N7 SW-N7/3H
Max. motor capacity (kW)	200-240V 380-440V	11 18.5	15 22	18.5 30	22 40	30 55	37 60	45 75
AC-3	500-550V	18.5	25	37	37	55	60	75
IEC 60947-4-1	600-660V	15	22	30	37	55	60	90
Operational current (A)	200-240V 380-440V 500-550V 600-660V	40 40 29 19	50 50 38 26	65 65 60 38	80 80 60 44	105 105 85 64	125 125 90 72	150 150 120 103
Thermal current (A)		60	80	100	135	150	150	200
Auxiliary contact arrangement		2NO+2NC 4NO+4NC	2NO+2NC 4NO+4NC	2NO+2NC 4NO+4NC	2NO+2NC 4NO+4NC	2NO+2NC 4NO+4NC	2NO+2NC 4NO+4NC	2NO+2NC 4NO+4NC
Durability (x 10 ⁶ operations)	Electrical 200V	1.5	2	2	1	0.8	0.6	1
	400V	1	1.5	1.5	0.8	0.7	0.5	0.8
	Mechanical	10	5	5	5	5	5	5
Switching cycle per hour		1200	1200	1200	1200	1200	1200	1200
Thermal overload relay	Standard type	TR-N2/3	TR-N3/3	TR-N3/3	TR-N5/3	TR-N5/3	TR-N6/3	TR-N7/3
	Phase-loss protection	TK-N2	TK-N3	TK-N3	TK-N5	TK-N5	TK-N6	TK-N7
Setting range (A)		4-6 5-8 6-9 7-11 9-13 12-18 18-26 24-36 32-42	7-11 9-13 12-18 18-26 24-36 28-40 34-50 45-65	7-11 9-13 12-18 18-26 24-36 28-40 34-50 45-65 48-68 53-80 * 65-95 * 85-105 *	18-26 24-36 28-40 34-50 45-65 53-80	18-26 24-36 28-40 34-50 45-65 53-80 65-95 85-105	45-65 53-80 65-95 85-125 110-160 *	45-65 53-80 65-95 85-125 110-160
Dimensions (mm)	Contactors	74 x 87 x 96	88 x 110 x 111	88 x 110 x 111	88 x 127 x 117	88 x 127 x 132	100 x 144 x 138	115 x 156 x 140
W x H x D	Starters	74 x 146 x 96	88 x 177 x 111	88 x 177 x 111	88 x 189 x 117	88 x 189 x 132	100 x 225 x 138	155 x 237 x 140
Standard		IEC 60947-4-1, EN60947-4-1, VDE0660, TÜV, CE mark, CSA C22.2, UL508, CCC, NK, LR, BV, KR						






Note: * Separate mounting only






■ Standard type non-reversing, open N8 to N16

Type	Contact Starter	SC-N8 SW-N8/3H	SC-N10 SW-N10/3H	SC-N11 SW-N11/3H	SC-N12 SW-N12/3H	SC-N14 SW-N14/3H	SC-N16 -	
Max. motor capacity (kW)	200-240V 380-440V	55 90	65 110	90 160	120 220	180 315	220 440	
AC-3	500-550V	130	132	160	250	400	500	
IEC 60947-4-1	600-660V	132	132	200	300	480	500	
Operational current (A)	200-240V 380-440V 500-550V 600-660V	180 180 180 150	220 220 200 150	300 300 230 230	400 400 360 360	600 600 600 600	800 800 720 630	
Thermal current (A)		260	260	350	450	660	800	
Auxiliary contact arrangement		2NO+2NC 4NO+4NC	2NO+2NC 4NO+4NC	2NO+2NC 4NO+4NC	2NO+2NC 4NO+4NC	2NO+2NC 4NO+4NC	2NO+2NC 4NO+4NC	
Durability (x 10 ⁶ operations)	Electrical 200V	1	1	1	0.7	0.6	0.3	
	400V	0.8	0.8	0.8	0.6	0.5	0.25	
	Mechanical	5	5	5	5	5	2.5	
Switching cycle per hour		1200	1200	1200	1200	1200	1200	
Thermal overload relay	Standard type	TR-N8/3	TR-N10/3	TR-N12/3	TR-N12/3	TR-N14/3	-	
	Phase-loss protection	TK-N8	TK-N10	TK-N12	TK-N12	TK-N14	-	
Setting range (A)		65-95 85-125 110-160 125-185	85-125 110-160 125-185 160-240	110-160 125-185 160-240 200-300	110-160 125-185 160-240 200-300 240-360 300-450	240-360 300-450 400-600	-	
Dimensions (mm)	Contactors	138 x 209 x 174	138 x 209 x 174	148 x 240 x 195	148 x 240 x 195	290 x 332 x 327	290 x 332 x 327	
W x H x D	Starters	138 x 305 x 174	138 x 287 x 174	148 x 360 x 195	148 x 360 x 195	290 x 463 x 327	-	
Standard		IEC 60947-4-1, EN60947-4-1, VDE0660, TÜV, CE mark, CSA C22.2, UL508, CCC, NK, LR, BV, KR						

Optional accessories

Optional unit	Auxiliary contact block			Operation counter	Coil surge suppression unit	Main circuit surge suppression unit
	All contacts are bifurcated contacts so that the minimum voltage current is 5V DC, 3mA.			This unit indicates the number of contactor on-off operations to ensure easy maintenance and inspection.	This unit absorbs coil surge voltage due to contactor on-off operation.	This unit prevents misoperation of electronic equipment due to surge voltage generated from motor when contactor is open or closed.
Type	4-pole SZ-A Front mounting	2-pole SZ-A	Single-pole SZ-AS Side mounting	SZ-J	SZ-Z	SZ-ZM Front mounting Side mounting
						
Used with	SC-03 to N3		SC-03 to N16	SC-03 to N3	SC-03 to N4 SC-03/G to SC-N3/G	SC-03 to N3 SC-03 to N3

Optional unit	Mechanical interlock unit and power connection kit for reversing		Coil drive unit for IC output		3-pole parallel connection kit	Base unit for separate mounting	Dial cover
	This unit is used to interlock two contactors for reversing.		This unit controls on-off operation for contactor by the DC output of electronic equipment.		This kit modifies a 3-pole contactors to a single-pole contactor for resistive load.	This unit is used when thermal relay is required to mount independently.	For protection against the current setting being changed in error.
Type	SZ-RM	SZ-RW	SZ-CD Top mounting	SZ-CD Side mounting	SZ-SP	SZ-H	SZ-DA
							
Used with	SC-03 to N3	SC-03 to N3	SC-03 to N3	SC-N1 to N12	SC-03 to N16	TR-0N to N3	TR-0N to N14

Optional unit	Trip indicator	Terminal cover		Insulation barrier	Live-section cover	Off-delay release unit
	This unit indicates thermal relay tripping status.	This covers conform to DIN 57106 and VDE 0106 Teil 100.		This unit prevents accidental short-circuits caused by metallic objects falling onto the terminals.	This cover prevents exposure of the live section for increasing safety.	This unit prevents circuit opening due to instantaneous voltage drop.
Type	SZ-L	SZ-T□, □T, SZ-W□T		SZ-B	SZ-□J, W□J SZ-J□, JW□	SZ-DE□ SZ-□DE
						
Used with	TR-0N to N14	SC-03 to N12 SW-03 to N12	TR-0N to N3 TR-N2H, N3H, N6H	SC-N4 to N12 SW-N4 to N12 TR-N6H, N10H, N12H	SC-03 to N12 SW-03 to N12	SC-03/G to N14

■ Versions

Starters with on-off and RESET pushbuttons

- Compact and simple operation – Provided with ON-OFF and reset pushbuttons, hence best suited for direct-on-line starting.
- Superior motor protection – Built-in highly reliable thermal overload relay is designed to give motor complete protection against overcurrent.
- Long service life – Hyperfine silver alloy contacts performance and a long electrical life.



Max. motor capacity (kW)			Auxiliary contact	With on-off/reset pushbutton Type
Single-phase	3-phase			
110V	200/240V	380/440V	Standard	
0.4	2.5	4	1NO	SW-03P/3H
0.5	3.5	5.5	1NO	SW-0P/3H
0.5	3.5	5.5	1NO+1NC	SW-05P/3H
0.6	4.5	7.5	1NO	SW-4-0P/3H
0.8	5.5	11	1NO	SW-4-1P/3H
0.8	5.5	11	1NO+1NC	SW-5-1P/3H
1.2	7.5	15	2NO+2NC	SW-N1PB/3H
1.7	11	18.5	2NO+2NC	SW-N2PB/3H
–	15	22	2NO+2NC	SW-N3PB/3H
–	18.5	30	2NO+2NC	SW-N4PB/3H
–	22	40	2NO+2NC	SW-N5PB/3H
–	30	55	2NO+2NC	SW-N6PB/3H
–	37	60	2NO+2NC	SW-N8PB/3H
–	55	90	2NO+2NC	SW-N8PB/3H
–	65	110	2NO+2NC	SW-N10PB/3H

Coil voltage *

• SW-03P to 5-1P, N1PB to N4PB

24V 50Hz / 24-26V 60Hz
 48V 50Hz / 48-52V 60Hz
 100V 50Hz / 100-110V 60Hz
 100-110V 50Hz / 110-120V 60Hz
 110-120V 50Hz / 120-130V 60Hz
 200V 50Hz / 200-220V 60Hz
 200-220V 50Hz / 220-240V 60Hz
 220-240V 50Hz / 240-260V 60Hz
 346-380V 50Hz / 380-420V 60Hz
 380-400V 50Hz / 400-440V 60Hz
 415-440V 50Hz / 440-480V 60Hz
 480-500V 50Hz / 500-550V 60Hz

• SW-N5PB to N10PB

AC DC
 24-25V 50/60Hz 24V
 48-50V 50/60Hz 48V
 100-127V 50/60Hz 100-120V
 200-250V 50/60Hz 200-240V
 265-347V 50/60Hz
 380-450V 50/60Hz
 460-575V 50/60Hz

* Other coil voltages between 24V and 600V AC are available.

Definite purpose contactors and starters

- Small size, light weight
- Budget priced
- Long service life – The contacts are self-cleaning by a scrubbing section during operation and are made of silver alloy.
- Highly reliable operating coil – Pick up voltage 75% of rated voltage
- Self-lifting terminals make it easy to wire.



Motor capacity (kW)			Operational current (A)	Auxiliary contact	Non-reversing Open Type
AC-3 3-phase			AC-1	Standard	
200/240V	380/440V				
3	2.5	20	1NO, 1NC	FC-0UL	
3.5	4.5	20	1NO, 1NC	FC-0SUL	
5.5	5.5	30	1NO+1NC *1	FC-1UL	
7.5	7.5	30	1NO+1NC *1	FC-1SUL	
11	11	40	1NO+1NC *1	FC-2SUL	
15	18.5	60	1NO+1NC *1	FC-3UL	
18.5	30	80	1NO+1NC *1	FC-4UL	
1.5	–	8	1NO, 1NC	FC-0A	
3.0	2.5	20	1NO, 1NC	FC-0TUL	
3.5	4.5	20	1NO, 1NC	FC-0STUL	
3.0	2.5	20	1NO, 1NC	FC-0/GUL	
3.5	4.5	20	1NO, 1NC	FC-0S/GUL	
3.0	2.5	20	1NO, 1NC	FC-0/TGUL	
3.5	4.5	20	1NO, 1NC	FC-0S/TGUL	
1.5	–	8	1NO, 1NC	FC-0A/G	

Coil voltage *

• FC-0/UL to 4UL

24V 50Hz / 24-26V 60Hz
 48V 50Hz / 48-52V 60Hz
 100V 50Hz / 100-110V 60Hz
 100-110V 50Hz / 110-120V 60Hz
 110-120V 50Hz / 120-130V 60Hz
 200V 50Hz / 200-220V 60Hz
 200-220V 50Hz / 220-240V 60Hz
 220-240V 50Hz / 240-260V 60Hz
 346-380V 50Hz / 380-420V 60Hz
 380-400V 50Hz / 400-440V 60Hz
 415-440V 50Hz / 440-480V 60Hz

• FC-0/GUL to 0A/G

24V DC
 48V DC
 60V DC
 100V DC
 110V DC
 200V DC
 220V DC

*1 : Auxiliary contact arrangement 2NO or 2NC is available.

* Other coil voltages between 24V and 440V AC are available.

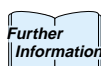
Standard type industrial relay

- Employing of bifurcated contact assures an increase of high contact reliability in low-level circuit use (5V, 3mA)
- Variety of optional function units: Auxiliary contact block, off-delay release unit, coil surge suppression unit and operation counter
- Snap-on 35mm rail mounting available
- UL, CSA, TÜV, BV and Lloyd approved



Type	SH-4 4-pole, 8-pole	SH-5 5-pole	SH-4H 4-pole, 8-pole	SH-5H 5-pole
Contact	Bifurcated		Single	
Rated thermal current (A)	10		10	
Make and break capacity (A)	110V AC	60	60	
	220V AC	30	60	
	440V AC	15	40	
	550V AC	12	40	
Rated operational current (A)	Ind.	Res.	Ind.	Res.
	110V AC	6	10	10
	220V AC	3	8	10
	440V AC	1.5	5	4
	550V AC	1.2	5	4
	24V DC	3	5	5
	48V DC	1.5	3	1.5
	110V DC	0.55	2.5	0.7
	220V DC	0.27	1	0.27
	Coil voltage *	24V 50Hz / 24-26V / 60Hz, 48V 50Hz / 48-52V / 60Hz, 100V 50Hz / 100-110V / 60Hz, 110-120V 50Hz / 120-130V / 60Hz, 200V 50Hz / 200-220V / 60Hz		220-240V 50Hz / 240-260V / 60Hz, 346-380V 50Hz / 380-420V / 60Hz, 380-400V 50Hz / 400-440V / 60Hz, 415-440V 50Hz / 440-480V / 60Hz, 480-500V 50Hz / 500-550V / 60Hz
Contact arrangement	4-pole : 4NO, 3NO+1NC, 2NO+2NC 8-pole : 8NO, 7NO+1NC, 6NO+2NC, 5NO+3NC, 4NO+4NC 5-pole : 5NO, 4NO+1NC, 3NO+2NC, 2NO+3NC, 1NO+4NC, 5NC			

* Other coil voltages between 24V and 600V AC are available.



See page 01/1 of D & C catalog 19th Edition.

Manual Motor Starters and Contactors

Molded case circuit breaker and thermal overload relay functions integrated into highly compact unit



DUO series

■ MMSs / 32AF

Adjustable thermal-magnetic trip type	Standard breaking capacity		High breaking capacity																			
Instantaneous trip type	BM3RSB-□		BM3RHB-□																			
Number of poles	3		3																			
Handle type	Rocker		Rotary																			
Rated current I _e (A)	0.16 to 32																					
Rated operational voltage U _e (V)	200 to 690																					
Rated frequency (Hz)	50/60																					
Rated insulation voltage U _i (V)	690																					
Rated impulse withstand voltage U _{imp} (kV)	6																					
Utilization IEC 60947-2 Circuit breaker category	Category A																					
IEC 60947-4-1 Motor starter	AC-3																					
Trip class IEC 60947-4-1 *	10																					
Instantaneous trip characteristic	13 x I _e maximum																					
Power loss (total of 3-pole)	7W: I _n =0.16 to 25A 8.5W: I _n =32A																					
Durability (operations)	Mechanical 100,000: I _n =0.16 to 25A 70,000: I _n =32A Electrical 100,000: I _n =0.16 to 25A 70,000: I _n =32A																					
Max. operations per hour (motor start-up)	25																					
Phase-loss protection	Provided																					
Trip indicator / Test trip function	Provided																					
Rated breaking capacity (kA)	Adjustable current range Code I _e : Min.–Max. (A)	240V/230V		415V/400V		460V/440V		500V		690V/600V		240V/230V		415V/400V		460V/440V		500V		690V/600V		
		I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	
IEC 60947-2 Replace the □ mark in the type number by current range codes.	P16	0.1-0.16	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
	P25	0.16-0.25	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
	P40	0.25-0.4	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
	P63	0.4-0.63	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
	001	0.63-1	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
	1P6	1-1.6	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
	2P5	1.6-2.5	100	100	100	100	100	100	100	100	3	2	100	100	100	100	100	100	100	100	8	6
	004	2.5-4	100	100	100	100	100	100	100	100	3	2	100	100	100	100	100	100	100	100	8	6
	6P3	4-6.3	100	100	100	100	50	38	50	38	3	2	100	100	100	100	100	100	100	100	6	5
	010	6.3-10	100	100	100	100	15	11	10	8	3	2	100	100	100	100	50	38	50	38	6	5
	013	9-13	100	100	50	38	10	8	6	5	3	2	100	100	100	100	50	37	42	32	6	5
	016	11-16	100	100	25	19	10	8	6	5	3	2	100	100	50	38	35	27	10	8	4	3
	020	14-20	50	38	25	19	10	8	6	5	3	2	100	100	50	38	35	27	10	8	4	3
	025	19-25	50	38	25	19	10	8	6	5	3	2	100	100	50	38	35	27	10	8	4	3
	032	24-32	50	38	25	19	10	8	6	5	3	2	100	100	50	38	35	27	10	8	4	3
040	28-40	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
050	35-50	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
063	45-63	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Dimensions (mm) W x H x D	45 x 90 x 66						45 x 90 x 79															
Standard	IEC 60947-1, 60947-2, 60947-4-1, UL 508, CSA C22.2 No.14, TÜV, CCC																					

Note: * Adjustable thermal-magnetic trip type only

■ MMSs / 63AF

Adjustable thermal-magnetic trip type	Standard breaking capacity												High breaking capacity									
Instantaneous trip type	BM3VSB- □												BM3VHB- □									
	BM3VSBK- □												BM3VHBK- □									
Number of poles	3												3									
Handle type	Rotary												Rotary									
Rated current I _e (A)	10 to 63																					
Rated operational voltage U _e (V)	200 to 690																					
Rated frequency (Hz)	50/60																					
Rated insulation voltage U _i (V)	1000																					
Rated impulse withstand voltage U _{imp} (kV)	8																					
Utilization IEC 60947-2	Circuit breaker																					
category IEC 60947-4-1	Motor starter																					
Trip class IEC 60947-4-1 *	10																					
Instantaneous trip characteristic	13 x I _e maximum																					
Power loss (total of 3-pole)	11W: I _n =10 to 32A 15W: I _n =40 to 50A 17W: I _n =63A																					
Durability (operations)	Mechanical 50,000 Electrical 25,000																					
Max. operations per hour (motor start-up)	25																					
Phase-loss protection	Provided																					
Trip indicator / Test trip function	Provided																					
Rated breaking capacity (kA)	Adjustable current range	240V/		415V/		460V/		500V		690V/		240V/		415V/		460V/		500V		690V/		
	Code I _e : Min.–Max. (A)	230V		400V		440V				600V		230V		400V		440V				600V		
IEC 60947-2	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}	I _{cu}	I _{cs}		
Replace the □ mark in the type number by current range codes.	P16	0.1-0.16		–		–		–		–		–		–		–		–		–		
	P25	0.16-0.25		–		–		–		–		–		–		–		–		–		
	P40	0.25-0.4		–		–		–		–		–		–		–		–		–		
	P63	0.4-0.63		–		–		–		–		–		–		–		–		–		
	001	0.63-1		–		–		–		–		–		–		–		–		–		
	1P6	1-1.6		–		–		–		–		–		–		–		–		–		
	2P5	1.6-2.5		–		–		–		–		–		–		–		–		–		
	004	2.5-4		–		–		–		–		–		–		–		–		–		
	6P3	4-6.3		–		–		–		–		–		–		–		–		–		
	010	6.3-10	100	100	100	100	15	12	10	8	4	3	100	100	100	100	50	38	50	38	6	5
	013	9-13	100	100	50	38	10	8	6	5	4	3	100	100	100	100	50	38	42	32	6	5
	016	11-16	100	100	25	19	10	8	6	5	4	3	100	100	50	38	50	38	12	9	5	4
	020	14-20	50	38	25	19	10	8	6	5	4	3	100	100	50	38	50	38	12	9	5	4
	025	19-25	50	38	25	19	10	8	6	5	4	3	100	100	50	38	35	27	12	9	5	4
032	24-32	50	38	25	19	10	8	6	5	4	3	100	100	50	38	35	27	10	8	5	4	
040	28-40	50	38	25	19	10	8	6	5	4	3	100	100	50	38	35	27	10	8	5	4	
050	35-50	50	38	25	19	10	8	6	5	4	3	100	100	50	38	35	27	10	8	5	4	
063	45-63	50	38	25	19	10	8	6	5	4	3	100	100	50	38	35	27	10	8	5	4	
Dimensions (mm) W x H x D	55 x 110 x 96																					
Standard	IEC 60947-1, 60947-2, 60947-4-1, UL 508, CSA C22.2 No.14, TÜV, CCC																					

Note: * Adjustable thermal-magnetic trip type only

■ Contactors / SC-M, SC-E

Contactor	Non-reversing Reversing	SC-M01 SC-M01RM	SC-M02 SC-M02RM	SC-E02 SC-E02RM	SC-E03 SC-E03RM	SC-E04 SC-E04RM	SC-E05 SC-E05RM	SC-E1 SC-E1RM
Motor capacity 3-phase AC-3 (kW)	200-240V 380-440V	1.5 2.2	3 4	2.2 4	3 5.5	4 7.5	5.5 11	7.5 15
Rated operational current AC-3 (A)	200-240V 380-440V	6 6	9 9	9 9	12 12	18 18	25 25	32 32
Rated thermal current AC-1 (A)		20	20	20	20	25	32	50
Auxiliary contact Non-reversing		1NO, 1NC	1NO, 1NC	–	–	–	–	–
Dimensions (mm) W x H x D	AC operated DC operated	45 x 48 x 56		43 x 81 x 81			54 x 90 x 96	
		45 x 48 x 68		43 x 81 x 108			54 x 90 x 121.5	
Standard		IEC 60947-4-1, EN 60947-4-1, VDE 0660, UL 508, CSA C22.2						
Thermal overload relay (standard type)		TK-M0	TK-M0	TK-E02	TK-E02	TK-E02	TK-E02	TK-E2
Ampere setting range (A)		0.11-0.17 0.17-0.26 0.26-0.43 0.43-0.65 0.65-1.0 0.85-1.3 1.1-1.6 1.35-2.0 1.7-2.4 2.2-3.2 2.5-4.0 3.0-4.7 4.0-6.3	0.11-0.17 0.17-0.26 0.26-0.43 0.43-0.65 0.65-1.0 0.85-1.3 1.1-1.6 1.35-2.0 1.7-2.4 2.2-3.2 2.5-4.0 3.0-4.7 4.0-6.3 5.5-8.0 7.5-10.5	0.1-0.15 0.13-0.2 0.15-0.24 0.2-0.3 0.24-0.36 0.3-0.45 0.36-0.54 0.48-0.72 0.64-0.96 0.8-1.2 0.95-1.45 1.4-2.2 1.7-2.6 2.2-3.4 2.8-4.2 4-6 5-8 6-9 7-11	0.1-0.15 0.13-0.2 0.15-0.24 0.2-0.3 0.24-0.36 0.3-0.45 0.36-0.54 0.48-0.72 0.64-0.96 0.8-1.2 0.95-1.45 1.4-2.2 1.7-2.6 2.2-3.4 2.8-4.2 4-6 5-8 6-9 7-11 9-13	0.1-0.15 0.13-0.2 0.15-0.24 0.2-0.3 0.24-0.36 0.3-0.45 0.36-0.54 0.48-0.72 0.64-0.96 0.8-1.2 0.95-1.45 1.4-2.2 1.7-2.6 2.2-3.4 2.8-4.2 4-6 5-8 6-9 7-11 9-13 12-18	0.1-0.15 0.13-0.2 0.15-0.24 0.2-0.3 0.24-0.36 0.3-0.45 0.36-0.54 0.48-0.72 0.64-0.96 0.8-1.2 0.95-1.45 1.4-2.2 1.7-2.6 2.2-3.4 2.8-4.2 4-6 5-8 6-9 7-11 9-13 12-18 16-22 20-25	4-6 5-8 6-9 7-11 9-13 12-18 18-26 24-36
Dimensions W x H x D (mm)		45 x 68.5 x 53		53 x 60.5 x 80.5			54 x 78.5 x 97	
Standard		IEC 60947-1, EN 60947-4-1, VDE 0660, UL 508, CSA C22.2						

Contactor	Non-reversing Reversing	SC-E2 SC-E2RM	SC-E2S SC-E2SRM	SC-E3 SC-E3RM	SC-E4 SC-E4RM	SC-E5 SC-E5RM	SC-E6 SC-E6RM	SC-E7 SC-E7RM
Motor capacity 3-phase AC-3 (kW)	200-240V 380-440V	11 18.5	15 22	18.5 30	22 40	30 55	37 60	45 75
Rated operational current AC-3 (A)	200-240V 380-440V	40 40	50 50	68 65	80 80	105 105	125 125	150 150
Rated thermal current AC-1 (A)		60	65	100	105	150	150	200
Auxiliary contact Non-reversing		–	–	–	–	2NO+2NC	2NO+2NC	2NO+2NC
Dimensions (mm) W x H x D	AC operated DC operated	54 x 90 x 96		67 x 112 x 111		88 x 155 x 132	100 x 169 x 138	115 x 175 x 140
		54 x 90 x 121.5		67 x 112 x 130				
Standard		IEC 60947-4-1, EN 60947-4-1, VDE 0660, UL 508, CSA C22.2						
Thermal overload relay (standard type)		TK-E2	TK-E2	TK-E3	TK-E3	TK-E5	TK-E6	TK-E6
Ampere setting range (A)		4-6 5-8 6-9 7-11 9-13 12-18 18-26 24-36 32-42	4-6 5-8 6-9 7-11 9-13 12-18 18-26 24-36 32-42 40-50 44-54	7-11 9-13 12-18 18-26 24-36 28-40 34-50 45-65 48-68	7-11 9-13 12-18 18-26 24-36 28-40 34-50 45-65 48-68 64-80	18-26 24-36 28-40 34-50 45-65 65-95 85-105	45-65 53-80 65-95 85-125	45-65 53-80 65-95 85-125 110-160
Dimensions W x H x D (mm)		54 x 78.5 x 97		68 x 89.5 x 107.5	76.5 x 105 x 106	100 x 122 x 123		
Standard		IEC 60947-1, EN 60947-4-1, VDE 0660, UL 508, CSA C22.2						

Protective coordination between MMSs and contactors (Individuation)

IEC 60947-4-1 Type 1 The rated conditional short-circuit current $I_q=50kA/240V$ AC, 415V AC

Motor capacity and full load current 3-phase				Manual motor starter		Magnetic contactor			Rated operational current AC-3 (A)		
200-240V AC		380-415V AC		Type	Adjustable current range (A)	Type			M series	E series	SC series
Capacity (kW)	Current (A)	Capacity (kW)	Current (A)			M series	E series	SC series			
0.03	0.24	0.06	0.21	BM3RSB-P25	0.16 to 0.25	SC-M01	SC-E02	SC-03	6	9	9
0.06	0.37	0.09	0.31	BM3RSB-P40	0.25 to 0.4	SC-M01	SC-E02	SC-03	6	9	9
–	–	0.18	0.63	BM3RSB-P63	0.4 to 0.63	SC-M01	SC-E02	SC-03	6	9	9
0.12	0.72	0.18	0.63	BM3RSB-001	0.63 to 1.0	SC-M01	SC-E02	SC-03	6	9	9
–	–	0.25	0.8	BM3RSB-001	0.63 to 1.0	SC-M01	SC-E02	SC-03	6	9	9
0.25	1.4	0.37	1.1	BM3RSB-1P6	1.0 to 1.6	SC-M01	SC-E02	SC-03	6	9	9
–	–	0.55	1.5	BM3RSB-1P6	1.0 to 1.6	SC-M01	SC-E02	SC-03	6	9	9
0.37	2	0.75	1.9	BM3RSB-2P5	1.6 to 2.5	SC-M01	SC-E02	SC-03	6	9	9
–	–	1.1	2.5	BM3RSB-004	2.5 to 4.0	SC-M01	SC-E02	SC-03	6	9	9
0.75	3.6	1.5	3.4	BM3RSB-004	2.5 to 4.0	SC-M01	SC-E02	SC-03	6	9	9
–	–	2.2	4.5	BM3RSB-6P3	4.0 to 6.3	SC-M01	SC-E02	SC-03	6	9	9
1.5	6.1	3	6.5	BM3RSB-010	6.3 to 10	SC-M02	SC-E02	SC-03	9	9	9
2.2	9.2	4	8	BM3RSB-010	6.3 to 10	SC-M02	SC-E02	SC-03	9	9	9
3	12	5.5	11	BM3RSB-013	9 to 13		SC-E03	SC-0 or SC-05		12	12
4	16	7.5	14	BM3RHB-020	14 to 20		SC-E04	SC-4-0		18	16
5.5	22	11	21	BM3RHB-025	19 to 25		SC-E05	SC-4-1 or SC-5-1		25	22
7.5	29	15	28	BM3RHB-032	24 to 32		SC-E1	SC-N1		32	32
				BM3VHB-032							
11	38	18.5	35	BM3VHB-040	28 to 40		SC-E2	SC-N2		40	40
15	50	22	45	BM3VHB-050	35 to 50		SC-E2S	SC-N2S		50	50

Note: • The full-load current of each three-phase motor is a reference value. Check the actual full-load current of the motor before use.

Protective coordination between MMSs and contactors (Combination starters)

IEC 60947-4-1 Type 1 The rated conditional short-circuit current $I_q=50kA/240V$ AC, 415V AC

Motor capacity and full load current 3-phase				Manual motor starter		Magnetic contactor		Link module	Base plate
200-240V AC		380-415V AC		Type	Adjustable current range (A)	Type		Rated operational current (AC-3) (A)	*1
Capacity (kW)	Current (A)	Capacity (kW)	Current (A)			SC series	Rated operational current (AC-3) (A)		
0.03	0.24	0.06	0.21	BM3RSB-P25	0.16 to 0.25	SC-M01	6	BZ0LRC09AA	(BZ0BP22A)
						SC-E02	9	BZ0LRE22AA	BZ0BP22A
0.06	0.37	0.09	0.31	BM3RSB-P40	0.25 to 0.4	SC-M01	6	BZ0LRC09AA	(BZ0BP22A)
						SC-E02	9	BZ0LRE22AA	BZ0BP22A
–	–	0.18	0.63	BM3RSB-P63	0.4 to 0.63	SC-M01	6	BZ0LRC09AA	(BZ0BP22A)
						SC-E02	9	BZ0LRE22AA	BZ0BP22A
0.12	0.72	0.18	0.63	BM3RSB-001	0.63 to 1.0	SC-M01	6	BZ0LRC09AA	(BZ0BP22A)
						SC-E02	9	BZ0LRE22AA	BZ0BP22A
–	–	0.25	0.8	BM3RSB-001	0.63 to 1.0	SC-M01	6	BZ0LRC09AA	(BZ0BP22A)
						SC-E02	9	BZ0LRE22AA	BZ0BP22A
0.25	1.4	0.37	1.1	BM3RSB-1P6	1.0 to 1.6	SC-M01	6	BZ0LRC09AA	(BZ0BP22A)
						SC-E02	9	BZ0LRE22AA	BZ0BP22A
–	–	0.55	1.5	BM3RSB-1P6	1.0 to 1.6	SC-M01	6	BZ0LRC09AA	(BZ0BP22A)
						SC-E02	9	BZ0LRE22AA	BZ0BP22A
0.37	2	0.75	1.9	BM3RSB-2P5	1.6 to 2.5	SC-M01	6	BZ0LRC09AA	(BZ0BP22A)
						SC-E02	9	BZ0LRE22AA	BZ0BP22A
–	–	1.1	2.5	BM3RSB-004	2.5 to 4.0	SC-M01	6	BZ0LRC09AA	(BZ0BP22A)
						SC-E02	9	BZ0LRE22AA	BZ0BP22A
0.75	3.6	1.5	3.4	BM3RSB-004	2.5 to 4.0	SC-M01	6	BZ0LRC09AA	(BZ0BP22A)
						SC-E02	9	BZ0LRE22AA	BZ0BP22A
–	–	2.2	4.5	BM3RSB-6P3	4.0 to 6.3	SC-M01	6	BZ0LRC09AA	(BZ0BP22A)
						SC-E02	9	BZ0LRE22AA	BZ0BP22A
1.5	6.1	3	6.5	BM3RSB-010	6.3 to 10	SC-M02	9	BZ0LRC09AA	(BZ0BP22A)
						SC-E02	9	BZ0LRE22AA	BZ0BP22A
2.2	9.2	4	8	BM3RSB-010	6.3 to 10	SC-M02	9	BZ0LRC09AA	(BZ0BP22A)
						SC-E02	9	BZ0LRE22AA	BZ0BP22A
3	12	5.5	11	BM3RSB-013	9 to 13	SC-E03	12	BZ0LRE22AA	BZ0BP22A
4	16	7.5	14	BM3RHB-020	14 to 20	SC-E04	18	BZ0LRE22AA	BZ0BP22A
5.5	22	11	21	BM3RHB-025	19 to 25	SC-E05	25	BZ0LRE22AA	BZ0BP22A
7.5	29	15	28	BM3RHB-032	24 to 32	SC-E1	32	BZ0LRE32AA	BZ0BP32A
				BM3VHB-032				BZ0LVE51AA	BZ0BPV51A
11	38	18.5	35	BM3VHB-040	28 to 40	SC-E2	40	BZ0LVE51AA	BZ0BPV51A
15	50	22	45	BM3VHB-050	35 to 50	SC-E2S	50	BZ0LVE51AA	BZ0BPV51A

Notes: • The full-load current of each three-phase motor is a reference value. Check the actual full-load current of the motor before use.
 • The above table shows combinations with AC operated type magnetic contactors. The link module will differ if the magnetic contactor is a DC operated type.
 *1 Use the base plate type in () when you use the base plate.



See page 02/1 of D & C catalog 19th Edition.

Molded Case Circuit Breakers

Compact, modular units help to reduce panel design and manufacturing costs



BW253S0



EA103C-CE



SA203C-CE

■ BW series/2, 3-pole NEW

Frame	100A	160A		250A		100A	
Pole	3	2	3	2	3	2	3
Type	BW103E0	BW162E0	BW163E0	BW252E0	BW253E0	BW102S0	BW103S0
Rated current (A)	15, 20, 25, 30 40, 50, 60, 75 80, 100	100, 125, 150, 160		175, 200, 225, 250		15, 20, 25, 30, 40, 50, 60, 75 80, 100	
Rated interrupting capacity (kA)	415V AC 15/8 380V AC 18/9 230V AC 25/13	18/9 18/9 25/13		18/9 18/9 25/13		30/8 30/15 50/25	
IEC 60947-2 (Icu/lcs)		25/13		25/13		100/50	

Frame	160A				250A			
Pole	2	3	2	3	2	3	2	3
Type	BW162J0	BW163J0	BW162S0	BW163S0	BW252J0	BW253J0	BW252S0	BW253S0
Rated current (A)	100, 125, 150, 160		100, 125, 150, 160		175, 200, 225, 250		175, 200, 225, 250	
Rated interrupting capacity (kA)	415V AC 25/13 380V AC 25/13 230V AC 50/25		36/18 36/18 85/43		25/13 25/13 50/25		36/18 36/18 85/43	
IEC 60947-2 (Icu/lcs)								

■ E series/2, 3-pole

Frame	30A		50A		60A	
Pole	2	3	2	3	2	3
Type	EA32AC□-CE	EA33AC□-CE	EA52C□-CE	EA53C□-CE	EA62C□-CE	EA63C□-CE
Rated current (A)	3, 5, 10, 15, 20, 30		5, 10, 15, 20, 30, 40, 50		60	
Rated interrupting capacity (kA)	415V AC 1.5/1 380V AC 1.5/1 230V AC 2.5/2		2.5/2 2.5/2 5/3		2.5/2 2.5/2 5/3	
IEC 60947-2 (Icu/lcs)						

Frame	100A		225A		400A	
Pole	2	3	2	3	2	3
Type	EA102C□-CE	EA103C□-CE	EA202C□-CE	EA203C□-CE	EA402C□-CE	EA403C□-CE
Rated current (A)	50, 60, 75, 100		125, 150, 175, 200, 225		250, 300, 350, 400	
Rated interrupting capacity (kA)	415V AC 10/5 380V AC 10/5 230V AC 25/13		18/5 18/5 35/18		25/13 25/13 35/18	
IEC 60947-2 (Icu/lcs)						

Frame	600A	800A
Pole	3	3
Type	EA603C□-CE	EA803□-CE
Rated current (A)	500, 600	700, 800
Rated interrupting capacity (kA)	415V AC 35/18 380V AC 35/18	35/18
IEC 60947-2 (Icu/Ics)	230V AC 50/25	50/25

■ S series/2, 3-pole

Frame	30A		50A			
Pole	2	3	2	3	2	3
Type	SA32C□-CE	SA33C□-CE	SA52C□-CE	SA53C□-CE	SA52RC□-CE	SA53RC□-CE
Rated current (A)	3, 5, 10, 15, 20, 30		5, 10, 15, 20, 30, 40, 50		10, 15, 20, 30, 40, 50	
Rated interrupting capacity (kA)	415V AC 2.5/2 380V AC 2.5/2		7.5/4 7.5/4		10/5 10/5	
IEC 60947-2 (Icu/Ics)	230V AC 5/3		10/5		25/13	

Frame	60A			100A		
Pole	2	3	2	3	2	3
Type	SA62C□-CE	SA63C□-CE	SA62RC□-CE	SA63RC□-CE	SA102C□-CE	SA103C□-CE
Rated current (A)	60			60		
Rated interrupting capacity (kA)	415V AC 7.5/4 380V AC 7.5/4			10/5 10/5		
IEC 60947-2 (Icu/Ics)	230V AC 10/5			25/13		

Frame	100A			150A		
Pole	2	3	2	3	2	3
Type	SA102C□-CE	SA103C□-CE	SA102RC□-CE	SA103RC□-CE	SA152C□-CE	SA153C□-CE
Rated current (A)	15, 20, 30, 40, 50, 60, 75, 100			15, 20, 30, 40, 50, 60, 75, 100		
Rated interrupting capacity (kA)	415V AC 30/8 380V AC 30/8			50/13 50/13		
IEC 60947-2 (Icu/Ics)	230V AC 50/25			100/50		

Frame	225A			300A		
Pole	2	3	2	3	2	3
Type	SA202C□-CE	SA203C□-CE	SA202RC□-CE	SA203RC□-CE	SA302C□-CE	SA303C□-CE
Rated current (A)	125, 150, 175, 200, 225			125, 150, 175, 200, 225		
Rated interrupting capacity (kA)	415V AC 30/8 380V AC 30/8			50/13 50/13		
IEC 60947-2 (Icu/Ics)	230V AC 50/25			100/50		

Frame	400A				600A	
Pole	2	3	2	3	2	3
Type	SA402C□-CE	SA403C□-CE	SA402RC□-CE	SA403RC□-CE	SA603C□-CE	SA603RC□-CE
Rated current (A)	250, 300, 350, 400			250, 300, 350, 400		500, 600
Rated interrupting capacity (kA)	415V AC 35/18 380V AC 35/18			50/25 50/25		50/25 50/25
IEC 60947-2 (Icu/Ics)	230V AC 50/25			85/43		85/43

Frame	800A	1000A	1250A	1600A
Pole	3	3	3	3
Type	SA803RC□-CE	SA1003E□-CE	SA1253E□-CE	SA1603E□-CE
Rated current (A)	700, 800	500-1000	500-1000, 630-1250	800-1600
Rated interrupting capacity (kA)	415V AC 50/25 380V AC 50/25	65/49 85/64	65/49 85/64	85/64 100/75
IEC 60947-2 (Icu/Ics)	230V AC 85/43	100/75	100/75	125/94

■ H and L series/2, 3-pole

Frame	50A		50A	100A		
Pole	2	3	3	2	3	3
Type	H52BA	H53BA	LA53B	H102BA	H103BA	H103R
Rated current (A)	15, 20, 30, 40, 50		5, 10	15, 20, 30, 40, 50, 60, 75, 100		40, 50, 60, 75, 100
Rated interrupting capacity (kA)	440V AC	65/17	50/25	65/17	85 (*415V AC)	
	400V AC	65/17	60/30	65/17	100 (*380V AC)	
IEC 60947-2 (Icu/Ics)	230V AC	125/32	100/50	125/32	125 (*240V AC)	

Frame	225A			400A		
Pole	2	3	3	2	3	3
Type	H202BA	H203BA	H203R	H402B	H403B	H403R
Rated current (A)	125, 150, 175, 200, 225		125, 150, 175, 200, 225	250, 300, 350, 400		250, 300, 350, 400
Rated interrupting capacity (kA)	440V AC	65/17	85 (*415V AC)	65/33	125/63	
	400V AC	65/17	100 (*380V AC)	65/33	125/63	
IEC 60947-2 (Icu/Ics)	230V AC	125/32	125 (*240V AC)	125/63	125/63	

Frame	600A		800A	
Pole	3	3	3	3
Type	H603B	H603R	H803B	H803R
Rated current (A)	500, 600	500, 600	700, 800	700, 800
Rated interrupting capacity (kA)	440V AC	65/33	65/33	125/63
	400V AC	65/33	65/33	125/63
IEC 60947-2 (Icu/Ics)	230V AC	125/63	125/63	125/63

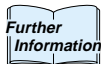
Note: * Interrupting capacity are conforming to IEC 157-1

■ S and E series/4-pole

Frame	50A	100A	100A	225A	400A
Pole	4	4	4	4	4
Type	SA54B	EA104B	SA104R	SA204R	SA404HA
Rated current (A)	5, 10, 15, 20, 30, 40, 50	50, 60, 75, 100	15, 20, 30, 40, 50, 60, 75, 100	125, 150, 175, 200, 225	250, 300, 350, 400
Rated interrupting capacity (kA)	415V AC	7.5	10	45	45
	380V AC	7.5	15	50	45
IEC 157-1	240V AC	10	25	80	85

Frame	600A	800A	1000A	1250A	1600A
Pole	4	4	4	4	4
Type	SA604H	SA804H	SA1004E □ -CE	SA1254E □ -CE	SA1604E □ -CE
Rated current (A)	500, 600	700, 800	500-1000	500-1000, 630-1250	800-1600
Rated interrupting capacity (kA)	415V AC	45	65/49*	65/49*	85/64*
	380V AC	45	85/64*	85/64*	100/75*
IEC 157-1	240V AC	85	100/75 (* 230V AC)	100/75 (* 230V AC)	125/94 (* 230V AC)

Note: * Interrupting capacity are conforming to IEC 60947-2 (Icu/Ics)



See page 06/1 of D & C catalog 19th Edition.

Air Circuit Breakers

Provides positive protection for electric power systems



DH series

Selection guide

Series		DH series		DA series
Frame		800, 1250, 1600, 2000, 2500, 3200, 4000A		5000, 6000A
Pole		3, 4		2, 3, 4
Installation	Fixed	Available (except 4000AF)		Not available
	Draw-out	Available		Available
Closing mechanism		Manual spring, motor spring		
Tripping mechanism		Shunt trip, undervoltage trip		
Overcurrent protection device	Characteristic	L-characteristics	Available	Available
		R-characteristics	Available	Not available
		S-characteristics	Available	Available
	Protection function	Long time delay	Available	Available
		Short time delay		
		Instantaneous		
		Pre-alarm	Available	Available
		Ground fault	Available	Available
		Earth leakage	Available	Not available
		Preverse power	Available	Not available
N-phase protection	Available	Available		
Contact temp.monitoring	Available	Not available		

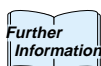
Comparison of interrupting capacity

Rated current (A)		800A	1250A	1600A	2000A	2500A	3200A	4000A	5000A	6000A
Rated interrupting capacity (kA sym.)/ Rated making current (kA peak)	Rated voltage 690V AC	DH□	50/105		65/143		75/165			
		DH□H	55/121							
		DH□P			85/187					
		DA□							85/187	
	Rated voltage 440V AC	DH□	65/143		85/187		100/220			
		DH□H	80/176							
		DH□P			100/220					
		DA□							120/264	

Standards

IEC60947-2
 EN60947-2
 AS3947-2
 NEMA PUB No. SG3
 ANSI C37.13
 BS EN60947-2
 VDE 0660 part 101
 JIS C 8372 (JIS C8201-2)
 JEC 160

ASTA
 LR
 AB
 GL
 BV
 NK



See page 08/47 of D & C catalog 19th Edition.

Pushbuttons, Selectors, Pilot Lights

Ergonomically designed and perfectly suited for control panels



Command Switches

AR22, DR22 series (22mm dia.)

■ Illuminated pushbutton switches

Operator	Flush round head	Extended round head	Extended with transparent full guard	Flush square head	Extended square head
Momentary type	AR22F0L	AR22E0L	AR22G4L	AR22F0M	AR22E0M
Alternate type	AR22F5L	AR22E5L	AR22G9L	AR22F5M	AR22E5M
Contact arrangement	1NO, 1NC, 1NO+1NC, 2NO, 2NC, 2NO+2NC, 3NO, 3NC, 4NO, 4NC, 5NO, 5NC				
Lamp voltage	5.5V AC/DC, 6V AC, 6V DC, 12V AC/DC, 15V AC/DC, 20V AC/DC, 24V AC/DC 100-110V AC, 115-127V AC, 200-220V AC, 230-254V AC, 350-380V AC, 400-440V AC, 480V AC, 500-550V AC				
Lamp	LED lamp, Incandescent lamp				
Color of lens	● Green, ● Red, ○ White, ● Yellow, ● Orange, ● Blue				

■ Pushbutton switches




Operator	Flush round head	Extended round head	Mushroom head	Flush square head	Flush round head with square bezel
Momentary type	AR22F0R	AR22E0R	AR22M0R	AR22F0S	AR22F0Y
Alternate type	AR22F5R	AR22E5R	AR22M5R	AR22F5S	AR22F5Y
Contact arrangement	1NO, 1NC, 1NO+1NC, 2NO, 2NC, 2NO+2NC, 3NO, 3NC, 3NO+3NC, 4NO, 4NC, 5NO, 5NC				
Color of button	● Green, ● Red, ● Black ○ White, ● Yellow, ● Orange, ● Blue				

■ Emergency stop pushbutton switches






Operator	Push-lock, turn-reset (40mm dia.)	Push-lock, turn-reset (29mm dia.)	Key release push-lock, turn-reset	Push-lock, pull-reset	Unibody push-lock, turn-reset
Type	AR22V0R	AR22V4R	AR22V7R	AR22Q2R	AR22VGE
Contact arrangement	1NC, 1NO+1NC, 2NC, 2NO+2NC, 3NC, 4NC				
Color of button	● Red				

The manufacturing range varies depending on the model.

■ Selector switches






Operator	Knob 	Lever 	Key 	Key (Long durability) 
Type Knob/key operated control	AR22PR AR22PCR	AR22WR AR22WCR	AR22JR AR22JCR	AR22JAR -
Contact arrangement	1NO, 1NC, 1NO+1NC, 2NO, 2NC, 2NO+2NC, 3NO, 3NC, 3NO+3NC, 4NO, 4NC, 5NO, 5NC			
Color of knob	● Black, ● Green, ● Red			

■ Pilot lights






Lens	Dome 	Extended round 	Flush square 	Flush square (transparent lens) 	Extended square 
Type	DR22D0L	DR22E3L	DR22F3M	DR22F4M	DR22E3M
Lamp voltage	5.5V AC/DC, 6V AC, 6V DC, 12V AC/DC, 15V AC/DC, 20V AC/DC, 24V AC/DC, 110V DC 100-110V AC, 115-127V AC, 200-220V AC, 230-254V AC, 350-380V AC, 400-440V AC, 480V AC, 500-550V AC				
Lamp	LED lamp, incandescent lamp				
Color of lens	● Green, ● Red, ○ White, ● Yellow, ● Orange, ● Blue				

AR30, DR30 series (30mm dia.)

■ Illuminated pushbutton switches





Operator	Extended round head 	Extended with transparent full guard 	Extended with full guard (with openings) 	Extended with full guard 	Push-lock, turn-reset 
Momentary type	AR30E0L	AR30G4L	AR30G2L	AR30G3L	-
Alternate type	AR30E5L	AR30G9L	AR30G7L	AR30G8L	AR30V5L
Contact arrangement	1NO, 1NC, 1NO+1NC, 2NO, 2NC, 2NO+2NC, 3NO, 3NC, 4NO, 4NC, 5NO, 5NC				
Lamp voltage	5.5V AC/DC, 6V DC, 6V AC, 12V AC/DC, 15V AC/DC, 20V AC/DC, 24V AC/DC 100-110V AC, 115-127V AC, 200-220V AC, 230-254V AC, 350-380V AC, 400-440V AC, 480V AC, 500-550V AC				
Lamp	LED lamp, incandescent lamp				
Color of lens	● Green, ● Red, ○ White, ● Yellow, ● Orange, ● Blue				

■ Pushbutton switches





Operator	Flush round head 	Extended round head 	Mushroom head 	Extended with full guard 	Giant head with full guard 
Momentary type	AR30F0R	AR30E0R	AR30M0R	AR30G1R	AR30B2R
Alternate type	AR30F5R	AR30E5R	AR30M5R	AR30G6R	-
Contact arrangement	1NO, 1NC, 1NO+1NC, 2NO, 2NC, 2NO+2NC, 3NO, 3NC, 3NO+3NC, 4NO, 4NC, 4NO+4NC, 5NO, 5NC				
Color of button	● Green, ● Red, ● Black ○ White, ● Yellow, ● Orange, ● Blue				

The manufacturing range varies depending on the model.





Emergency stop pushbutton switches

Operator	Push-lock, turn-reset (40mm dia. with white arrow) 	Push-lock, turn-reset (65mm dia.) 	Push-lock, turn-reset (40mm dia.) 	Push-lock, pull-reset 
Type	AR30V0R	AR30V1R	AR30V2R	AR30Q2R
Contact arrangement	1NC, 1NO+1NC, 2NC, 2NO+2NC, 3NC, 4NC			
Color of button	● Red			

Selector switches

Operator	Knob 	Lever 	Key 	Key (Long durability) 
Type	AR30PR AR30PCR	AR30WR AR30WCR	AR30JR AR30JCR	AR30JAR -
Contact arrangement	1NO, 1NC, 1NO+1NC, 2NO, 2NC, 2NO+2NC, 3NO, 3NC, 3NO+3NC, 4NO, 4NC, 4NO+4NC, 5NO, 5NC			
Color of knob	● Black, ● Green, ● Red			

Pilot lights

Lens	Dome 	Extended round 	Faceted 	Flush square 
Type	DR30D0L	DR30E3L	DR30K0L	DR30F4M
Lamp voltage	5.5V AC/DC, 6V AC, 6V DC, 12V AC/DC, 15V AC/DC, 20V AC/DC, 24V AC/DC, 50V DC, 110V DC, 100-110V AC, 115-127V AC, 220V DC, 200-220V AC, 230-254V AC, 350-380V AC, 400-440V AC, 480V AC, 500-550V AC			
Lamp	LED lamp, incandescent lamp			
Color of lens	● Green, ● Red, ○ White, ● Yellow, ● Orange, ● Blue			

The manufacturing range varies depending on the model.



See page 04/2 of D & C catalog 19th Edition.

Time Delay Relays

Direct reading time-scale and compact body



■ Super timers

Description	Operation	Contact arrangement		Timer Type	Required socket		
		Timed	Instant.		Surface mounting Type	Flush mounting Type	Rail mounting Type
Super Timer Multi-range, compact body	Multi-mode • On-delay • Flicker • One-shot • Signal off-delay	2PDT	–	MS4SM	TP411X 11GB + FX3 (Hold-down spring)	TP411SBA+TX4 (Adaptor) ATX2NS+TX4 (Adaptor)	TP411X
	On-delay	2PDT SPDT	– SPDT	MS4SA MS4SC	TP48X 8GB + FX3 (Hold-down spring)	TP48SB+TX4 (Adaptor) ATX1NS+TX4 (Adaptor)	TP48X
	Off-delay	2PDT SPDT	–	MS4SF MS4SF-R			
	Star-delta	2NO	1NO	MS4SY			
	On-delay with electrical reset	2PDT	–	MS4SE			
	On-off repetitive operation	2PDT	–	MS4SR			
	On-off	SPDT	–	MS4SB			
Super Timer Miniature size	On-delay	2PDT	–	ST7P-2			
	Off-delay	SPDT	–	ST7PF	TP88R2 TP88B		TP88X1
	On-delay	4PDT	–	ST7P-4	TP814 TP814R2 TP814B	–	TP814X2 TP814X1

■ Digital timers

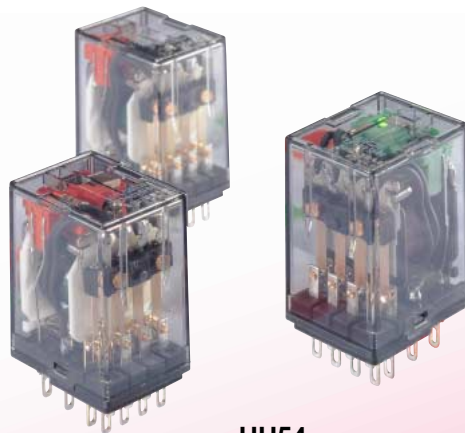
Description	Contact arrangement		Input voltage (V)	Timer Surface mounting Type	Required socket	
	Timed	Instant.			Surface mounting Type	Flush mounting Type
Digital timer	SPDT	–	100–110V AC 200–220V AC 24V DC	SD4 SD4D	TP28X-UL	TP48SB ATX1NS
	SPDT	–				



See page 03/49 of D & C catalog 19th Edition.

Industrial Control Relays

Reliable operation and long life



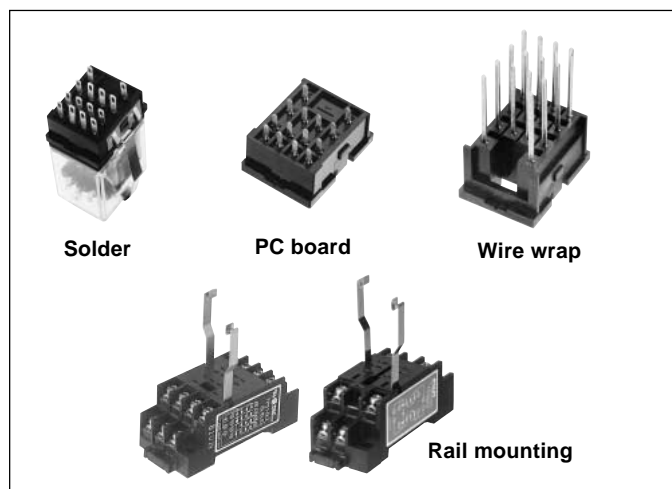
HH54

■ Miniature control relays HH52, 53, 54

Type	HH52□	HH53□	HH54□	HH52□U	HH54□U	HH52□W	HH54□W
Contact arrangement	2PDT	3PDT	4PDT	2PDT	4PDT	2PDT	2PDT
Contact form	Single	Single	Single	Single	Single	Bifurcated	Bifurcated
Rated thermal current	5A	5A	3A	7A	5A	5A	3A
Resistive load	120V AC	5A	5A	3A	7A	5A	5A
	240V AC	5A	5A	3A	7A	5A	5A
	30V DC	5A	5A	3A	7A	5A	5A
	120V DC	0.3A	0.3A	0.3A	0.3A	0.3A	0.3A
Inductive load	120V AC	1.5A	1.5A	1A	1.5A	1A	1.5A
	L/R=15ms (DC)	30V DC	2A	2A	2A	2A	2A
	Cosφ=0.3 to 0.4 (AC)	120V DC	0.2A	0.2A	0.2A	0.2A	0.2A
Contact resistance	50mΩ max.						
Coil	Rated voltage	6 to 240V AC, 6 to 110V DC (50/60Hz)					
	Power consumption	AC: 1.0/1.2VA max. (60Hz), 1.2/1.4VA max. (50Hz) DC: 0.9W					

• Sockets

Description	Type	Used with
Soldering	TP58	HH52P
	TP511	HH53P
	TP514	HH54P
PC board	TP58B	HH52P
	TP511B	HH53P
	TP514B	HH54P
Wire wrap	TP58R2	HH52P
	TP511R2	HH53P
	TP514R2	HH54P
Rail mounting Screw terminal M3.5	TP58X2	HH52P
	TP511X2	HH53P
	TP514X2	HH54P
Rail mounting Screw terminal M3.0	TP58X1	HH52P
	– TP514X1	– HH54P



■ Standards

UL, CSA, TÜV

■ Miniature power relays HH62, 63, 64

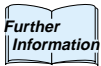
Type	HH62□	HH63□	HH64□	HH62□ W
Contact arrangement	2PDT	3PDT	4PDT	2PDT
Contact form	Single	Single	Single	Bifurcated
Rated thermal current	10A	10A	10A	7A
Resistive load	120V AC	10A	10A	5A
	240V AC	10A	10A	5A
	30V DC	8A	8A	5A
	120V DC	0.3A	0.3A	0.3A
Inductive load	120V AC	1.5A	1.5A	1.5A
	30V DC	2A	2A	2A
L/R=15ms (DC)	30V DC	2A	2A	2A
Cosφ=0.3 to 0.4 (AC)	120V DC	0.2A	0.2A	0.2A
Contact resistance	50mΩ max.			
Coil	Rated voltage	6 to 240V AC, 6 to 110V DC (50/60Hz)		
	Power consumption	AC: 2VA max. (60Hz), 2.5VA max. (50Hz) DC: 1.5W max.		

• Sockets

Description	Type	Used with
Soldering	TP68	HH62
PC board	TP68B	
Wire wrap	TP68R	
Rail mounting screw terminal	TP68X2	HH62
	TP611X2	HH63
	TP614X2	HH64
Finger protection cover	RZ62X2	TP68X2
	RZ64X2	TP614X2

■ Standards

UL, CSA, TÜV



See page 03/25 of D & C catalog 19th Edition.

Power Monitoring Unit

Performs precise energy control at low cost



■ F-MPC04

Type			F-MPC04	F-MPC04P			F-MPC04	
			UM01-A□A4E	UM02-AR2	UM02-AR3	UM02-AR4	UM03-ARA3G	UM03-ARA3
			Integrated power monitoring unit	Multi-circuit power monitoring unit			Single-circuit power monitoring unit	
Measuring function	No. of phases and wires	Single-phase 2-wire	10 circuits	12 circuits	—	—	1 circuit	1 circuit
		Single-phase 3-wire	10 circuits	—	8 circuits	—		
3-phase 3-wire		—	—	—	—	—		
3-phase 4-wire		6 circuits	—	—	4 circuits	—	—	
No. of voltage circuits			2	1			1	1
Measuring item	Voltage [V]	Voltage [V]	○	○			○	○
		Current [A]	○	○			○	○
		Power [W]	○	○			○	○
		Active power [Wh]	○	○			○	○
		Reactive power [var]	○	○			○	○
		Reactive energy [varh]	○	—			○	○
		Power-factor	○	○			○	○
		Leakage current [Io]	○	—			○	—
		Basic component of leakage current [Iob]	—	—			○	—
Maintenance item	Demand	Current	○	—			○	○
		Power	○	—			○	○
		Max. current	○	—			○	○
		Max. power	○	○			○	○
	Max. voltage value	○	○			—	—	
Min. voltage value	○	○			—	—		
Harmonic current			○	—			○ (Demand only)	
Protection	Current prealarm (OCA)		○	—			○	○
	Leakage current prealarm (OCGA)		○	—			○	—
	Leakage current trip (OCG)		○	—			○	—
Communications interface			RS-485, T-link	RS-485			RS-485	RS-485
Display and setting			○	Display and setting unit UM02S			○	○
Devices to be connected	Current sensor (Current Transformer:CT)		○*	CT: 5, 50, 200, 400A			—	—
	ZCT (separately installed)		○	—			○	—
	MCCB with ZCT		○	—			○	—

Note: * F-MPC 04 (UM01) is connected to CT via CT-BOX.

○ Available



See page 09/119 of D & C catalog 19th Edition.

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- Customers, who want to use the products introduced in this catalog for special systems or devices such as for atomic-energy control, aerospace use, medical use, passenger vehicle, and traffic control, are requested to consult the Fuji sales division.
- Customers are requested to prepare safety measures when they apply the products introduced in this catalog to such systems or facilities that will affect human lives or cause severe damage to property if the products become faulty.
- For safe operation, wiring should be conducted only by qualified engineers who have sufficient technical knowledge about electrical work or wiring.

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